Welcome to USGBC Central California’s LEED v4 Introduction: November 5, 2013
In general, LEED focuses on increasing the technical rigor and improving the user experience over LEED 2009. When launched in 2009 made a lot of structural and foundational changes to the LEED program.

Example: Alignment of the rating system development cycle, which provided the foundation for providing clear requirements that applied regardless of which rating system a project uses. If a requirement is different, it is intentional.

The LEED v4 program builds from the foundation of LEED 2009 and improves the program experience. The last 1.5 years has been focused on implementing the program and addressing the needs of project teams. This includes everything from more useful reference guide content to documentation relaying on industry standards. Additionally, the solutions provided by LEED v4 address a wider variety of projects all around the world.
Focus on Market Transformation. The goal of continuous improvement of LEED is to not only push the market toward net zero, but net positive impacts on the environment. Currently (and including LEED v4) LEED buildings still have a net negative environmental impact, or are “less bad.” LEED revisions strive to improve the performance of buildings and eventually get to a state of contributing “more good.”
Key takeaway from this graphic is that the percentage of projects earning LEED Gold certification is dramatically increasing. It is time to raise the bar.

Currently, over 50 percent of certified projects achieve LEED Gold. The strategy works – LEED clearly pushes teams to reach higher. It is time to raise the bar. Bringing value and meaning back to Certified and Silver certification levels with LEED v4 will restore the innovative potential of LEED.
One of the major influences of rating system development is the progression of codes, particularly energy codes, around the world. ASHRAE has incorporated a significant change to Standard 90.1-2010 and as a result, LEED has shifted its minimum energy performance requirements to stay above code and continue to be a leadership standard.
LEED v4 is critical to our mission. It will have the biggest impact on CO$_2$ emissions of any rating system developed by USGBC. It takes an unprecedented stand on human health. LEED v4 changes the way project teams think, integrate, plan, execute, and operate their buildings.

LEED v4 focused on improving performance in order to obtain improved environmental outcomes associated with buildings and communities.
Change from Impact Categories to Environmental Goals, from a “Do Less Bad” Shift to refined and simplified system goals, to a “Do More Good”, more of a positive approach
Improved performance relates to all of the system goals shown on the screen. USGBC wants LEED buildings to address the following goals by obtaining credits and earning the highest levels of certification. These are in order of importance.

The system goals are used to assign points to credits – credits with the highest number of points address one of the system goals very deeply, or perhaps several of the goals in a variety of ways.
LEED still has 100 base points plus 10 Innovation in Design and Regional Priority points. LEED will still continue to use the Pilot Credit program with new credits being added. LEED will continue the LEED AP credit although it will change to require LEED AP with Specialty aligned with project type.
LEED has added a new credit category, splitting and modifying an existing category.
LEED will address additional project types including Data Centers, Warehouse & Distribution Centers, and Multifamily Midrise.
LEED will recognize European and International Standards (SI/Metric).
LEED v4 will reference updated standards including ASHRAE 2010 standards like 90.1-2010, EPA NPDES 2012 standards, and plumbing fixtures will now need to meet the EPA WaterSense Standards, including Landscapes standards and EPA water sense labeled fixtures. Also LEED will include International and European Standards as alternative compliance paths.
Serving different project types that previously had difficulty certifying under a system originally developed for office buildings

New project types added to various rating systems including BD&C, ID&C, and EBOM and Homes

BD&C and ID&C: Data Centers, Warehouses and Distribution Centers, Hospitality

EBOM: provisions for Schools and Retail

Homes: Midrise Multifamily
Integrative Process instead of Integrated
Integrated implies an end, Integrative is an Ongoing Process
3 different phases:
- Vision or Discovery—Before Design Begins
- Design and Construction—All Phases
- Building Operations—Expanding the integrative process to include Collection of Building Performance Data

Continuous Value Optimization through the process rather than limited Value Engineering.
A stand alone credit not part of any LEED category to incentivize the integrative process, whose intent is to promote high performance project cost effective outcomes through the early analysis of interrelated project systems. The credit addresses the discover phase mostly with focus on energy and water systems. Encourages inclusion of users and facility operators.
Location and Transportation is a new credit category within LEED BD&C, ID&C, and EBOM. Previously existed in Homes and Neighborhood Development
Split Sustainable Sites

The Location and Transportation category rewards project locations that are within relatively dense areas, are near diverse uses, have access to transportation options, and are on sites with development constraints.

The introduction of the Location and Transportation category is primarily a re-organization for the purposes of communication of the general trajectory of these specific credits. LEED 2009 recognized the value of Location related issues via credit weightings – this is the next step in conveying that importance.

In general, changes to the LT credits include introducing gradation into credits knowing that there are varying levels of performance to reward – The density, transit, and parking credits now have tiers at which you can earn points, rather than either earning a sum of points or not, as it is in LEED 2009.

Highlights:

New credit category to improve alignment between commercial rating systems and LEED ND.
More performance-based credits with improved ties to anticipated outcome.
  - bicycle facilities [link to bike network]
  - quality transit [trip frequency, walking distance]
No prerequisite in this category
First Credit is through development in ND Neighborhood
• Site Selection change to Sensitive Land Protection, basically the same but does allow for some development activity in protected sites
• Brownfields to High Priority Sites, Still includes Brownfields but also includes other types of site constraints including Historic Districts and Priority designations
• Development Density and Community Connectivity renamed to Surrounding Density and Diverse Uses with multiple thresholds for points
• Previous grouped transportation credits now stand alone
  • Access to Quality Transit not just focused on availability but also frequency that truly served
  • Bicycles Facilities includes requirements for Bicycle accessible site or on a bicycle network where users can safely bike there
  • Reduce Parking footprint-no changes
  • Green vehicles – no changes
Now that the LT and SS credits are separated and allows the focus of the Sustainable Sites category to be on the relationships among ecosystems, project sites, and the buildings and occupants within them.

Not as many major changes compared to other categories. In general, most credits have been revised in ways that enable project teams achieve higher levels of performance while providing less documentation.

Performance related to sites:
• encouraging sites decisions to be considered early in the design process (importance of this mentioned in the Integrative Process session)
• Maximizing relationships between project and ecosystem services
• Less prescriptive credits
• Rather than a given percentage of open space, LEED has added qualitative requirements, too
• The credits focus on linking performance with requirements

Highlights:

New credit for site assessment.

Financial support option in protect or restore habitat.

Major simplification to Light Pollution Reduction credit through new option for BUG rated equipment.
No big Changes to prerequisites
• Site Development-no significant changes except option for financial support of offsite preservation
• Open space: simplified name - qualification opens space must be shown to be of beneficial use to occupants or community
• Stormwater credits combined to Rainwater credit-basically the same criteria with new more positive title
• Heat Island Credits combined – same basic credit with roof and Nonroof combined, added criteria for 3 year aging of roof materials
• Light Pollution – All new criteria based on IESNA BUG (Backlight, Uplight, Glare) (same as CALGreen)

There are other credits in this category specific to schools and to healthcare which have not really changed from 2009
The Water Efficiency category has been reorganized significantly from LEED 2009 to LEED v4. In LEED v4 reward project teams for water efficiency of many water uses beyond fixtures and fittings, including process water, appliance water, cooling tower water, and ramped up some of the existing requirements for outdoor water.

Schools, healthcare, and retail continue to have additional credit requirements for process and appliance water because those uses are more typical of the space type. There is now a more simplified presentation of indoor water use reduction and outdoor water use reduction intended to encourage a more holistic way of addressing total use of water on a project.

Performance related to Water Efficiency:
• Holistically thinking in terms of water usages in the project; addressing indoor, outdoor, and process water
• Addressing more sources of water – NC and EBOM
• Metering – you can’t manage what you don’t measure; it’s fundamental to ensuring that the system is functioning as it was designed; There are now incentives to track performance

An Example of the relationship of a credit to performance: Projects such as Data Centers will have substantial water use with cooling towers. v4 addresses more sources of water such as cooling tower. Incentive now for projects where there wasn’t before to address water efficiency there.

Highlights:

Addressing all water uses including fixtures & fittings, process, appliance, cooling towers, and outdoor water.

Focus on measuring water use through fundamental building metering requirements.

Additional points in credit for metering of subsystems.
Big Changes: 3 Prerequisites

- Outdoor Water Use – Landscaping Lower entry threshold than credit but requires EPA Watersense calculation method
- Indoor Water Use – Same as before
- Building Level Water Metering-Install water meters for individual buildings and associates grounds (First of the Performance minded Prereqs)

- Outdoor Water Use Reduction – Similar to 2009 credits, requires use of EPA Watersense calculation method
- Note: Innovative Wastewater Technologies eliminated, however, Pilot Credit, Nutrient Recovery covers much of the same material
- Water Use Reduction now named Indoor Water Use Reduction now includes process water use reduction, previously offered only in Schools
- Cooling Tower Water Use reduction credit – covers conservation of water in cooling towers while controlling microbes, corrosion and scale
- Water Metering – Provide additional opportunities for water conservation through tracking water use, submetering
In the Energy and Atmosphere category, there is much more explicit focus on measurement, metering and performance. Same basic philosophy of LEED 2009, but moving forward requiring greater stringency as well as encouraging more integrative, early design decisions. The aim is to encourage buildings to perform well from the very beginning and follow through with measurement and performance metrics, such as commissioning and metering.

The energy and atmosphere category has notable changes, including the following:

- ASHRAE 90.1-2010 (calculated by cost, 5% beyond referenced standard at the prerequisite level)
- Enhanced Commissioning now includes an option for envelope commissioning
- Renewable Energy rewards community generated central systems
- Green Power now includes carbon offsets
- New Demand Response credit focused on reducing the carbon contribution of the energy grid

Opportunity to use the data to show that LEED = improved energy performance, not just how much energy is used, but what is its source, what is it used for.

Highlights:

- **Minimum Energy Performance**: five percent above ASHRAE 90.1-2010; minimum ENERGY STAR score now 75.
- **New credit** for Demand Response.
- Building level **energy metering** required for all projects.
3 Existing Prerequisites remain pretty much the same, with updated reference standards, 1 New Prerequisite

- **Fundamental Commissioning & Verification** – pretty much the same but added requirement for facilities requirements and operations and maintenance plan
- **Minimum Energy Performance** – requires ASHRAE 90.1-2010 compliance, due to more rigorous standards (18% over 2007) now requires only 5% better than standard instead of 10% previously
- **Fundamental Refrigerant Management** – no change
- **Building Level Energy Metering - Measure and Verification Credit** has gone away but portions of it now exist in other credits and prerequisites. This is a new prerequisite requiring building level or aggregated sub metering to allow for tracking of building energy consumption
- **Optimize Energy Performance** – Essentially No Change
- **Enhanced Commissioning** – Similar but includes different methods for commissioning and provides opportunity for envelop commissioning
- **Advanced Energy Metering** – This credit focuses on Submetering throughout the building focus on specific systems. Another component of M&V. CEC will require separate electrical panels for systems to allow for submetering or installation of panel boards with metering capability built in. Focus on tracking and performance.
- **Demand Response** – Credit for becoming involved on a demand response program, requires a 1 year commitment, also requires development for a plan as to how load would be shed in the event of a demand response event.
- **On-Site Renewable Energy renamed as Renewable Energy Production**, essentially the same except worth fewer points, more like LEED NC 2.2
- **Enhanced Refrigerant Management** – No Changes, essentially the same credit with the same calculations.
- **Green Power and Carbon Offset** – Same credit as before but now expanded to allow carbon offsets to earn credit.
The Materials and Resources has been significantly edited to address a more sophisticated approach to building material selection. Rewards project teams for doing more with less. Reuse is of highest value, followed by new material design optimization, resulting in less resource use. Credits on material transparency and optimization and promoting responsible extraction practices emphasize human and ecological health make LEED a pioneer in establishing best practice for parts of the industry not yet engaged with sustainability.

Foremost, building and material reuse of any kind is prioritized and rewarded through high point valued credits.

Next, project teams should assess and optimize their material selections when reuse is not an option. This means using tools like life cycle assessment and environmental product declaration to understand what is in a materials, what are the ingredients making up the products, what are the energy and system implications and using this information as a tool to help project teams address their priorities.

In areas where LCA is still improving, such as human and ecological health, has credits for transparency and optimization of building materials and the responsible extraction of raw materials. This credit for extraction of raw materials is the evolution of the BD+C MRc7 for certified wood and has been expanded to include mined and quarried materials, other bio-based materials aside from wood and any other extracted materials. This gives other industries an incentive to perform as well as the wood industry where there are very sophisticated and well established certifications for project teams to rely on.

Finally, the 4th step in this life cycle approach is proper waste management, including an option for minimizing waste overall, diverting things from the waste stream when possible, or patronizing manufacturers that have closed-loop recycling programs. Shifting from rewarding single attributes to rewarding multiple attributes of a product.

This is a push towards performance because considering products and materials holistically; e.g. building and material reuse

Building and material reuse of any kind is prioritized and rewarded through high point valued credits.

V4 encourages project teams to assess and optimize their material selections when reuse is not an option. This means using tools like life cycle assessment and environmental product declaration to understand what is in a materials, what are the ingredients making up the products, what are the energy and system implications and using this information as a tool to help project teams address their priorities.

MR section in v4 was structured around a life cycle thinking approach. Focusing on reuse first. If you can't reuse then assess and optimize the products you are using. Address the impact on human and ecological health. And then waste management – divert the waste from the landfill.

This is a leap for many, not as incremental a change as other credits and categories but it is the right move in order for LEED to transform the market. But, it requires the support from manufacturers as well as new knowledge and skills by project team members.

Note: LEED 2009 will be an option for a couple more years but teams can start with LEED v4 concepts now. USGBC will be spending the next few years educating and supporting the marketplace.

With EPDs - architects don't understand what they are, so they think they have to generate them, they do not.

- Push to performance by considering products and materials holistically
- Impact on human health and well being as well as environmental impact

Highlights:

Life cycle thinking approach to category.

Optional whole building life cycle assessment for new construction.

Focus on product transparency and outcomes through Building Disclosure & Optimization credits.
Most extensive changes
Now has 2 prerequisites:

- Storage & Collection of recyclables basically the same, expanded to include batteries, mercury containing lamps, and electronics. Second requirement unique to Healthcare for PBT Source Reduction - Mercury
- Waste Management Planning – Requires establishing a plan and diversion targets, identify at least 5 materials for diversion, specify method of collection.

- Building Life Cycle Impact Reduction – Combines 2 previous building reuse credits now combined, most amount of points in materials & resources, up to 5 points, 4 options, first 3 address existing buildings, including historic preservation, 4th option for new buildings doing a whole building life cycle assessment on the whole building, materials reuses reflected here.

** Next credits include, spread around, attributes that were contained 4 credits under 2009, MRc4, MRc5, MRc6, MRc7, a more holistic look at product life cycle impacts
- Product Disclosure & Optimization – Environmental Product Declarations, involves use of products with Environmental Product Declarations, EPDs, 4 basic types Product Specific (preferred), Industry Wide (generic), Product Specific Type 3 (third party certifications), USGBC approved program (currently none exist) all programs must conform to ISO standards for method and disclosure. Also includes a point for products with extended producer responsibility, take back programs.
- Product Disclosure & Optimization – Sourcing of Raw Materials, (2 points total) Where the raw materials are coming from, includes products from MRc4, MRc5, MRc6, MRc7, looks for products where manufacturer have publicly disclosed sourcing locations, at least 20 Products. Products must be sourced from at least 5 different Manufacturers.
- Product Disclosure & Optimization – Material Ingredients – includes additional reporting such as products full disclosure of product ingredients, with Health Product Declarations (HPDs) and Cradle to Cradle certifications, USGBC approved programs.
- Construction & Demolition Waste Management – Essentially the same credit, involves reporting of diversion, focus on materials not included in the Waste Planning prereq. Added an option for waste stream reduction which allows looking a packaging and reducing the packaging waste stream.
Indoor environmental quality: this section has been reorganized to address holistic issues impacting IEQ, including indoor air, light, sound, and occupant experience. It is more technically rigorous than previous versions of LEED.

Improve occupant satisfaction, productivity, and health. Performance in IEQ is all about implementing credits that will lead to higher performing/healthier occupants.

Taking a systems approach and looking at performance of the building as a whole to quantify the human health impacts and occupant experience occupant satisfaction is key metric

Highlights:

Category focused on key indicators of **air**, **light**, **sound**, and **occupant experience**.
More **performance-based credits** focused on health and wellbeing outcomes.
**Systems approach** to material emissions.
Some significant changes to this credit category

2 Prerequisites:

- Minimum IAQ Performance – Essentially the same as LEED 2009 but now recognizes European and International Standards along side ASHRAE 62.1-2010, part of USGBC’s effort to make LEED more Global. Now includes requirement for out air delivery measurement. Back to the idea of measuring to insure/enhance performance.

- Tobacco Smoke Control – Essentially the same but now prohibits smoking within the building (only allowed on Residential projects). Other requirements the same as 2009

- Enhanced Indoor Air Quality Strategies – Combines elements from EQc1, EQc2, and EQc5 into one credit. Includes CO2 monitoring, increased ventilation, odor source control. Creating a more holistic approach to improving indoor air quality.

- Construction IAQ Management Plan – Focuses just on construction indoor air quality management, essentially the same as LEED 2009.

- Indoor Air Quality Assessment – a renamed Const IAQ MP Before Occupancy, now with more points for doing air testing, proving you have good indoor air quality rather than just simply flushing the building.

- Low Emitting Interiors – Combines previous EQc4 credits into one credit category with 3 points, more of a performance focus, focus not on VOC content but rather on emissions when that product is installed. Provides for inherently nonemitting sources or provides for requirement the emissions be test in accordance with California Department of Public Health Standard Method v1.1-2010
• Interior Lighting – Essentially the same as Controllability of Systems Lighting, 2 points, one for controllability and another for quality of lighting.

• Thermal Comfort – Now includes Mold Prevention (Previously a credit unique to Schools), credit also combines Thermal Comfort, Controllability and Thermal Comfort Design. Addresses humidity control. Thermal Comfort Verification has been eliminated.

• Daylight – Simplified name, now provides up to 3 points depending on available daylight to spaces. 2 point for daylighting quantity and 1 point available for measurement of spaces. Again focus on measurement of indicator of performance.

• Quality Views – In addition to window area, height and location, as in 2009 now requires that views have quality to them, open space, vegetation, sky, movement, and objects at least 25 feet from window, not just of a wall. This is based on previous exemplary performance point in LEED 2009. Calculations must take into account any permanent obstructions including furniture partitions, etc.

• Acoustic Performance – Now included in NC projects (previously only Schools).
LEED v4:
IMPROVED USER EXPERIENCE
The reference guide has been reorganized and now has new sections. The reference guide has been revised to focus on the successful implementation of LEED credits, and includes valuable sections like Step-By-Step guidance, further explanation, examples, documentation requirements, and a summary of requirement changes from LEED 2009. Tested and refined through 100 Pilot Projects.
In addition to print guides, the reference guide will also be available for purchase in an “on-demand” format through Kindle or other related systems.
The LEED credit library offers all rating system content in one place, and will house the web-based version of the reference guide, available for subscription purchase starting at Greenbuild 2013.
Greatly improved LEED Online experience. Simplified templates and data entry. All Calculators have been removed from the templates and will be provided as MS Excel Spreadsheets.
Open registration for LEED v4 Projects begins November 2013
Extended registration period to allow for greater transition and to allow market to respond to new LEED v4 requirements
Current Version of Exams through May 2014, with a dark month of June while they switch over, new exam starting in July 2014.

LEED v4: SCHEDULE

» Held six public comment periods and received over 23,000 comments
» Passed ballot in June 1, 2013 with 86% approval
» Engaged over 100 project teams in LEED v4 beta test
» Program launch at Greenbuild in November 2013
» Extended registration for LEED 2009 until June 2015
» New LEED AP test on LEEDv4 in July 2014
This is the short URL to find all up to date materials on LEED v4.

usgbc.org/leedv4
QUESTIONS
Thank you