

STUDY ON LEED CREDITS AND THE CERTIFICATION FOR WHOLE BUILDING CONSTRUCTION AND MAJOR RENOVATION - LT

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ABSTRACT

Green buildings are an integral part of the solution to the environmental challenges facing the planet. Today we use the equivalent of 1.5 Earths to meet the resource needs of everyday life and absorb the resulting wastes. This measure of our planet's carrying capacity means that it takes Earth 18 months to regenerate what is used in only 12 months. If current trends continue, estimates suggest, by the year 2030 we will need the equivalent of two planets. Turning resources into waste faster than they can be regenerated puts the planet into ecological overshoot, a clearly unsustainable condition that we all must address. The forces driving this situation are numerous. Human population has increased exponentially in the past 60 years, from about 2.5 billion in 1950 to more than 7 billion today. Our linear use of resources, treating outputs as waste, is responsible for the toxins that are accumulating in the atmosphere, in water, and on the ground. This pattern of extraction, use, and disposal has hastened depletion of finite supplies of non-renewable energy, water, and materials and is accelerating the pace of our greatest problem—climate change. Buildings account for a significant portion of greenhouse gas emissions; in the U.S., buildings are associated with 38% of all emissions of carbon dioxide; globally, the figure is nearly one-third. The problem is anticipated to worsen as developing countries attain higher standards of living. These forces are bringing us to a tipping point, a threshold beyond which Earth cannot rebalance itself without major disruption to the systems that humans and other species rely on for survival. The aim of this study is to know how the LEED certification process works.

Keywords: Global climate change, Restore water resources, LEED

1 Introduction

Green buildings are an integral part of the solution to the environmental challenges facing the planet. Today we use the equivalent of 1.5 Earths to meet the resource needs of everyday life and absorb the resulting wastes. This measure of our planet's carrying capacity means that it takes Earth 18 months to regenerate what is used in only 12 months. If current trends continue, estimates suggest, by the year 2030 we will need the equivalent of two planets. Turning resources into waste faster than they can be regenerated puts the planet into ecological overshoot, a clearly unsustainable condition that we all must address. The forces driving this situation are numerous. Human population has increased exponentially in the past 60 years, from about 2.5 billion in 1950 to more than 7 billion today. Our linear use of resources, treating outputs as waste, is responsible for the toxins that are accumulating in the atmosphere, in water, and on the ground. This pattern of extraction, use, and disposal has hastened depletion of finite supplies of nonrenewable energy, water, and materials and is accelerating the pace of our greatest problem—climate change. Buildings account for a significant portion of greenhouse gas emissions; in the U.S., buildings are associated with 38% of all emissions

of carbon dioxide; globally, the figure is nearly one-third. The problem is anticipated to worsen as developing countries attain higher standards of living. These forces are bringing us to a tipping point, a threshold beyond which Earth cannot rebalance itself without major disruption to the systems that humans and other species rely on for survival.

Objectives

Identify the specific LEED LT credits to be analyzed. Understand how these credits impact whole building construction and major renovations. Assess the benefits and challenges of implementing LT strategies.

Literature Review

Ali Amiri and Nargessadat Emami, “Embodied emissions of buildings - A forgotten factor in green building certificates” The paper is to study and evaluate the suitability of LEED in supporting the urgently needed embodied emission reductions of buildings. More specifically, we estimated if and how well the LEED points support choosing building materials with low embodied emissions. A recently built concrete-structure university building located in Iceland, claimed to be a sustainable building, was selected as a base case (Con). Three scenarios with different building materials were defined for comparison. These three scenarios included an optimized concrete building (Opt Con) with the replacement of non-structural walls with lower strength concrete; a hybrid concrete-wooden building (Con Wood), in which non-structural components were changed to wood; and a wooden building (Wood) mainly constructed from wood. An LCA study was conducted for all four cases with an emphasis on four indicators: climate change, ozone depletion, terrestrial acidification, and freshwater eutrophication. This enabled the determination of a LEED certification score in each scenario. In addition, transportation emissions were evaluated to assess the possibility of using the findings globally for the challenge of climate change.

Svetlana Pushkar “Evaluating LEED commercial interior (LEED-CI) projects under the LEED transition from v3 to v4: the differences between China and the US” This study has analysed the difference between China-LEED-CI and US-LEED-CI projects for v3 and v4 at the level of Silver and Gold certificates. For LEED-CIv3, China was found to have better results than the US in the WE Silver and Gold categories with a mediate effect size ($|\delta| \geq 0.33$ and $|\delta| \geq 0.34$, respectively) and, for LEED-CIv4, China was found to have better results than the US in the WE Silver and Gold categories with a large effect size ($|\delta| \geq 0.60$ and $|\delta| \geq 0.79$, respectively). In contrast, the US was found to have better results than China in the EA Silver category with a small effect size ($|\delta| \geq 0.26$) and in the EA Gold category with a large effect size ($|\delta| \geq 0.58$), and, for LEED-CIv4, the US was found to have better results than China in the EA Silver and Gold categories with a large effect size ($|\delta| \geq 0.53$ at both levels of certification). Consequently, the difference between China and the United States was recorded in two LEED-CI categories, the WE and EA categories, for the LEED-CIv3 Gold and Silver systems.

John H. Scofield “Efficacy of LEED-certification in reducing energy consumption and greenhouse gas emission for large New York City office buildings” In this paper, 2011 energy benchmark data for New York City non-residential buildings, collected as a result of New York City’s Local Law 84, are examined and used to understand source energy consumption and greenhouse gas emission by 953 large NYC office buildings. 21 of these buildings were identified as LEED-certified office buildings, allowing us to compare the energy consumption and GHG emission of these LEED buildings with other large NYC office buildings. The results show that, collectively, the LEED buildings use the same amount of source energy and emit the same amount of GHG as do other NYC office buildings. LEED Gold buildings show a 20% reduction in source energy consumption and

GHG emission than other buildings, but these savings are offset by the fact that LEED buildings at the Certified and Silver level actually use more energy and emit more GHG than other NYC office buildings. No LEED Platinum office buildings were identified in this study. Looking at the LEED buildings that were certified at the level of Silver or better we find their GHG emission and source energy consumption to be insignificantly different from non-LEED NYC building.

K.Hewage “**Energy saving performance of green vegetation on LEED certified buildings**” Sustainable building practices can considerably reduce building's environmental impact in energy consumption. Covering a building envelope with green vegetation, such as green roof and green wall, is considered a sustainable construction practice, as green vegetation has a positive performance in energy savings. It reduces heat flux and solar reflectivity, generates evaporative cooling, increases thermal performance of the building envelope, and blocks the wind effect on the building. This paper analyses the energy performance of green vegetation in a high occupancy LEED Gold standard building in Canada. Design Builder software was used to model the energy consumption for heating and cooling, and Energy Plus software was used to perform the detailed energy simulations. The developed simulation model was validated with the actual energy consumptions of the selected building. Three different scenarios of green vegetation were simulated and the results show that green vegetation could considerably reduce the negative heat transfer through the building façade in summer and winter months. However, the analysis demonstrated that the green vegetation is not cost-effective in winter months or cold climatic regions due to the low energy savings performance. The paper concludes with recommendations to improve the overall energy performance in green buildings.

RuveydaKomurlu “**Evaluation of LEED Requirements for Site Properties in Developing**” Sustainable construction aims to create a system that consists of natural and built environments that function in harmony and present equal economic opportunities [17]. From the architect's point of view, the whole process needs to be planned to the last detail. It should include the design and the choosing of the systems and details, site usage and excavation, materials supply and construction, disposal of construction waste and control of contamination caused by the construction activities, operation and maintenance of the facility, and finally demolition of the building. The lack of standards developed for local needs is the issue that weakens the success of implementing green building certification systems. The Sustainable Sites Category of LEED-India NC refers to only one local standard. For the efficiency of sustainable practices, especially in implementing the Sustainable Sites Category of LEED-India NC, there is an urgent need for standards that are adequate for local conditions in India. On the other hand, the Emirates Authority for Standardization and Metrology (ESMA) was established by the United Arab Emirates in 2001 [18]. However, the Abu Dhabi Quality and Conformity Council was founded as late as in 2009. Because of this, the number of standards introduced by the Abu Dhabi Quality and Conformity Council is not sufficient for the application of a green building rating system. In the absence of an adequate number of local standards, both LEED-India NC and ESTIDAMA PBRS refer to ASTM and ANSI/ASHRAE/IESNA standards. ESTIDAMA PBRS also refers to CIBSE standards. While LEED-India NC refers to only one local code, ESTIDAMA PBRS refers to multiple local codes, as well as manuals and standards, but still not enough for easy implementation of green practices.

Data Collection

Quantitative Data:

Gather data on buildings that have received LEED certification, focusing on LT credits. Use surveys or questionnaires to collect data from architects, builders, and facility managers regarding their experiences with LT strategies.

Qualitative Data:

Conduct interviews or focus groups with stakeholders involved in LEED certification processes. Analyze the design and planning documents of LEED-certified projects to understand LT credit implementation.

LEED FOR BUILDING DESIGN AND CONSTRUCTION

LEED BD+C: New Construction and Major Renovation. New construction or major renovation of buildings that do not primarily serve K-12 educational, retail, data centers, warehouses and distribution centers, hospitality, or healthcare uses. New construction also includes high-rise residential buildings 9 stories or more.

- **LEED BD+C: Core and Shell Development.** Buildings that are new construction or major renovation for the exterior shell and core mechanical, electrical, and plumbing units, but not a complete interior fit-out. LEED BD+C: Core and Shell is the appropriate rating system to use if more than 40% of the gross floor area is incomplete at the time of certification.
- **LEED BD+C: Schools.** Buildings made up of core and ancillary learning spaces on K-12 school grounds. LEED BD+C: Schools may optionally be used for higher education and non-academic buildings on school campuses.
- **LEED BD+C: Retail.** Buildings used to conduct the retail sale of consumer product goods. Includes both direct customer service areas (showroom) and preparation or storage areas that support customer service.
- **LEED BD+C: Data Centers.** Buildings specifically designed and equipped to meet the needs of high density computing equipment such as server racks, used for data storage and processing. LEED BD+C: Data Centers only addresses whole building data centers (greater than 60%).
- **LEED BD+C: Warehouses and Distribution Centers.** Buildings used to store goods, manufactured products, merchandise, raw materials, or personal belongings, such as self-storage.
- **LEED BD+C: Hospitality.** Buildings dedicated to hotels, motels, inns, or other businesses within the service industry that provide transitional or short-term lodging with or without food.
- **LEED BD+C: Healthcare.** Hospitals that operate twenty-four hours a day, seven days a week and provide inpatient medical treatment, including acute and long-term care.
- **LEED BD+C: Homes and Multifamily Low-rise.** Single-family homes and multi-family residential buildings of 1 to 3 stories. Projects 3 to 5 stories may choose the Homes rating system that corresponds to the ENERGY STAR program in which they are participating.
- **LEED BD+C: Multifamily Midrise.** Multi-family residential buildings of 4 to 8 occupiable stories above grade. The building must have 50% or more residential space. Buildings near 8 stories can inquire with USGBC about using Midrise or New Construction, if appropriate

LEED FOR INTERIOR DESIGN AND CONSTRUCTION

Interior spaces that are a complete interior fit-out. In addition, at least 60% of the project's gross floor area must be complete by the time of certification.

- **LEED ID+C: Commercial Interiors.** Interior spaces dedicated to functions other than retail or hospitality.
- **LEED ID+C: Retail.** Interior spaces used to conduct the retail sale of consumer product goods. Includes both direct customer service areas (showroom) and preparation or storage areas that support customer service.
- **LEED ID+C: Hospitality.** Interior spaces dedicated to hotels, motels, inns, or other businesses within the service industry that provide transitional or short-term lodging with or without food.

LEED FOR BUILDING OPERATIONS AND MAINTENANCE

- Existing buildings that are undergoing improvement work or little to no construction. **LEED O+M: Existing Buildings.** Existing buildings that do not primarily serve K-12 educational, retail, data centers, warehouses and distribution centers, or hospitality uses.
- **LEED O+M: Retail.** Existing buildings used to conduct the retail sale of consumer product goods. Includes both direct customer service areas (showroom) and preparation or storage areas that support customer service.
- **LEED O+M: Schools.** Existing buildings made up of core and ancillary learning spaces on K-12 school grounds. **SYSTEM SELECTION 35RATING SYSTEM SELECTION GUIDANCE** May also be used for higher education and non-academic buildings on school campuses.
- **LEED O+M: Hospitality.** Existing buildings dedicated to hotels, motels, inns, or other businesses within the service industry that provide transitional or short-term lodging with or without food.
- **LEED O+M: Data Centers.** Existing buildings specifically designed and equipped to meet the needs of high density computing equipment such as server racks, used for data storage and processing. **LEED O+M: Data Centers** only addresses whole building data centers.
- **LEED O+M: Warehouses and Distribution Centers.** Existing buildings used to store goods, manufactured products, merchandise, raw materials, or personal belongings (such as self-storage)

LEED FOR NEIGHBORHOOD DEVELOPMENT

New land development projects or redevelopment projects containing residential uses, non-residential uses, or a mix. Projects may be at any stage of the development process, from conceptual planning through construction. It is recommended that at least 50% of total building floor area be new construction or major renovation. Buildings within the project and features in the public realm are evaluated.

- **LEED ND: Plan.** Projects in conceptual planning or master planning phases, or under construction.
- **LEED ND: Built Project.** Completed development projects.

MUST COMPLY WITH PROJECT SIZE REQUIREMENTS

Intent

The LEED rating system is designed to evaluate buildings, spaces, or neighbourhoods of a certain size. The LEED requirements do not accurately assess the performance of projects outside of these size requirements.

Requirements:

All LEED projects must meet the size requirements listed below.

LEED BD+C and LEED O+M Rating Systems: The LEED project must include a minimum of 1,000 square feet (93 square meters) of gross floor area. 30

LEED ID+C Rating Systems: The LEED project must include a minimum of 250 square feet (22 square meters) of gross floor area.

LEED for Neighborhood Development Rating Systems: The LEED project should contain at least two habitable buildings and be no larger than 1500 acres.

LEED for Homes Rating Systems: The LEED project must be defined as a “dwelling unit” by all applicable codes. This requirement includes, but is not limited to, the International Residential Code stipulation that a dwelling unit must include “permanent provisions for living, sleeping, eating, cooking, and sanitation

INTEGRATIVE PROCESS

Intent

To support high-performance, cost-effective project outcomes through an early analysis of the interrelationships among systems.

Requirements

Beginning in pre-design and continuing throughout the design phases, identify and use opportunities to achieve synergies across disciplines and building systems. Use the analyses described below to inform the owner’s project requirements (OPR), basis of design (BOD), design documents, and construction documents.

Energy-Related Systems

- Site conditions.** Assess shading, exterior lighting, hardscape, landscaping, and adjacent site conditions.
- Massing and orientation.** Assess how massing and orientation affect HVAC sizing, energy consumption, lighting, and renewable energy opportunities.
- Basic envelope attributes.** Assess insulation values, window-to-wall ratios, glazing characteristics, shading, and window operability.
- Lighting levels.** Assess interior surface reflectance values and lighting levels in occupied spaces.
 - Thermal comfort ranges. Assess thermal comfort range options.
- Plug and process load needs.** Assess reducing plug and process loads through programmatic solutions (e.g., equipment and purchasing policies, layout options).

Water-Related Systems

Indoor water demand. Assess flow and flush fixture design case demand volumes, calculated in accordance with WE Prerequisite Indoor Water-Use Reduction.

- Outdoor water demand. Assess landscape irrigation design case demand volume calculated in accordance with WE Credit Outdoor Water-Use Reduction.
- Process water demand. Assess kitchen, laundry, cooling tower, and other equipment demand volumes, as applicable.
- Supply sources. Assess all potential non potable water supply source volumes, such as on-site rainwater and grey water, municipally supplied non potable water, and HVAC equipment condensate.

LOCATION AND TRANSPORTATION (LT)

LEED for Neighborhood Development Location

Intent

To avoid development on inappropriate sites. To reduce vehicles miles travelled. To enhance liveability and improve human health by encouraging daily physical activity.

Requirements

Locate the project within the boundary of a development certified under LEED for Neighborhood Development (Stage 2 or Stage 3 under the Pilot or 2009 rating systems, Certified Plan or Certified Project under the LEED v4 rating system). Projects attempting this credit are not eligible to earn points under other Location and Transportation credits.

Certification Level	Points BD+C	Points BD+C (Core and shell)	Points BD+C (schools)	Points BD+C (Hospitals)
Certified	8	8	8	5
Gold	10	12	10	6
Silver	12	16	12	7
Platinum	16	20	15	9

Sensitive Land Protection

Intent

To avoid the development of environmentally sensitive lands and reduce the environmental impact from the location of a building on a site.

Requirements

Option1

Locate the development footprint on land that has been previously developed.

Option 2

- **Prime farmland:** Prime farmland, unique farmland, or farmland of state-wide or local importance as defined by the U.S. Code of Federal Regulations, Title 7, Volume 6, Parts 400 to 699, Section 657.5 (or local equivalent for projects outside the U.S.) and identified in a state Natural Resources Conservation Service soil survey (or local equivalent for projects outside the U.S.).

- **Floodplains:** A flood hazard area shown on a legally adopted flood hazard map or otherwise legally designated by the local jurisdiction or the state. For projects in places without legally adopted flood hazard maps or legal designations, locate on a site that is entirely outside any floodplain subject to a 1% or greater chance of flooding in any given year. Location and Transportation CREDIT Sensitive Land Protection This credit applies to: Data Centers (1 point) Warehouses and Distribution Centers (1 point) Hospitality (1 point) Healthcare (1 point) New Construction (1 point) Core and Shell (2 points) Schools (1 point) Retail (1 point) 64LEED Reference Guide for BUILDING Design AND Construction LT ·
- **Habitat:** Land identified as habitat for the following: ° species listed as threatened or endangered under the U.S. Endangered Species Act or the state's endangered species act, or species or ecological communities classified by Nature Serve as GH (possibly extinct), G1 (critically imperilled), or G2 (imperilled), or ° species listed as threatened or endangered species under local equivalent standards (for projects outside the U.S.) that are not covered by Nature Serve data. · Water bodies. Areas on or within 100 feet (30 meters) of a water body, except for minor improvements. ·
- **Wetlands:** Areas on or within 50 feet (15 meters) of a wetland, except for minor improvements. Minor improvements within the wetland and water body buffers may be undertaken to enhance appreciation of them, provided such facilities are open all building users. Only the following improvements are considered minor: · Bicycle and pedestrian pathways no more than 12 feet wide (3.5 meters), of which no more than 8 feet (2.5 meters) may be impervious;
- Activities to maintain or restore native natural communities and/or natural hydrology; · One single-story structure per 300 linear feet (90 linear meters) on average, not exceeding 500 square feet (45 square meters); · Grade changes necessary to ensure public access; · Clearings, limited to one per 300 linear feet (90 linear meters) on average, not exceeding 500 square feet (45 square meters) each; · Removal of the following tree types:
- Hazardous trees, up to 75% of dead trees ° Trees less than 6 inches (150 millimetres) diameter at breast height ° Up to 20% of trees more than 6 inches (150 millimetres) diameter at breast height with a condition rating of 40% or higher. ° Trees under 40% condition rating · The condition rating must be based on an assessment by an arborist certified by the International Society of Arboriculture (ISA) using ISA standard measures, or local equivalent for projects outside the U.S.

HIGH-PRIORITY SITE

Intent

To encourage project location in areas with development constraints and promote the health of the surrounding area.

Option 1. Historic District

Locate the project on an infill location in a historic district.

Option 2. Priority Designation

Locate the project on one of the following:

- A site listed by the EPA National Priorities List; · a Federal Empowerment Zone site;
- A Federal Enterprise Community site;
- A Federal Renewal Community site; a Department of the Treasury Community Development Financial Institutions Fund Qualified Low-Income Community (a subset of the New Markets Tax Credit Program);
- A site in a U.S. Department of Housing and Urban Development’s Qualified Census Tract (QCT) or Difficult Development Area (DDA); or
- A local equivalent program administered at the national level for projects outside the U.S.

Option 3. Brownfield Remediation

Locate on a brownfield where soil or groundwater contamination has been identified, and where the local, state, or national authority (whichever has jurisdiction) requires its remediation. Perform remediation to the satisfaction of that authority.

SURROUNDING DENSITY AND DIVERSE USES

Intent

To conserve land and protect farmland and wildlife habitat by encouraging development in areas with existing infrastructure. To promote walkability, and transportation efficiency and reduce vehicle distance traveled. To improve public health by encouraging daily physical activity.

Requirements

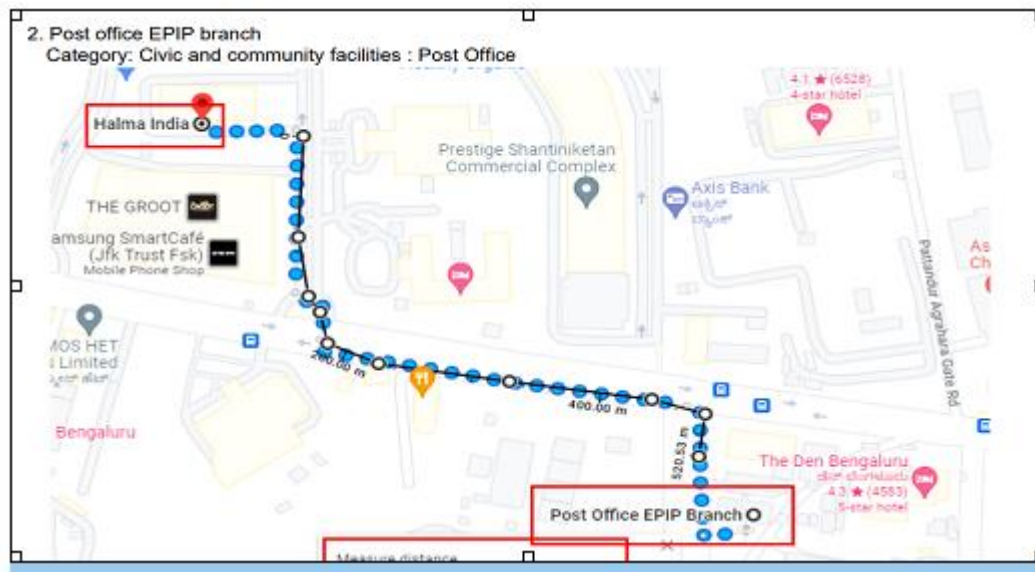
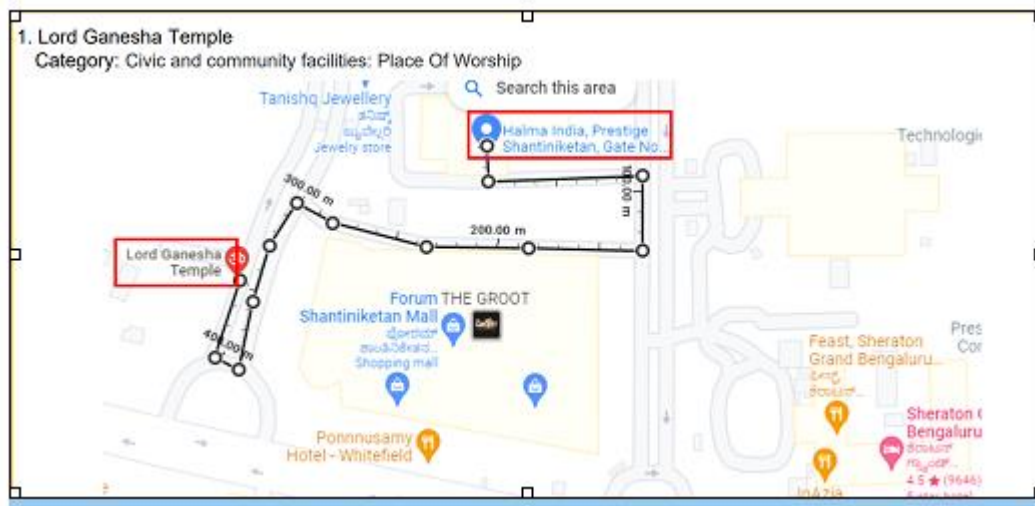
Locate on a site whose surrounding existing density within a 1/4 mile (400-meter) radius of the project boundary meets the values in Table 1. Use either the “separate residential and non-residential densities” or the “combined density” values.



Diverse Uses

Construct or renovate a building or a space within a building such that the building’s main entrance is within a 1/2 mile (800-meter) walking distance of the main entrance of four to seven (1 point) or eight or more (2 points) existing and publicly available diverse uses (listed in Appendix 1). The following restrictions apply.

- A use counts as only one type (e.g., a retail store may be counted only once even if it sells products in several categories).
- No more than two uses in each use type may be counted (e.g. if five restaurants are within walking distance, only two may be counted).
- The counted uses must represent at least three of the five categories, exclusive of the building’s primary use.
- The following are the map representing the credit.



BICYCLE FACILITIES

Intent

To promote bicycling and transportation efficiency and reduce vehicle distance travelled. To improve public health by encouraging utilitarian and recreational physical activity.

Requirement

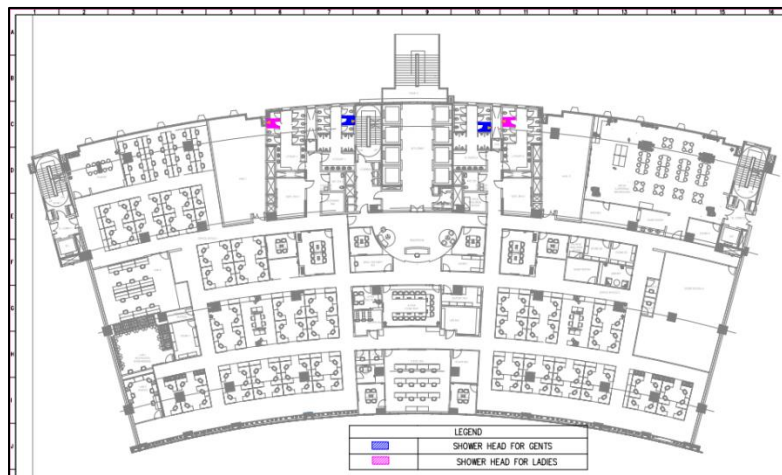
Provide short-term bicycle storage for at least 2.5% of all peak visitors, but no fewer than four storage spaces per building. Provide long-term bicycle storage for at least 5% of all regular building occupants, but no fewer than four storage spaces per building in addition to the short-term bicycle storage spaces. Provide at least one on-site shower with changing facility for the first 100 regular building occupants and one additional shower for every 150 regular building occupants thereafter.

Provide short-term bicycle storage for at least 2.5% of all peak visitors but no fewer than four storage spaces per building. Provide long-term bicycle storage for at least 30% of all regular building occupants, but no less than one storage space per residential unit.

PARKING FACILITIES



SHOWER HEAD FACILITIES



Results and Discussion

After creating the documents for each credit, the documents are uploaded in the LEED Online website for the verification and certification process. If there is any clarification in the Sumption or in the document USGBC will give a review response. Based on the review response the documents are corrected and again uploaded.

The USGBC will response within 30 working days from the day of application. If the certification level is the not up to our expectation, then we can reapply for the desired certification level.

Document Registration

LEED ONLINE Your name

Projects Example project A

Example project A SUBMIT FOR REVIEW

1000158027 - LEED v4.1 O+M EB Initial Certification Application

LEED **LEED Zero**

Details Credits Uploads Team Timeline Interpretations Clarifications Payments

All selected

PROJECT INFORMATION

- Project Information v4.1 O+M EB ATTEMPTED REQUIRED

LOCATION AND TRANSPORTATION 0 OF 14 AWARDED 0

- Transportation Performance v4.1 O+M EB ATTEMPTED ATTEMPTED 0-14

SUSTAINABLE SITES 0 OF 4 AWARDED 0

- Rainwater Management v4.1 O+M EB ATTEMPTED ATTEMPTED 0-1
- Heat Island Reduction v4.1 O+M EB ATTEMPTED ATTEMPTED 0-1
- Light Pollution Reduction v4.1 O+M EB ATTEMPTED ATTEMPTED 0-1
- Site Management v4.1 O+M EB ATTEMPTED ATTEMPTED 0-1

SUSTAINABLE SITES 1 OF 4 AWARDED 0

- Rainwater Management v4.1 O+M EB ATTEMPTED ATTEMPTED 1-1
- Heat Island Reduction v4.1 O+M EB ATTEMPTED ATTEMPTED 0-1

Form (v01) Team Credit library

REVIEW RESPONSE

SUSTAINABLE SITES 3 OF 4 AWARDED 0

- ✓ Rainwater Management v4.1 O+M EB READY FOR REVIEW ATTEMPTED 1-1
- ✓ Heat Island Reduction v4.1 O+M EB READY FOR REVIEW ATTEMPTED 1-1
- ✓ Light Pollution Reduction v4.1 O+M EB READY FOR REVIEW ATTEMPTED 1-1
- ✓ Site Management WITHDRAWN ATTEMPTED 0-1

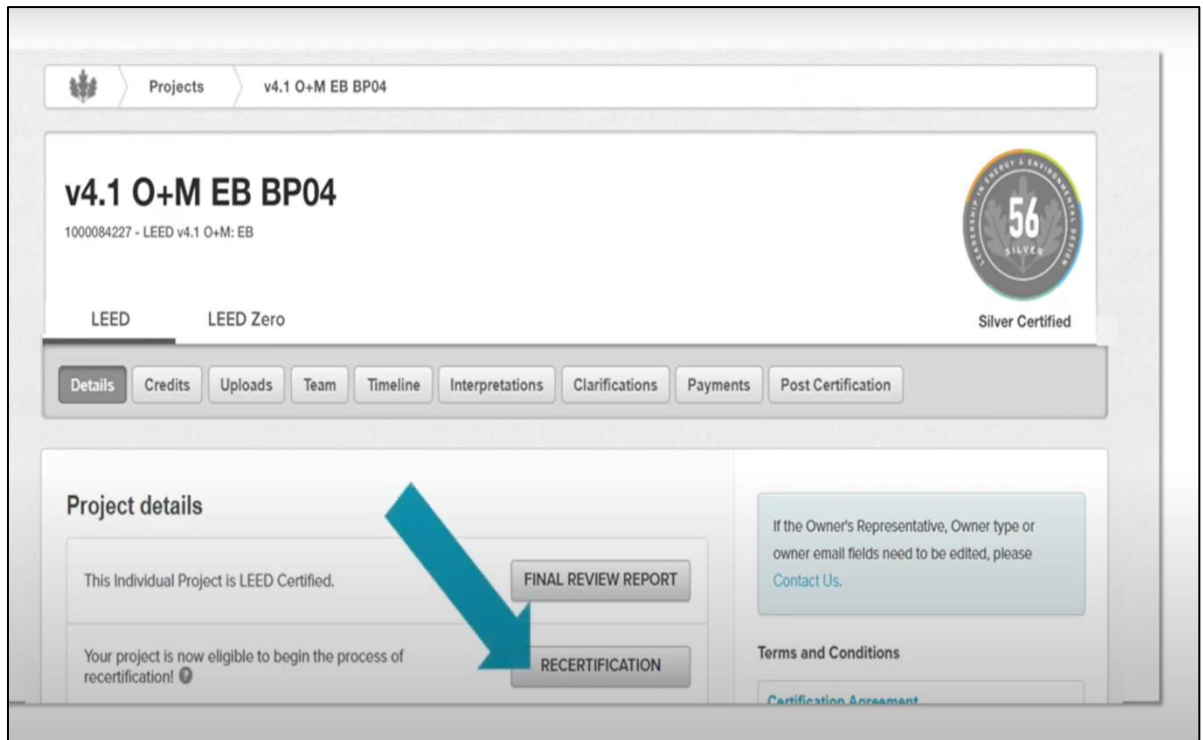
WATER EFFICIENCY 12 OF 15 AWARDED 0

- ✓ Water Performance v4.1 O+M EB READY FOR REVIEW ATTEMPTED 12-15

ENERGY AND ATMOSPHERE 31 OF 35 AWARDED 0

- ✓ Energy Efficiency Best Management Practi v4.1 O+M EB READY FOR REVIEW REQUIRED
- ✓ Energy Performance v4.1 O+M EB READY FOR REVIEW ATTEMPTED 31-33

RECLARIFICATION



CONCLUSION

Thus, the LEED Certification for various categories and various systems is studied and knowledge about sustainability and green approach for the environment is gained. Various credits in the LEED BD+C under the category of Location and Transportation is analyzed. working on the feasibility we come to know the points and certification level of a particular project.

LEED v4 for BD+C: New Construction and Major Renovation Project Checklist		Project Name:	06.03.2023
Y	?	N	Credits
1			1
6 7 3 Location and Transportation 16			
1			16
2			2
2	3		5
5			5
1			1
1			1
1			1
3 7 0 Sustainable Sites 10			
1			10
2			2
1			1
3			3
1			2
1			1
7 4 0 Water Efficiency 11			
1			11
2			2
4			4
2			2
1			1
17 11 5 Energy and Atmosphere 33			
1			33
2			2
6			6
7			7
1			1
2			2
3			3
1			1
2			2
4 4 5 Materials and Resources 13			
1			13
2			2
2			2
2			2
2			2
2			2
8 8 0 Indoor Environmental Quality 16			
1			16
1			1
3			3
1			1
2			2
1			1
2			2
1			1
1			1
6 0 0 Innovation 6			
1			6
4 0 0 Regional Priority 4			
1			4
1			1
1			1
1			1
56 41 13 TOTALS Possible Points: 110			
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110			

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