

LEED REQUIREMENTS

OVERVIEW: The *University of Illinois at Urbana-Champaign Facilities Standards* includes language to comply with LEED® Building Design and Construction Rating System developed by the U.S. Green Building Council. The *Standards* require compliance with all Prerequisites and several additional Credits listed in the LEED® Rating System and found in the *Sustainability* section of these Standards. Certain credits only apply to new buildings, additions, and/or major renovations and are mentioned in the notes to the PSC. For minor renovations, credits that are not applicable to the specific project may be disregarded with approval of the University.

LEED® DETERMINATION: The LEED rating systems were designed to evaluate complete buildings and spaces in fixed locations. Partial buildings or spaces are unsuitable for LEED® certification because when analyzed under the requirements of LEED® prerequisites and credits, they create results inconsistent with those of whole buildings or spaces. Also, partial certification can easily appear to encompass an entire building or space, sending a false message to the occupants.

Source reference: Supplemental Guidance to the Minimum Program Requirements (MPR), Rev. 2, 9/1/2011

LEED RATING SYSTEM: The U of I Facilities & Services has interpreted that campus building-level initiatives toward sustainability and energy conservation are best met by the LEED® Building Design and Construction for new construction and major renovations. The boundary between certified and uncertified must be contiguous, clearly identified and consistently applied to LEED® credit requirements. The addition must be identified by a unique name on all LEED® and LEED® represented documents. Energy systems and water service serving the addition must be separately metered. Whether evaluating a new, stand-alone building or a major renovation within an existing building, the Consultant must clearly identify the project boundary.

Incidental spaces that are part of the project – such as toilet rooms, egress corridors, doors, and demolition and site modifications

may be excluded from LEED® area calculations. Larger adjacent spaces that are outside the LEED® project boundary and served by the addition energy systems, such as class rooms and lobbies, must be separately metered in order to exclude energy use from the total project performance. The allowable magnitude of incidental spaces is not defined by the MPR but for our purpose, must be less than 10%.

LEED THRESHOLD: The project threshold for LEED® Silver certification is \$5 million in project initial budget costs. The State of Illinois, through the Green Buildings Act (PA 096-0073), however, requires LEED® Silver certification for new construction and major renovations. The threshold for the State mandate is 10,000 GSF. State requirements further require projects less than 10,000 GSF must achieve the highest level of LEED® but are not required to be certified. The University has determined that our threshold will be “project budgets that exceed \$5 million or 10,000 GSF must attain LEED® Silver Certification.”

ENERGY MODEL REQUIREMENTS: All projects must comply with the Illinois Green Buildings Act (PA 096-0073), including the requirements for life cycle cost analysis, energy modeling and documentation showing compliance with green buildings standards. LEED® requirements for the energy model shall be met.

Modeler Qualifications:

1. Comprehensive understanding of all building systems related to energy performance.
2. Applying the appropriate modeling software to meet the requirements of ASHRAE 90.1, Appendix G (latest adopted version).
3. Clearly defining input data required to the design team.
4. Performing quality control to ensure that the modeling inputs accurately reflect the proposed design.

Record Documents shall include:

1. Preliminary energy model, methods of calculation with output data clearly identified on the ASHRAE templates. The model shall compare a minimum of three design alternatives, each

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- with a resulting energy load reduction from a baseline building.
2. Final energy model, reflecting all updates from the preliminary energy model.
 3. Life cycle analysis for a minimum of three viable HVAC systems.
 4. Comprehensive listing of input data, schedules, and assumptions used in calculating the life cycle analysis and energy model.
 5. Provide 3 bound copies and an electronic file of all documents pertaining to the energy model and life cycle analysis.

SUSTAINABILITY CRITERIA: The following list are high value and important to the University, and therefore are key drivers for classification of each credit:

- Conserving energy
- Conserving natural resources
- Preventing environmental degradation
- Ensuring health, well-being and comfort of the students, faculty, staff and administration
- Validating high value through total cost of ownership analysis

COMPATIBILITY WITH LEED® CREDITS, CLASSIFICATION DEFINITIONS:

CLASSIFICATION- The LEED® intent, definitions and requirements are in common use at the University, the same nomenclature and organization will be used in these Standards.

[MANDATORY] = Compliance is required on all Campus construction projects. LEED® Credits are inherently achieved.

[RECOMMENDED] = The University strongly recommends that these credits be attempted. Where credits are awarded progressively as in EA Credit 1 Optimized Energy Performance, the University is setting a minimum number. If the University agrees that this credit requirement is beyond a project's programmatic requirements, then evidence of effort must be submitted to the University for review. Once decided, no additional efforts or resources will be needed for the credit.

[OPTIONAL] = Credit may be attempted if demonstrated by the design professional to be of value to the University. Also, the credit may not apply to the specific project as determined by the University.

[NOT APPLICABLE] = Credits will not be pursued on University construction projects and documentation will not be required.

ADDITIONAL PROVISIONS:

1. Each credit is addressed as it relates to large scope, new and major renovation projects on Campus and is impacted by campus-wide initiatives and institutional commitments. These credits will fall into the "mandatory" category, for example: energy goals, transportation and parking issues, storm water issues, wastewater issues, etc...
2. This policy applies to all projects exceeding a Total Project Cost of \$5,000,000. The Illinois CDB project requirement threshold is 10,000 GSF. For purposes of these Standards, the criteria will be "\$5,000,000 or 10,000 GSF" for LEED® Silver Certification.
3. If the design team determines that there is a compelling reason to waive a mandatory requirement or entire project certification, they will submit the request and supporting documentation to the Capital Programs Project Manager who will make the decision and inform the project team.

LOCATION AND TRANSPORTATION

LT Credit 1: LEED® for Neighborhood Development Location.

[NOT APPLICABLE]

The Campus has not established a LEED® project boundary.

LT Credit 2: Sensitive Land Protection

[RECOMMENDED]

(1) LEED® Credit may apply based on Option #1 or #2. Building site will be determined by the University. (1) LEED® Credit.

LT Credit 3: High Priority Site

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[RECOMMENDED]
LEED® Credit may apply in brownfield sites. Building site will be determined by the University. (2) LEED® Credits possible.

LT Credit 4: Surrounding Density and Diverse Uses

[RECOMMENDED]
LEED® Credit may apply in projects constructed in high density areas. Building site will be determined by the University. (1) to (5) LEED® Credits possible.

LT Credit 5: Access to Quality Transit

[RECOMMENDED]
LEED® Credit may apply if the project is within ½ mile of a transit stop and walkable from the building entry. Building site will be determined by the University. (1) to (5) LEED® Credits possible

LT Credit 6: Bicycle Facilities

[MANDATORY]
Provide bicycle facilities for 2.5% of the peak building visitors and 5% of the full time building occupants. (1) LEED® Credit will apply only if shower and changing facilities are provided.

LT Credit 7: Reduced Parking Footprint

[OPTIONAL]
Building site and parking requirements will be determined by the University. (1) LEED® Credit possible.

LT Credit 8: Green Vehicles

[RECOMMENDED]
Building site and applicability will be determined by the University. (1) LEED® Credit may apply if parking for preferred vehicles and charging stations are provided.

SUSTAINABLE SITES

SSp1 Construction Activity Pollution Prevention

[MANDATORY]
Comply with the University's Municipal Separate Storm Sewer (MS4) Permit. Implement a Storm Water Pollution Prevention Plan (SWPPP) to reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust for all projects. Projects disturbing greater than 1 acre of soil shall obtain coverage under the National Pollutant

Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Site Activities. This is a LEED® Prerequisite.

SS Credit 1: Site Assessment

[RECOMMENDED]
Typically, site selection is addressed at the campus master planning level and is established by the University prior to design; however, if required in the Scope of Work, (1) LEED® Credit may be possible.

SS Credit 2: Site Development- Protect or Restore Habitat:

[RECOMMENDED]
This is addressed at the campus master planning level. (2) LEED® Credits possible if there is on-site restoration.

SS Credit 3: Open Space

[OPTIONAL]
It is important to maximize the efficient use of the site. This will help with storm water infiltration and provide natural areas for informal use. This credit is dependent on the Campus Master Plan.

SS Credit 4: Storm Water Management:

[MANDATORY]
Campus and Municipal requirements as well as regulatory compliance are necessary in achieving this credit. Maintain compliance with the University's Municipal Separate Storm Sewer System (MS4) Permit, and if applicable, the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Site Activities. (2) LEED® Credit.

SS Credit 5: Heat Island Reduction

[MANDATORY]
Provide natural or architectural or natural shade on paved areas and select highly reflective roofing materials. Analysis of durability, performance, cost and maintenance must be performed. (2) LEED® Credits.

SS Credit 6: Light Pollution Reduction

[MANDATORY]
Reduced light trespass and increase nighttime sky access to reduce the consequences of development for wildlife and people. (1) LEED® Credit.

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SS Joint Use of Facilities [OPTIONAL]

Only applicable to Projects which are programmed for community access; to make the Campus a more integrated part of the community by enabling the building and its facilities to be used for non-University events and functions.

WATER EFFICIENCY

WEp1 Outdoor Water Use Reduction [MANDATORY]

Reduce indoor water consumption by 20% from LEED® baseline calculation. Projects should attempt to remove all permanent irrigation requirements following establishment of the plantings. This is a LEED® Prerequisite.

WEp2 Indoor Water Use Reduction [MANDATORY]

Eliminate or reduce outdoor water consumption beyond the two year establishment period. Projects should provide high efficiency fixtures. This is a LEED® Prerequisite.

WEp3 Building Level Water Metering [MANDATORY]

Provide water meters in all new facilities. This is a LEED® Prerequisite.

WE Credit 1: Outdoor Water Use Reduction [MANDATORY]

Eliminate irrigation beyond the two year establishment period or reduce by 50% from the site baseline peak outdoor water use. (2) LEED® Credits.

WE Credit 2: Indoor Water Use Reduction: 25%-50% Reduction

This is attainable with current technology but will require consideration of multiple water-saving strategies including ultra-low flow faucets and dual-flush toilets. Options should be explored on a case by case basis.

25% [MANDATORY]

35% TO 50% [RECOMMENDED]

(3) LEED® Credits possible.

WE Credit 3: Cooling Tower Water Use [NOT APPLICABLE]

WE Credit 4: Water Metering [RECOMMENDED]

Provide additional sub-meters for domestic hot water, make-up water, and/or process water. (1) LEED® Credit possible.

ENERGY AND ATMOSPHERE

EAp1 Fundamental Commissioning and Verification

[MANDATORY]

This is a LEED® Prerequisite.

EAp2 Minimum Energy Performance

[MANDATORY]

This is a LEED® Prerequisite.

EAp3 Building-level Energy Metering

[MANDATORY]

This is a LEED® Prerequisite.

EAp4 Fundamental Refrigerant Management [MANDATORY]

This is a LEED® Prerequisite.

EA Credit 1: Enhanced Commissioning [OPTIONAL]

Enhanced Commissioning of energy systems will be in the Consultant's Scope of Work and determined by the University. (2) LEED® Credits possible.

EA Credit 2: Optimize Energy Performance [MANDATORY]

The University has adopted an energy performance requirement based on the latest adopted edition of ASHRAE 90.1. See the *Energy Conservation* section of these Standards for details. See also the discussion of Energy Performance in the *Sustainability* section of these Standards. In meeting this credit, the design team will be required to validate their envelope design by presenting alternate concepts. Computer generated whole building energy simulations must be submitted at the Schematic Design and used to influence architectural building design decisions. Energy simulations should increase in detail with the design until the design is complete and the final simulation is performed. Expectations for this credit will vary between new construction and renovation projects.

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Utility rates shall be those provided by Utility and Energy Services. (18) LEED® Credits possible.

EA Credit 3: Advanced Energy Metering [OPTIONAL]

This credit applies only to energy used by systems exceeding 10% of the overall energy use. (1) LEED® Credit may apply.

EA Credit 4: Demand Response [NOT APPLICABLE]

EA Credit 5: On-Site Renewable Energy [RECOMMENDED]

Due to the pace of technological advances in this field, every effort should be made to utilize new, but proven technologies that help reduce consumption of fossil fuels. The Consultant may provide a design that includes Photovoltaics. (1) LEED® Credit minimum.

EA Credit 6: Enhanced Refrigerant Management [RECOMMENDED]

The University central chilled water plants already comply. A calculation documenting the central plant refrigerant management will be provided by Utility and Energy Services for all buildings connected to the central plant. Individual, stand-alone refrigerant systems within each building should be designed to meet this requirement and documentation provided by the design consultant. (1) LEED® Credit possible

EA Credit 7: Green Power [OPTIONAL]

The University has made a commitment to the use of renewable energy. The University may purchase Renewable Energy Certificates for LEED® certification purposes, when within the capital project budget. (1) LEED® Credit is possible with a 50% energy offset.

MATERIALS AND RESOURCES

MRp1: Storage and Collection of Recyclables [MANDATORY]

Reduce the waste that is generated by building occupants and hauled to and deposited in landfills. Provide dedicated areas of collection and storage of recyclables including mixed paper, corrugated

cardboard, glass, plastics and metals. In addition, provide safe storage and handling of batteries, mercury containing lamps and electronic waste. This is a LEED® Prerequisite.

MR Credit 1: Building Life-Cycle Impact Reduction [OPTIONAL]

Maintain as much as practical, the existing building structure (including structural floor and roof decking) and envelope (the exterior skin and framing, excluding window assemblies and nonstructural roofing materials). (2) to (5) LEED® Credits possible.

MR Credit 2: Building Product Disclosure and Optimization - Environmental Product Declarations [RECOMMENDED]

Use products and materials for which life-cycle information is available and have environmentally, economically, and socially preferable life-cycle impacts. (1) LEED® Credit.

MR Credit 3: Building Product Disclosure and Optimization - Sourcing of Raw Materials [RECOMMENDED]

Select products that have been verified to have been extracted or sourced in a responsible manner. (1) LEED® Credit.

MR Credit 4: Building Product Disclosure and Optimization - Material Ingredients [RECOMMENDED]

Use products and materials for which improved life-cycle information is available and content is verified to minimize the use and generation of harmful substances. (1) LEED® Credit.

MR Credit 5: Construction and Demolition Waste Management [MANDATORY]

Reduce construction and demolition waste disposed in landfills by recovering, reusing and recycling materials. (2) LEED® Credits possible.

INDOOR ENVIRONMENTAL QUALITY

IEQp1: Minimum Indoor Air Quality Performance [MANDATORY]

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The design and construction of mechanically ventilated spaces must meet the minimum outdoor air intake rate requirements of ASHRAE 62.1, Sections 4 through 7 as well as air filtration, monitoring and controls identified in LEED® credit requirement. This is a LEED® prerequisite.

IEQp2: Environmental Tobacco Smoke Control

[MANDATORY]

The Campus has a no smoking policy.

IEQ Credit 1: Enhanced Indoor Air Quality Strategies

[OPTIONAL]

Good air quality is already mandated by LEED® prerequisite. Additional ventilation requires energy to condition. Unless otherwise justified, the benefit does not justify the effort.

IEQ Credit 2: Low-Emitting Materials

[MANDATORY]

This is an important strategy in addressing the health and well-being of building occupants. Current industry standards make this relatively easy to attain. (3) LEED® Credits.

IEQ Cr. 3: Construction IAQ Management Plan

[MANDATORY]

This is an important strategy in addressing the health and well-being of building occupants. (1) LEED® Credit.

IEQ Credit 4: Indoor Air Quality Assessment

[MANDATORY]

This has substantial impact on the well-being and comfort of occupants as well as the maintainability of a facility. Although Option 1 has two paths, the University strongly favors Path 1: Flush-out before occupancy. Path 2: Flush-out during occupancy is less effective and difficult to verify. Option 2 may be approved by the University as an alternative. (1) LEED® Credit minimum.

IEQ Credit 5: Thermal Comfort

[MANDATORY]

The University considers this an important goal with significant benefit to the well-being and productivity of the students, faculty and staff.

Design the heating, ventilating and air conditioning (HVAC) systems and the building envelope to meet the requirements of ASHRAE 55 “*Thermal Environmental Conditions for Human Occupancy*”. Humidification is not part of the University’s standard practice since occupants can reach adequate comfort levels without this requirement. (1) LEED® Credit.

IEQ Credit 6: Interior Lighting

[MANDATORY]

Current practice makes it reasonable to expect achieving this goal. (1) LEED® Credit minimum.

IEQ Credit 7: Daylight

[OPTIONAL]

This is a very worthwhile goal with a potentially significant benefit to the well-being of occupants; however, in renovations of existing facilities, the Credit threshold may not be achievable without programmatic compromise. In new facilities, achieving the threshold requirements of this credit is more likely. (2) LEED® Credits possible.

IEQ Credit 8: Quality Views

[OPTIONAL]

The Consultant should strive for quality views where possible, resulting in a significant benefit to the well-being of occupants; however, in renovations of existing facilities, it may not be achievable without programmatic compromise. In new facilities, achieving the threshold requirements of this credit is more likely. (1) LEED® Credit possible.

IEQ Credit 9: Acoustical Performance

[RECOMMENDED]

Provide acoustic design in classrooms, workspaces, residential facilities, conference rooms, libraries and other similar campus spaces where comfort and productivity requires a low ambient noise level. Other special spaces like performance space, recording studios, music practice spaces will require a specific acoustic treatment if stated in the Program Document. (1) LEED® Credit possible.

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INNOVATION AND DESIGN PROCESS

ID Credit 1: Innovation in Design
[RECOMMENDED]

The University supports exceptional efforts beyond the minimum requirements set forth in the LEED® Green Building Rating System. Consider the project as a teaching and learning tool that integrates the sustainable features of the project into the University's educational mission. (3) LEED® Credits possible.

ID Credit 2: LEED® Accredited Professional
[MANDATORY]

The inclusion of a LEED® Accredited Professional on the design team is standard procedure. (1) LEED® Credit.

REGIONAL PRIORITY

RP Credit 1 through 4: Regional Priority
[RECOMMENDED]

To provide an incentive for the achievement of credits that address geographically specific environmental priorities. (2) LEED® Credits.