IGBC Green Campus

IGBC Green Campus

Rating System

(New & Existing)

Pilot Version

Abridged Reference Guide

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Confederation of Indian Industry
CII-Sohrabji Godrej Green Business Centre

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Indian Green Building Council
C/o Confederation of Indian Industry
CII – Sohrabji Godrej Green Business Centre
Survey No. 64, Kothaguda Post
Near Kothaguda Cross Roads, Ranga Reddy District
Hyderabad – 500 084
INDIA

Indian Green Building Council
Greening India since 2001

Contents

Foreword from the Indian Green Building Council (IGBC)

India is witnessing tremendous growth in infrastructure and construction development. The construction industry in India is one of the largest economic activities and is growing at an average rate of 9.5% as compared to the global average of 5%. As the sector is growing rapidly, preserving the environment poses a host of challenges. To enable the construction industry environmentally sensitive, CII - Sohrabji Godrej Green Business Centre has established the Indian Green Building Council (IGBC). IGBC is a consensus driven not-for-profit Council representing the building industry, consisting of more than 1,900 committed members. The Council encourages, builders, developers, owners, architects and consultants to design & construct green buildings thereby enhancing the economic and environmental performance of buildings.

The Green Building Movement in India has been spearheaded by IGBC since 2001, by creating awareness amongst the stakeholders Thus far, the Council has been instrumental in enabling 4.48 Billion sq.ft. of green buildings in the country. The Council's activities have enabled a market transformation with regard to green building materials and technologies.

IGBC continuously works to provide tools that facilitate the adoption of green building practices in India. The development of IGBC Green Campus rating system is another important step in this direction.

Acknowledgements

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IGBC would like to thank the following stakeholders for their immense contribution in development of the rating:

- Dr Prem C Jain, Chairman, Indian Green Building Council (IGBC); Chairman Emeritus, AECOM India
- Mr Jayesh Hariyani, Chairman, IGBC Green Campus Committee; Co-Chair, IGBC Ahmedabad; Managing Director, Stantec Consulting Ltd
- Mr V Suresh, Chairman, IGBC Policy & Advocacy Committee; Vice Chairman, National Building Code of India, BIS; Former CMD, Housing and Urban Development Corporation Ltd. (HUDCO)
- Mr C Shekar Reddy, Chairman, IGBC Hyderabad Chapter ; Former National President, CREDAI; CMD, CSR Estates Ltd
- Mr Maheep Singh Thapar, Managing Director, ADAPT Technologies
- Mr Ankoor Sanghvi, Managing Director, Ankoor Sanghvi Architects
- Mr Naresh Yadav, Assistant Vice President, Ascendas India
- Mr Rajeev Kumar Sharma, Director, DesignHaaus Solutions
- Mr Abhijit Pisal, AGM, Godrej & Boyce Mfg. Co. Ltd
- Mr Bharat Soni, Head – Projects, HCL Technologies
- Ms Rajni Mehta, Deputy General Manager – Sustainability, Hindustan Petroleum Corporation Limited (HPCL)
- Mr Prasad Modak, Chief Sustainability Officer, IL&FS and Dean IL&FS Academy for Applied Development (IAAD)
- Mr Rajat Malhotra, Chief Operating Officer – West Asia, Jones Lang LaSalle (JLL)
- Mr Ramaiah Kumar, Associate Director, Jones Lang LaSalle (JLL)
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- Mr Venkat, Managing Director, Murty & Manyam Architects and Engineers
- Mr Niroop Nallari, Principal Architect, NA Architects

- Mr Jitendra Kulkarni, Senior Associate, RSP Design Consultants (India) Pvt Ltd
- Mr G Srinivasa Murthy, Chief Executive and Architect, SMG Design Inc.
- Mr Vijaya Sai, Managing Director, S&S Green Projects
- Mr Saumil Mevada, Senior Urban Designer, Stantec
- Mr David Sam Roy, Head of Operations, The Aga Khan Academy, Hyderabad

I. Introduction

The construction sector for the last 10 years has done extremely well in embracing the green concepts. Though initially it started with individual buildings, green is now penetrating into other forms of environment such as Administrative campuses, Convention centers, Educational campuses, Healthcare campuses, Hospitality campuses, IT parks, Industrial parks, Leisure & Recreational campuses, Military campuses, Religious campuses, etc.,

The green concepts and techniques in campuses can help address National issues like water efficiency, energy efficiency, reduction in fossil fuel use in commuting, handling of consumer waste and conserving natural resources. Most importantly, these concepts can enhance occupant health, happiness and well-being.

Against this background, the Indian Green Building Council (IGBC) is in the process of launching 'IGBC Green Campus rating system to address the National priorities. This rating programme is a tool which enables the designer to apply green concepts and reduce environmental impacts that are measurable.

II. Benefits of Green Campuses

Green Campuses can have tremendous benefits, both tangible and intangible. The most tangible benefits are the reduction in water and energy consumption right from day one of occupancy. The energy savings could range from 20 - 30 % and water savings around 30 - 50%. Intangible benefits of green campus include health & well-being of the occupants, enhancing air quality & promoting biodiversity, safety benefits and conservation of scarce national resources.

III. National Priorities Addressed in the Rating System

The IGBC Green Campus rating system addresses the most important National priorities which include water conservation, handling waste, energy efficiency, reduced use of fossil fuels and health & well-being of occupants. The rating system requires the application of National standards and codes like the Bureau of Indian Standards (BIS), Central Ground Water Board guidelines, Central Pollution Control Board guidelines, Energy Conservation Building Code (ECBC), MNRE Guidelines, MoEFCC guidelines, National Building Code (NBC), and Renewable Energy Certificates (RECs). The overarching objective is to better the National standards so as to create new benchmarks.

- **Water Conservation:**

  Most of the Asian countries are water stressed and in countries like India, the water table has reduced drastically over the last decade. IGBC Green Campus rating system encourages use of water in a self-sustainable manner through reducing, recycling and reusing strategies. By adopting this rating programme, green campus can save potable water to an extent of 30 – 50%.

❖ **Handling of Construction Waste:**

Handling of waste in campuses is extremely difficult as most of the waste generated is not segregated at source and has a high probability of going to land-fills. This continues to be a challenge to the municipalities which needs to be addressed. IGBC intends to address this by encouraging buildings to segregate the waste generated in the campus.

❖ **Energy Efficiency:**

The Buildings sector is a large consumer of electrical energy. Through IGBC Green Campus rating system, campuses can reduce energy consumption through energy efficient –exterior lighting, air conditioning systems, etc. Also, alternative resources or energy are encouraged. The energy savings that can be realized by adopting this rating programme can be to the tune of 20 – 30%.

❖ **Reduced Use of Fossil Fuels:**

Fossil fuel is a slowly depleting resource, world over. The use of fossil fuel for transportation has been a major source of pollution. The rating system encourages the use of alternate fuels for transportation.

❖ **Health and Well-being of Occupants:**

Health and well-being of occupants is the most important aspect of IGBC Green Campus rating system. The rating system ensures facilities to enhance health and occupant well-being which are critical in a campus.

IV. IGBC Green Campus rating system

A. Features

IGBC Green Campus rating system is a voluntary and consensus based programme. The rating system has been developed based on materials and technologies that are presently available. The objective of IGBC Green Campus rating system is to facilitate the creation of water efficiency, handling of waste, energy efficiency, and environmentally friendly campuses.

The rating system evaluates certain mandatory requirements & credit points using a prescriptive approach and others on a performance based approach. The rating system is evolved so as to be comprehensive and at the same time user-friendly. The programme is fundamentally designed to address National priorities and quality of life for occupants.

Some of the unique aspects addressed in this rating system are as follows:

- Optimisation of water use for construction
- Improving lung space in the campus by emphasizing on green cover
- Encourage more green buildings in the campus

- Effective management of waste generated in campus
- Promotion of bicycles as a mode of transportation
- Encourage facilities for improving health & well-being of occupants

B. Scope

IGBC Green Campus rating system is designed for both New and Existing Campuses. The types of Campuses include Administrative campuses, Convention centers, Educational campuses, Healthcare campuses, Hospitality campuses, IT parks, Industrial parks, Leisure & Recreational campuses, Military campuses, Religious campuses, etc.,

Buildings within the campus such as new buildings, existing buildings, factory buildings, etc., will be covered under their respective IGBC rating programmes.

IGBC Green Campus rating system is broadly classified into two types:

- ❖ New Campuses
- ❖ Existing Campuses

Based on the scope of work, projects can choose any of the above options.

The campuses that would be covered under this rating system include:

- ❖ Campuses with multiple buildings and same functionality (Eg: Buildings in IT parks, Administrative campus)
- ❖ Campuses with multiple buildings and different functionality (Eg: Buildings in Educational campus, Industrial parks)
- ❖ Buildings in a campus owned by single owner
- ❖ Buildings in a campus owned by multiple owners

C. Validity

The rating awarded for the campuses would be valid for a period of 5 years. Thereafter, the campuses have to apply for re-certification with the prevailing version.

The campuses can also apply for re-certification within 5 years of award of the rating for a superior rating, if new green features are implemented or existing green features are enhanced in the campus.

D. The Future of IGBC Green Campus rating system

Many new green building materials, equipment and technologies are being introduced in the market. With continuous up-gradation and introduction of new green technologies and products, it is important that the rating programme also keeps pace with current standards and technologies.

Therefore, the rating programme will also undergo periodic revisions to incorporate the latest advances and changes. It is important to note that project teams applying

for IGBC Green Campus rating system should register their projects with the latest version of the rating system. During the course of implementation, projects have an option to transit to the latest version of the rating system.

IGBC will highlight new developments on its website (www.igbc.in).

V. Overview and Process

IGBC Green Campus rating system addresses green features under the following categories:

- Site Planning and Management
- Sustainable Transportation
- Water Conservation
- Energy Efficiency
- Material and Resource Management
- Health & Well-being
- Green Education
- Innovation in Design

The guidelines detailed under each mandatory requirement & credit enables the design and construction of campuses of all sizes and types (as defined in scope). Different levels of green campus certification are awarded based on the total credits earned. However, every green campus should meet certain mandatory requirements, which are non-negotiable.

The various levels of rating awarded are:

Certification Level	Recognition
Certified	Best Practices
Silver	Outstanding Performance
Gold	National Excellence
Platinum	Global Leadership

A. When to use IGBC Green Campus rating system

IGBC Green Campus rating system is designed primarily for both new and existing campuses. The project team can evaluate all the possible points to apply under the rating system using a suitable checklist (New Campus and Existing Campus). The project can apply for IGBC Green Campus rating system certification, if it can meet all mandatory requirements and achieve the minimum required points.

B. Registration

Project teams interested in IGBC Green Campus rating system Certification for their project must first register with IGBC. Projects can be registered on IGBC website (www.igbc.in) under 'IGBC Green Campus rating system. The website includes information on registration fee for IGBC member companies as well as non-members.

Registration is the initial step which helps establish contact with IGBC and provides access to the required documents, templates, important communications and other necessary information.

IGBC web site will have all important details on IGBC Green Campus rating system registration & certification - process, schedule and fee.

C. Certification

To achieve the IGBC Green Campus rating, the project must satisfy all the mandatory requirements and the minimum number of credit points.

The project team is expected to provide supporting documents at preliminary and final stage of submission for all the mandatory requirements and the credits attempted.

The project needs to submit the following:

1. General information of project including
    a. Project brief stating project type, different type of spaces, occupancy, number of buildings, area statement, etc.,
    b. General drawings (in PDF format only):
        i. Master/ Site plan
        ii. Landscape plan
        iii. Storm water drain layout
        iv. Parking plans
        v. Photographs/ Rendered images
2. Filled-in Templates (in excel format)
3. Narratives and supporting documentation such as drawings, calculations (in excel sheets), declarations/ contract documents, purchase invoices, manufacturer cut-sheets/ letters/ material test reports, etc., for each mandatory requirement/ credit

The required submittals are mentioned in this guide, under each mandatory requirement and credit.

The project documentation is submitted in two phases – preliminary submittal and final submittal:

- Preliminary submission involves all mandatory requirements and minimum number of credits. After the preliminary submission, review is done by third party assessors and review comments would be provided within 30 days.

- ❖ The next phase involves submission of clarifications to preliminary review queries and final submittal. This review will also be provided within 30 days, after which the rating is awarded.

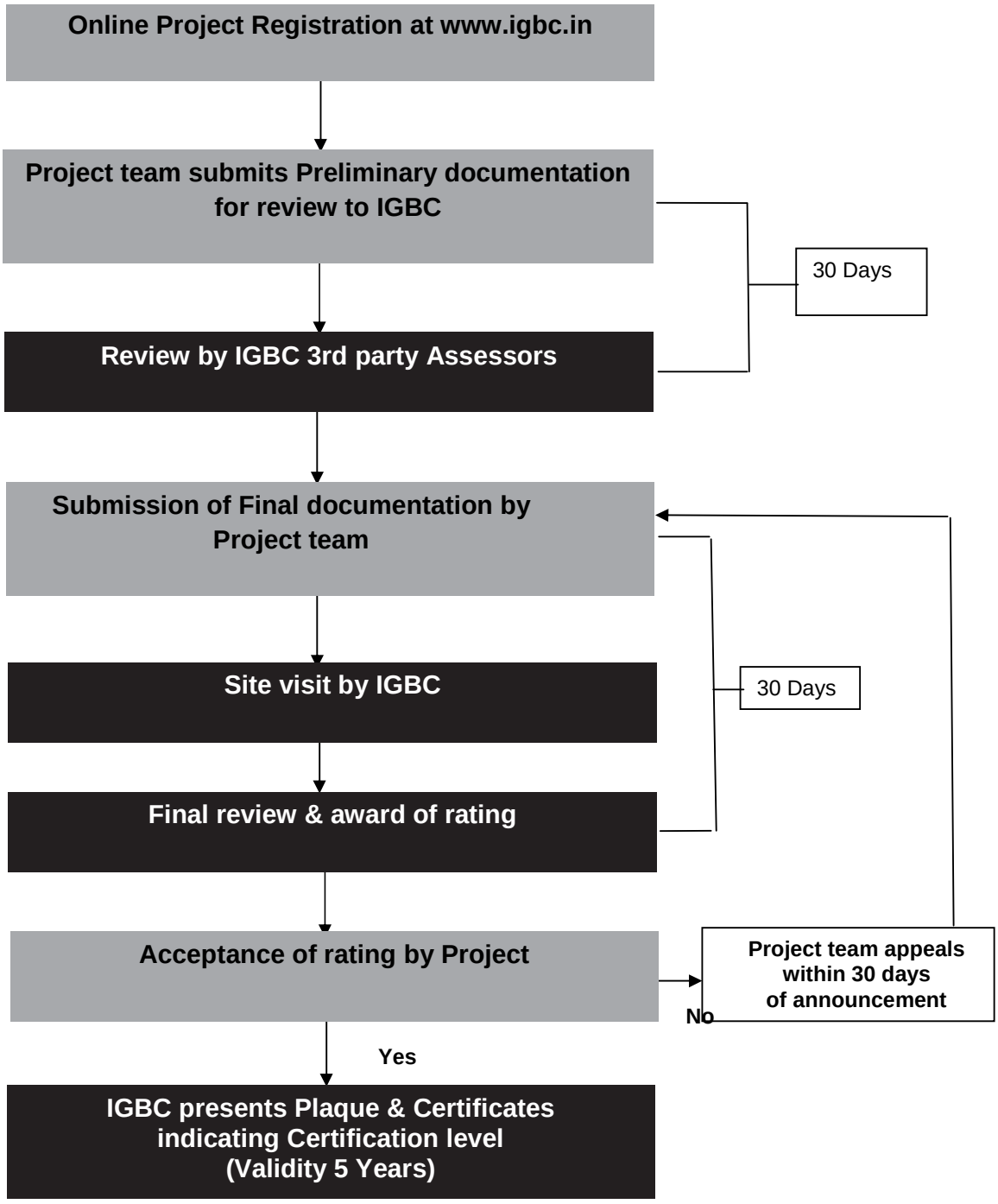
It is important to note that the mandatory requirements and credits earned at the preliminary review are only considered as anticipated. These mandatory requirements and credits are not awarded until the final documents are submitted, along with additional documents showing implementation of design features. If there are changes in any 'credit anticipated' aspects after preliminary review, these changes need to be documented and resubmitted during the final review.

The threshold criteria for certification levels are as under:

Certification Level	New Campus	Existing Campus	Recognition
Certified	40 – 49	36 – 44	Best Practices
Silver	50 – 59	45 – 53	Outstanding Performance
Gold	60 – 74	54 – 66	National Excellence
Platinum	75 – 100	67 – 90	Global Leadership

IGBC will recognize Green Campuses that achieve one of the rating levels with a formal letter of certification and a mountable plaque.

Certification Process



D. Precertification

Projects by owners/ developers can register for Precertification. This is an option provided for projects aspiring to get precertified at the design stage. Precertification also gives the developer a unique advantage to market the project to potential buyers.

The documentation submitted for precertification must detail the project design features which will be implemented. The rating awarded under precertification is based on the project's intention to conform to the requirements of IGBC Green Campus rating system. It is important to note that the precertification rating awarded need not necessarily correspond to the final rating.

Precertified projects are required to provide the status of the project to IGBC, in relation to the rating, once in every six months until the award of the final rating.

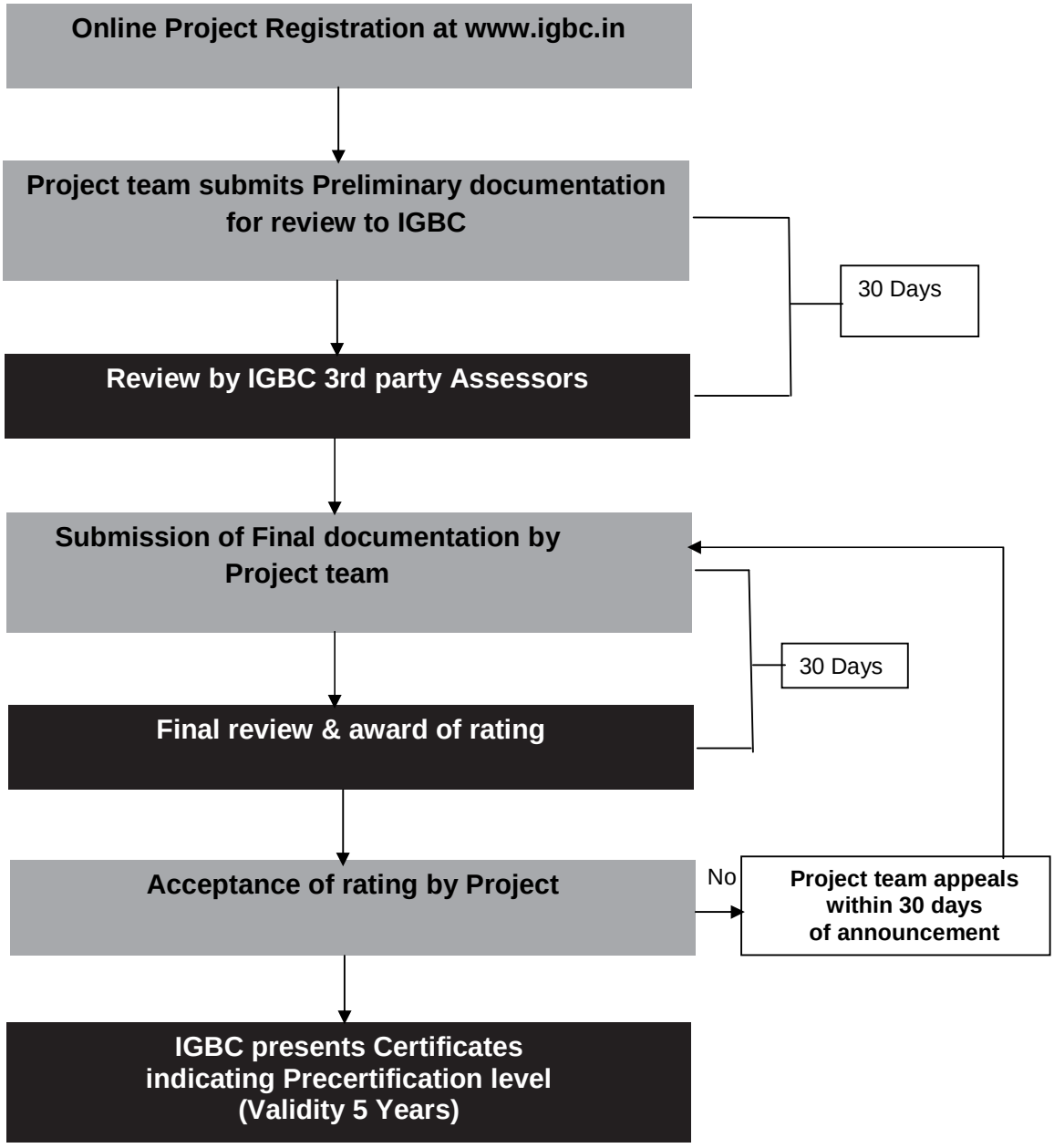
Those projects which seek precertification need to submit the following documentation:

1. General information about project, including
   a) Project brief stating project type, different type of spaces, occupancy, number of floors, area statement, etc.,
   b) General drawings (in PDF format only):
      1. Master/ Site plan
      2. Landscape plan
      3. Storm water drain layout
      4. Parking plans
      5. Photographs/ Rendered images
   c) Photographs/ Rendered views
2. Filled-in templates
3. Narratives and supporting documentation such as conceptual drawings, estimate / tentative calculations (in excel sheets), declarations from the owner, etc., for each of the mandatory requirement and credit

IGBC would take 30 days to review the first set of precertification documents. On receiving the clarifications posed in the first review, IGBC would take another 30 days to award the precertification.

A certificate and a letter are provided to projects on precertification.

Precertification Process



The Precertification is valid for 5 years from the date of award, after which projects are required to apply for the full certification (or) continue to submit construction progress reports once in six months to get an extension certificate for Precertification rating.

Note:

- *Projects applying for MoEF clearance can apply for Provisional Certification. The Provisional Certification process will be same as Precertification process.*

E. Credit Interpretation Ruling (CIR)

In some instances, the design team can face certain challenges in applying or interpreting a mandatory requirement or a credit. It can also happen in cases where the project can opt to achieve the same intent through a different compliance route.

To resolve this, IGBC uses the process of Credit Interpretation Ruling (CIR) to ensure that interpretations are consistent and applicable to other projects as well.

The following are the steps to be followed in case the project team faces a problem:

- ❖ Refer the Abridged Reference Guide for description of the credit intent, compliance options and approach & methodologies.
- ❖ Review the intent of the mandatory requirement/ credit and self-evaluate whether the project satisfies the intent.
- ❖ Review the Credit Interpretation Ruling web page for previous CIRs on the relevant mandatory requirement or credit. All projects registered under IGBC Green Campus rating system will have access to this page.
- ❖ If a similar CIR has not been addressed or does not answer the question sufficiently, submit a Credit Interpretation request. Only registered projects are eligible to post CIRs. Two CIRs are answered without levying any fee, and for any CIR beyond the first two CIRs, a fee is levied.

F. Appeal

In rare cases, mandatory requirements/ credits get denied due to misinterpretation of the intent. On receipt of the final review and if the project team feels that sufficient grounds exist to appeal a credit denied in the final review, the project has an option to appeal to IGBC for reassessment of denied mandatory requirements or credits. The documentation for the mandatory requirements or credits seeking appeal may be resubmitted to IGBC along with necessary fee. IGBC will take 30 days to review such documentation. If an appeal is pursued, please note that a different review team will be assessing the appeal documentation. The following documentation should be submitted:

1. General information of project including
    a. Project brief stating project type, different type of spaces, occupancy, number of buildings, area statement, etc.,
    b. General drawings (in PDF format only):
        i. Master/ Site plan
        ii. Landscape plan
        iii. Storm water drain layout
        iv. Parking plans
        v. Photographs/ Rendered views
2. Filled-in Template for respective mandatory requirement/ credit
3. Resubmittal and appeal submittal documentation for only those mandatory requirement/ credits that the project is appealing for. Also, include a narrative for each appealed mandatory requirement/ credit to describe how the documents address the reviewers` comments and concerns.

G. Fee

Registration, Certification and CIR fee details are available on IGBC website (www.igbc.in) or can be obtained from IGBC (igbc@cii.in).

H. Updates and Addenda

As the rating system continues to improve and evolve, updates addenda and errata to the abridged reference guide will be made available through IGBC website. These additions will be incorporated in the next version of the rating system.

Checklist

IGBC Green Campus Rating System		Points Available	
		New Campuses	Existing Campuses
Modules		**100**	**90**
Site Planning and Management		**25**	**22**
SPM MR 1	Green Buildings within the Campus	Required	Required
SPM MR 2	Soil Erosion Control	Required	Required
SPM Credit 1	Green Buildings within the Campus	10	10
SPM Credit 2	Site Preservation	3	NA
SPM Credit 3	Green Cover or Vegetation	6	6
SPM Credit 4	Heat Island Reduction, Non-roof	4	4
SPM Credit 5	Outdoor Light Pollution Reduction	2	2
Sustainable Transportation		**11**	**11**
ST Credit 1	Pedestrian Network	3	3
ST Credit 2	Bicycle Lanes Network	4	4
ST Credit 3	Access to Sustainable Transportation	4	4
Water Conservation		**19**	**18**
WC MR 1	Rainwater Harvesting	Required	Required
WC Credit 1	Rainwater Harvesting	6	6
WC Credit 2	Landscape Design	4	4
WC Credit 3	Management of Irrigation Systems	2	2
WC Credit 4	Wastewater Treatment and Reuse	4	4
WC Credit 5	Optimise Water Use for Construction	1	NA
WC Credit 6	Water Metering	2	2

Energy Efficiency		**21**	**21**
EE Credit 1	Energy Efficiency in Infrastructural Equipment	10	10
EE Credit 2	On-site Renewable Energy	5	5
EE Credit 3	Off-site Renewable Energy	4	4
EE Credit 4	Energy Metering	2	2
Material and Resource Management		**6**	**3**
MRM MR 1	Segregation of Waste, Post-occupancy	Required	Required
MRM Credit 1	Organic Waste Management, Post-occupancy	3	3
MRM Credit 2	Handling of Waste Materials, During Construction	1	NA
MRM Credit 3	Local Materials	2	NA
Health & Well-being		**9**	**6**
HWB MR 1	Tobacco Smoke Control	Required	Required
HWB Credit 1	Basic Amenities	2	1
HWB Credit 2	Health & Well-being Facilities	4	4
HWB Credit 3	Universal Design	2	1
HWB Credit 4	Basic Facilities for Construction Workforce	1	NA
Green Education		**3**	**3**
GE Credit 1	Green Education	2	2
GE Credit 2	Green Campus Guidelines	1	1
Innovation in Design		**6**	**6**
ID Credit 1	Innovation in Design Process	4	4
ID Credit 2	IGBC Accredited Professional	2	2

The threshold criteria for certification levels are as under:

Certification Level	New Campus	Existing Campus	Recognition
Certified	40 – 49	36 – 44	Best Practices
Silver	50 – 59	45 – 53	Outstanding Performance
Gold	60 – 74	54 – 66	National Excellence
Platinum	75 – 100	67 – 90	Global Leadership

Site Planning and Management

Green Buildings within the Campus

SPM Mandatory Requirement 1

Intent:

Design and construct high performance buildings within the campus to minimise negative environmental impacts resulting from development.

Compliance Options:

- **Option 1: Green Buildings Built-up Area within the Campus**

  Ensure atleast one building in the campus (or) 15% of the built-up area (excluding parking) within the campus (whichever is higher) is registered/ certified under appropriate IGBC rating systems (eg: IGBC Green New Buildings, IGBC Green Existing Building, IGBC Green Factory Building)

  (OR)

- **Option 2: Green Features in the Campus Buildings**

  Design / Retro-fit individual buildings with the following green features, as outlined in Annexure I – Mandatory Criteria for Green Features in the Campus Buildings:

  1) Water Efficient Plumbing Fixtures
  2) Energy Efficient Lighting Fixtures
  3) High Performance Air-conditioning Equipment
     (applicable only for air-conditioned buildings in the campus)

  Note:

  - *The project should show compliance through the same option in both SPM Mandatory requirement 1 & SPM Credit 1: Green Buildings within the Campus.*

Soil Erosion Control

SPM Mandatory Requirement 2

Intent:

Control soil erosion and sedimentation, thereby reducing negative impacts to the site and surroundings.

Compliance Options:

Implement the following measures in the campus, as applicable:

- Soil erosion control measures must conform to the best management practices highlighted in the National Building Code (NBC) of India 2005, Part 10, Section 1, Chapter 4 - Protection of Landscape during Construction and Chapter 5 - Soil and Water Conservation
- Fertile topsoil to be stockpiled prior to construction, for future reuse or donation
- Develop appropriate measures to address soil erosion, after occupancy

Note:

- *If the top soil (10-20 cm) in the project is not fertile (or) suitable for preservation, in such a case the project may provide relevant justification.*

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Green Buildings within the Campus

SPM Credit 1 **Points: 1-10**

Intent:

Design and construct high performance buildings within the campus to minimise negative environmental impacts resulting from development.

Compliance Options:

- **Option 1: Green Buildings Built-up Area within the Campus *(10 points)***

  Design individual buildings within the campus in accordance with appropriate IGBC rating system (eg., IGBC Green New Buildings, IGBC Green Existing Building, IGBC Green Factory Building)

  - **Registered Projects Built-up Area**

    Points are awarded as below:

Registered Projects (Built-up area of campus, excluding parking)	Points
20%	1
25%	2
30%	3
35%	4
40%	5

  - **Certified Projects Built-up Area**

    Points are awarded as below:

Certified Projects (Built-up area of campus, excluding parking)	Points
10%	1
15%	2
20%	3
25%	4
30%	5

(OR)

❖ **Option 2: Green Features in the Campus Buildings *(Max. 10 points)***

Design/ Retro-fit individual buildings with atleast 5 of the following green features, as outlined in Annexure II - Criteria for Green Features in the Campus Buildings:

1) Passive Architecture *(2 points)*
2) Heat Island Effect, Roof *(2 points)*
3) Water Efficient Plumbing Fixtures *(3 points)*
4) Waste Water Reuse *(2 points)*
   (for Flushing and individual air-conditioning systems Cooling tower make-up)
5) Eco-friendly Refrigerants *(1 point)*
6) Energy Efficient Lighting Fixtures *(3 points)*
7) High Performance Air-conditioning Equipment *(3 points)*
   (applicable only for air-conditioned buildings in the campus)
8) On-site Renewable Energy *(3 points)*
   (for Building requirements)
9) Daylighting *(2 points)*
10) Outdoor Views *(1 point)*

Note:

- *The project should show compliance through the same option in both SPM Mandatory requirement 1 & SPM Credit 1: Green Buildings within the Campus.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 45% of the campus built-up area is registered and/ or 35% of the campus built-up area is certified.

Site Preservation

SPM Credit 2 **Points: 1-3**
(Not applicable for Existing Campuses)

Intent:

Encourage retaining the site features to minimise site damage and associated negative environmental impacts.

Compliance Options:

Demonstrate that the campus complies with atleast one of the following measures:
(1 point for each measure; maximum 3 points)

- **Existing Landscape**

  Retain atleast 10% of the existing landscape, without any disturbance whatsoever.

  Note:
  - *Disturbance here refers to stacking of construction materials, pedestrian and vehicular movement, etc.,*

- **Natural Rocks**

  Retain atleast 50% of natural rocks (by surface area), excluding building footprint.

- **Preserve or Transplant Existing Trees**

  Preserve or transplant atleast 75% of existing fully grown trees within the campus.

  Notes:
  - *If the Ministry of Environment & Forest (MoEF) or local authorities prescribe stringent criteria, then the project shall comply with the respective criteria.*
  - *Existing fully grown trees need not include those which are meant for harvesting (eg: bamboo trees, eucalyptus trees, etc.,)*
  - *Trees planted in pots shall not be considered for credit calculations*.

- **Site Contour**

  Retain site contour to an extent of atleast 50% of the site, including building footprint area.

- **Water Bodies and Channels**

  Retain 100% of water bodies and channels existing on the site.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Green Cover or Vegetation

SPM Credit 3 **Points: 1-6**

Intent:

Minimise disturbances or restore green cover/ vegetation in the site, so as to promote habitat and biodiversity.

Compliance Options:

❖ **Case A: Green Cover or Vegetation**

Demonstrate that the campus has retained or restored green cover or vegetation, for atleast 15% of the site area.

Points are awarded as below:

Percentage of Site Area with Green Cover / Vegetation	Points
≥ 15%	1
≥ 20%	2
≥ 25%	3

Notes:

- *Grass medians, grass pavers, jogging track, open-air theatre, parking areas, driveways, walkways, playground, swimming pool, etc., are considered as site disturbance.*
- *Vegetation on the ground shall only be considered; vegetation over built structures such as roofs, basement, podiums, etc., shall not be considered.*
- *Only native / adaptive vegetation shall be considered for this credit calculation.*
- *Potted plants shall not be considered as vegetation.*
- *Artificial vegetation shall not be considered for this credit calculation.*

(AND/ OR)

❖ **Case B: Plantation of Tree Saplings**

The green cover shall have minimum 15 trees per acreage or plant tree saplings that can mature into fully grown-up trees with large canopy in the next 5 to 8 years.

Note:

- *If projects apply only for 'Case B: Plantation of Tree Saplings', then such projects shall have atleast 10% of the site area landscaped.*

Points are awarded as below:

Minimum number of Tree Saplings per Acre (Including Existing and Transplanted Trees)	Points
15	1
20	2
25	3

Notes:

- *Tree saplings shall be in place at the time of occupancy.*
- *Only native / adaptive tree saplings shall be considered for this credit calculation.*
- *Saplings planted in pots shall not be considered for credit calculations.*
- *Development footprint includes building footprint and other hardscape areas such as parking, footpaths, walkways, roads, grass medians, grass pavers, etc.,*

Exemplary Performance:

The project is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 30% of the site area is provided with green cover/ vegetation.

Heat Island Reduction, Non-roof

SPM Credit 4 **Points: 1-4**

Intent:

Minimise heat island effect so as to reduce negative impact on micro-climate.

Compliance Options:

- **Option 1: Non-roof Impervious Areas**
  Provide one or more of the following measures, for atleast 50% of exposed non-roof impervious areas within the campus.

  - Shade from existing tree cover/ newly planted saplings within 5 to 8 years of planting
  - Open grid pavers or grass pavers
  - Hardscape materials (including pavers) with SRI of atleast 29 (and not higher than 64).

  Points are awarded as below:

Non-roof Impervious Area as a Percentage of Total Non-roof Area	Points
≥ 50%	1
≥ 75%	2

Notes:

- *Non-roof impervious areas include, but not limited to, footpaths, pathways, roads, driveways, bicycle lanes uncovered surface parking, and other impervious areas.*
- *Trees / Saplings shall be in place at the time of certification.*
- *SRI values of reflectance materials shall be as per ASTM Standards.*
- *SRI materials that are certified by CII-IGBC under Green Product Certification Programme or by a third party agency approved by IGBC can be used by the project to show compliance.*

(AND/ OR)

- **Option 2: Covered Parking**
  Provide atleast 50% of the parking spaces under cover.

  Points are awarded as below:

Percentage of Parking Spaces under Cover	Points
≥ 50%	1
≥ 75%	2

Notes:

- '*Covered surface parking' here refers to structured covered parking*
- *The exposed roof of the parking shall meet 'Heat Island Effect - Roof' criteria. For details, please refer Annexure II - Criteria for Green Features in the Campus Buildings, Heat Island Reduction, Roof*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process:

- **Option 1**: If more than 95% of exposed non-roof impervious areas are under tree cover (and/ or) with open grid pavers/ grass pavers (and/ or) hardscape materials with an SRI of atleast 29 (and not higher than 64).
- **Option 2**: If more than 95% of the parking spaces are under cover.

Outdoor Light Pollution Reduction

SPM Credit 5 **Points: 2**

Intent

Reduce light pollution to increase night sky access and enhance the nocturnal environment.

Compliance Options:

❖ **Option 1: Prescriptive Approach**

➢ Upward Lighting:

Design exterior lighting such that no external light fixture emits more than 5% of the total initial designed fixture Lumens, at an angle of 90 degrees or higher from nadir (straight down).

(AND)

➢ Lighting Power Density:

The lighting power density should be reduced by 25% for exterior areas vis-à-vis the ASHRAE Standard 90.1-2010 baselines, Section 9.4.3 - Exterior Building Lighting Power.

Notes:

- *Total initial designed fixture Lumens shall be based on the sum total of all fixtures installed on site.*

❖ **Option 2: Simulation Approach**

➢ Upward Lighting:

Design exterior lighting such that all site luminaires produce a maximum initial illuminance values, as defined in ASHRAE Standard 90.1-2010.

(AND)

➢ Lighting Power Density:

The lighting power density should be reduced by 25% for exterior areas vis-à-vis the ASHRAE Standard 90.1-2010 baselines, Section 9.4.3 - Exterior Building Lighting Power (tradable & non-tradable surfaces).

Notes:

- *Classify the project under one of the lighting zones, as defined in ASHRAE Standard 90.1-2010, and follow all the requirements of the respective zone. Justification shall be provided for the selected lighting zone.*

LZ1: Dark (Developed Areas of National Parks, State Parks, Forest Land and Rural Areas)

Design exterior lighting so that all site luminaires produce a maximum initial illuminance value no greater than 0.01 horizontal and vertical footcandles (0.1 horizontal and vertical Lux) at the site boundary and beyond. Document that 0% of the total initial designed fixture Lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ2: Low (Areas predominantly consisting of residential zones, neighborhood business districts, light industrial areas with limited night time use and residential mixed-use areas)

Design exterior lighting so that all site luminaires produce a maximum initial illuminance value no greater than 0.1 horizontal and vertical footcandles (1.0 horizontal and vertical Lux) at the site boundary and no greater than 0.01 horizontal footcandles (0.1 horizontal Lux) 10 feet (3 meters) beyond the site boundary. Document that no more than 2% of the total initial designed fixture Lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ3: Medium (All other areas not included in LZ1, LZ2 or LZ4, such as commercial/ industrial, and high-density residential)

Design exterior lighting so that all site luminaires produce a maximum initial illuminance value no greater than 0.2 horizontal and vertical footcandles (2.0 horizontal and vertical Lux) at the site boundary and no greater than 0.01 horizontal footcandles (0.1 horizontal Lux) 15 feet (4.5 meters) beyond the site. Document that no more than 5% of the total initial designed fixture Lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ4: High14 (High-activity commercial districts in major metropolitan areas)

Design exterior lighting so that all site luminaires produce a maximum initial illuminance value no greater than 0.6 horizontal and vertical footcandles (6.5 horizontal and vertical Lux) at the site boundary and no greater than 0.01 horizontal footcandles (0.1 horizontal Lux) 15 feet (4.5 meters) beyond the site. Document that no more than 10% of the total initial designed fixture Lumens (sum total of all fixtures on site) are emitted at an angle of 90 degrees or higher from nadir (straight down).

LZ2, LZ3 and LZ4: For site boundaries that abut public rights-of-way, light trespass requirements may be met relative to the curb line instead of the site boundary.

For All Zones

Illuminance generated from a single luminaire placed at the intersection of a private vehicular driveway and public roadway accessing the site is allowed to use the centerline of the public roadway as the site boundary for a length of 2 times the driveway width centered on the centerline of the driveway.

Exemplary Performance:

This credit is not eligible for exemplary performance.

SUSTAINABLE TRANSPORTATION

Pedestrian Network

ST Credit 1 **Points: 1-3**

Intent:

Encourage safe and comfortable walking experience by providing well designed interconnected pedestrian network.

Compliance Options:

Design pedestrian network within the campus between main buildings and basic amenities, with proper shading and adequate illumination levels.

- Provide shade for pedestrian network areas through tree cover or structured cover, for comfortable pedestrian access. *(2 points)*
- Provide adequate illumination (Lux levels) for pedestrian network within the campus, as per National Building Code of India, Part 8 - Building Services, Section – 1 Lighting and Ventilation, Table - 4 Recommended Values of Illuminance. The code recommends lux levels in the range 30 to 100. *(1 point)*

Notes:

- *Pedestrian network here refers to footpaths and pathways.*
- *Trees/ Saplings shall be in place at the time of occupancy for shading.*
- *Shade from newly planted saplings shall be within 5 to 8 years of planting.*

Exemplary Performance:

This credit is not eligible for exemplary performance.

Bicycle Lane Network

ST Credit 2 **Points: 2-4**

Intent:

Reduce automobile dependency for short distance commuting to minimise fuel consumption & vehicular emissions, thereby promoting physical activity and health.

Compliance Options:

- **Bicycle Lane Network:** ***(2 points)***
  - Design bicycle lane network within the campus to connect to all main buildings and basic amenities.
  - Provide bicycle parking at all main buildings/ basic amenities, within a walking distance of 100 meters.
  - Provide adequate illumination (Lux levels) for pedestrian network within the campus, as per National Building Code of India, Part 8 - Building Services, Section - 1 Lighting and Ventilation, Table - 4 Recommended Values of Illuminance. The code recommends lux levels in the range 30 to 100.

(AND/ OR)

- **Bicycles Provision:** ***(2 points)***
  - Provide bicycles for campus occupants to commute within or outside the campus, as an environmental friendly transportation facility.

Type of Campus	Minimum number of Bicycles
Educational	1 for every 25 occupants
Non Educational	1 for every 100 occupants

(AND)

  - Have a bicycle servicing facility within the campus (or) an alternative system to ensure that the bicycles would be in working condition.

Note:

- *The compliance can be shown only for primary and secondary roads & streets.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if 100% of the bicycle network is designed exclusively for bicycles.

Access to Sustainable Transportation

ST Credit 3 **Points: 2-4**

Intent:

Encourage use of public transport, so as to reduce negative impacts caused from automobile use.

Compliance Options:

- **Option 1: Public Transport *(2 Points)***

  Provide access to a public transportation facility (bus-stop/ intra-city railway station), within 800 meters walking distance from the campus entrance(s).

  (AND/ OR)

- **Option 2: Shuttle Service *(2 Points)***

  - **Electric/ CNG-powered Vehicles**

    Operate or have a contract in place for electric/ CNG-powered vehicles within or outside the campus as shuttle services, to cater atleast 10% of the campus occupants during the peak hours.

    Additionally, the project shall install electric charging facilities within the projects' parking area to cater to the electric vehicles (or) the project shall have atleast one CNG filling station within 5 km distance from the projects' campus entrance.

    (OR)

  - **Conventional Vehicles (Fossil Fuel based vehicles)**

    Operate or have a contract in place for shuttle services within or outside the campus, to cater atleast 20% of the campus occupants during the peak hours.

Exemplary Performance:

This credit is not eligible for exemplary performance.

WATER CONSERVATION

Rainwater Harvesting

WC Mandatory Requirement 1

Intent:

Enhance ground water table and reduce municipal water demand through effective rainwater management.

Compliance Options:

- **Case A: Rainwater Harvesting**

  Design rainwater harvesting system to capture/ percolate atleast 'one-day rainfall*' runoff volume from roof and non-roof areas in the campus.

  * *One-day rainfall can be derived from 'percentage of average peak month rainfall' given in Table - 2.*

  To arrive at average peak month rainfall, consider an average of atleast last 5 years peak month rainfall (of the respective year).

Table 1 - Criteria to arrive at 'One-day Rainfall'

S No	Average Peak Month Rainfall (in mm)	One-day Rainfall (% of Average Peak Month Rainfall)
1	Upto 250	9%
2	251 – 350	7.5%
3	351 – 500	6%
4	501 – 700	4.5%
5	701 & above	3%

- **Case B: High Groundwater Table**

  In areas where the Central / State Ground Water Board does not recommend artificial rain water recharge (or) if the groundwater table is less than 8 meters, the project is required to provide justification for not implementing rainwater harvesting system.

Notes:

- *For rainfall information, refer Indian Meteorological Department data at http://www.imd.gov.in*
- *Runoff volume = Surface area x Runoff Coefficient x Rainfall.*
- *For run-off coefficients for typical surface types, refer Table 3 - Run-off coefficients for Typical Surface Types.*
- *Consider Rainwater Harvesting Guidelines from National Building Code (NBC) of India, Part 11 - Approach to Sustainability (as and when available), Section 7.2 - Rainwater Harvesting - Surface runoff.*
- *In areas where the water percolation is limited, collection tanks / water bodies may be provided to meet the above requirement.*
- *Filtering of suspended solids shall be ensured by providing suitable filtering media before letting the water into the collection tanks, water bodies and municipal storm water drains.*

Table 2 – Run-off coefficients for Typical Surface Types

S No	Surface Type	Run-off Coefficient
1	Cemented / Tiled Roof	0.95
2	Roof Garden (<100 mm thickness)	0.5
3	Roof Garden (100 – 200 mm thickness)	0.3
4	Roof Garden (201 – 500 mm thickness)	0.2
5	Roof Garden (> 500 mm thickness)	0.1
6	Turf, Flat (0 - 1% slope)	0.25
7	Turf, Average (1 - 3% slope)	0.35
8	Turf, Hilly (3 - 10% slope)	0.4
9	Turf, Steep (> 10% slope)	0.45
10	Vegetation, Flat (0 - 1% slope)	0.1
11	Vegetation, Average (1 - 3% slope)	0.2
12	Vegetation, Hilly (1 - 3% slope)	0.25
13	Vegetation, Steep (> 10% slope)	0.3
14	Concrete Pavement	0.95
15	Gravel Pavement	0.75
16	Open-grid Concrete Pavement	0.75
17	Open-grid Grass Pavement	0.5
18	Water Bodies (lined) Ex: Swimming Pools	0.95
19	Water Bodies (un-lined) Ex: Water Pond	0

Rainwater Harvesting

WC Credit 1 **Points: 2-6**

Intent:

Enhance ground water table and reduce municipal water demand through effective rainwater management.

Compliance Options:

- **Case A: Rainwater Harvesting**

  Design rainwater harvesting system to capture/ percolate atleast 'one-day rainfall*' runoff volume from roof and non-roof areas.

  **One-day rainfall can be derived from 'percentage of average peak month rainfall' given in Table - 4.*

  To arrive at average peak month rainfall, consider an average of atleast last 5 years peak month rainfall (of the respective year).

  Points are awarded as below:

Table 3 - Criteria to arrive at 'One-day Rainfall'

S No	Average Peak Month Rainfall (mm)	One-day Rainfall (% of Average Peak Month Rainfall)		
		2 points	4 points	6 points
1	Upto 250	12%	15%	18%
2	251 – 350	10%	12.5%	15%
3	351 – 500	8%	10%	12%
4	501 – 700	6%	7.5%	9%
5	701 & above	4%	5%	6%

- **Case B: High Groundwater Table**

  Design rainwater harvesting system to capture/ percolate atleast 'one-day rainfall*' runoff volume from roof and non-roof areas.

  **One-day rainfall can be derived from 'percentage of average peak month rainfall' given in Table - 5.*

  To arrive at average peak month rainfall, consider an average of atleast last 5 years peak month rainfall (of the respective year).

Points are awarded as below:

Table 4 - Criteria to arrive at 'One-day Rainfall' for Projects with High Groundwater Table

S No	Average Peak Month Rainfall (mm)	One-day Rainfall (% of Average Peak Month Rainfall)		
		2 points	4 points	6 points
1	Upto 250	6%	9%	12%
2	251 – 350	5%	7.5%	10%
3	351 – 500	4%	6%	8%
4	501 – 700	3%	4.5%	6%
5	701 & above	2%	3%	4%

***Notes*:**

- *For rainfall information, refer Indian Meteorological Department data at http://www.imd.gov.in WC Mandatory Requirement 1 - Rainwater Harvesting*
- *Runoff volume = Surface area x Runoff Coefficient x Rainfall.*
  For run-off coefficients for typical surface types, refer Table 3 - Run-off coefficients for Typical Surface Types in.
- *Consider Rainwater Harvesting Guidelines (as and when available) from the National Building Code (NBC) of India, Part 11 - Approach to Sustainability, Section 7.2 - Rainwater Harvesting- Surface Runoff.*
- *In areas where the water percolation is limited, collection tanks may be provided to meet the above requirement.*
- *Filtering of suspended solids shall be ensured by providing suitable filtering media before letting the water into the collection tanks, water bodies and municipal storm water drains.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if rainwater runoff from roof & non-roof areas is captured and / or recharged, as per Table-5 listed below:

Table 5 - Criteria to arrive at 'One-day Rainfall' for Exemplary Performance

S No	Average Peak Month Rainfall (mm)	One-day Rainfall (% of Average Peak Month Rainfall)	
		Case A: Rainwater Harvesting	Case B: High Groundwater Table
1	Upto 250	21%	15%
2	251 – 350	17.5%	12.5%
3	351 – 500	14%	10%
4	501 – 700	10.5%	7.5%
5	700 & above	7%	5%

Landscape Design

WC Credit 2 **Points: 1-4**

Intent:

Design landscape to ensure minimum water consumption.

Compliance Option:

Limit use of turf in the campus to conserve water and / or ensure that landscaped area is planted with drought tolerant / native / adaptive species (excluding turf species).

Note:

- *This credit is applicable only for those projects which have atleast 10% of the site area landscaped.*

Points are awarded as below:

Type of Landscape	Percentage of Total Landscaped area	Points
Turf Area	≤ 40%	1
	≤ 20%	2
Drought Tolerant/ Native / Adaptive Species Area	≥ 40%	1
	≥ 60%	2

***Notes*:**

- *The landscape here refers to soft landscaping, which includes only pervious vegetation.*
- *Drought tolerant species are those species that do not require supplemental irrigation. Generally accepted time frame for temporary irrigation is 1 to 2 years.*
- *For this credit calculations, turf area in play areas, golf course, etc., shall also be considered.*
- *Vegetation on the ground shall only be considered; vegetation over built structures such as roofs, basement, podiums, etc., shall not be considered.*
- *Potted plants shall not be considered as vegetation.*
- *Areas planted with turf should not exceed a slope of 25 percent (i.e. 4 to 1 slope).*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if more than 80% of the landscaped area is planted with drought tolerant / native / adaptive species.

Management of Irrigation Systems

WC Credit 3 **Points: 1-2**

Intent:

Reduce water demand for irrigation through water efficient management systems and techniques.

Compliance Options:

Provide or install highly efficient irrigation systems and techniques incorporating the features mentioned below: *(1 point for every three measure; maximum 2 points)*

- Central shut-off valve
- Soil moisture sensors integrated with irrigation system
- Turf and each type of bedding area must be segregated into independent zones based on watering needs
- Atleast 50% of landscape planting beds must have a drip irrigation system to reduce evaporation
- Atleast 75% of turf area must have sprinkler irrigation system to reduce water loses
- Time based controller for the valves such that evaporation loss is minimised and plant health is ensured
- Pressure regulating device(s) to maintain optimal pressure to prevent water loss
- Any other innovative methods for watering

***Note*:**

- *This credit is applicable only for those projects which have atleast 10% of the site area landscaped.*
- *Vegetation on the ground shall only be considered; vegetation over built structures such as roofs, basement, podiums, etc., shall not be considered.*
- *Potted plants shall not be considered as vegetation.*

Exemplary Performance:

This credit is not eligible for exemplary performance.

Waste Water Treatment and Reuse

WC Credit 4 **Points: 1-4**

Intent:

Treat waste water generated on-site, so as to avoid polluting the receiving streams by safe disposal. Use treated waste water, thereby reducing dependence on potable water.

Compliance Options:

- **Waste Water Treatment: (2 Points)**
  Have an on-site treatment system to handle 100% of waste water generated in the campus, to the quality standards suitable for reuse, as prescribed by Central (or) State Pollution Control Board, as applicable.

  (AND)

- **Waste Water Reuse: (2 Points)**

  Use treated waste water for atleast 25% of the total water required for landscaping and centralised Air-conditioning cooling tower make-up *water (if the project uses centralised water-cooled chillers)*

  Points are awarded as below:

Application (in aggregate)	Percentage of Total Water Catered trough Treated Waste Water	Points
Landscaping and Centralised Air-conditioning cooling tower make-up	≥ 25% ≥ 50%	1 2

***Notes*:**

- *Waste water here refers to grey, black and industrial water.*
- *The credit point(s) can be claimed only if the waste water is treated in-situ and reused in-situ.*

  In case the local authorities insist the project to divert waste water to a centralised /common waste water treatment plant outside the campus, then the project can show compliance with 'Case-2' given above, by reusing treated wastewater from the centralised / common / any other waste water treatment plant.
- *Treated waste water sourced from other sites / local authorities through permanent piped connections or other means can also be considered to show compliance for 'waste water reuse'.*
- *Water from sources such as bore wells, natural wells, municipal water systems is considered as potable water.*
- *Captured rain water can also be considered to show compliance.*
- *The water requirement and average number of watering days for landscaping shall be considered as 6 liters per sq.m. per day (i.e. 6 liters/ sq.m./ day) for a minimum of 300 days.*

  (Or)

Justify if the water requirement and the average number of watering days for landscaping is less than the above requirement.

- *Vegetation on the ground shall only be considered for landscape water requirement calculations; vegetation over built structures such as roofs, basement, podiums, etc., shall not be considered*
- *Potted plants shall not be considered under vegetation.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if treated waste water is used for atleast 75% of the total water required for landscaping and centralised Air-conditioning cooling make-up water (if the project uses water-cooled chillers).

Optimise Water Use for Construction

WC Credit 5 **Points: 1**

(*Not applicable for Existing Campuses*)

Intent:

Enhance water use efficiency, thereby minimising the use of potable water for construction activities.

Compliance Options:

Demonstrate that the project has reduced atleast 50% of the potable water required for campus infrastructural construction activities (concrete mixing, plastering works and curing), as compared to national and international practices, with the use of:

- Treated waste water
- Admixtures & curing compounds
- Any other innovative measures

Ensure that the quality of construction is not compromised by reducing potable water requirement or by reusing treated waste water.

(AND)

The treated waste water shall meet the quality standards suitable for reuse during construction, as prescribed by:

- Bureau of Indian Standards (BIS) – Plain and Reinforced Concrete (Code of Practice) IS 456 : 2000, Section 2 - Materials, Workmanship, Inspection and Testing, 5.4 - Water, 'Table 1 - Permissible Limit for Solids'

  (Or)
- Central (or) State Pollution Control Board

Notes:

- *Treated waste water from other sites/ local authorities through piped connections or other means can also be considered to show compliance.*
- *The baseline water requirement for construction activities shall be defined by the project team with supporting calculations.*

Exemplary Performance:

This credit is not eligible for exemplary performance.

Water Metering

WC Credit 6 **Points: 1-2**

Intent:

Encourage sub-metering to improve water performance and thereby save potable water.

Compliance Options:

Demonstrate sub-metering for atleast three of the following water use applications, as applicable: *(1 point for every three measures; maximum 2 points)*

- Municipal water supply
- Bore water consumption
- Treated waste water consumption
- Water consumption for landscape requirements
- Water consumption for centralised Air-conditioning cooling tower makeup *(if the project uses centralised water-cooled chillers)*
- Building-level water consumption
- Any other major source of water consumption

Exemplary Performance:

This credit is not eligible for exemplary performance.

ENERGY EFFICIENCY

Energy Efficiency in Infrastructural Equipment

EE Credit 1 **Points: 1 - 10**

Intent:

Enhance energy efficiency, thereby reducing the environmental impacts resulting from energy use.

Compliance Options:

- For all infrastructural equipment/ systems within the campus, achieve energy efficiency for the following systems: *(maximum 10 points)*

  - **Lighting Systems:**

    - Lighting Power Density: *(5 points)*

      Reduce lighting power density by atleast 30% for exterior areas over ASHRAE Standard 90.1-2010, Section 9.4.3 - Exterior Building Lighting Power baseline.

Reduction in Lighting Power Density for Exterior Areas	Points
≥ 30%	1
≥ 35%	2
≥ 40%	3
≥ 45%	4
≥ 50%	5

    - **Lighting Controls:** *(2 points)*

      All non-emergency exterior & common area lighting such as landscaping, surface and covered parking, pathways, bicycle lanes, street lighting should have Daylight sensor/ Timer-based control.

  - **Pumps and Motors:**

    - Pumps shall have minimum efficiencies as listed below: (2 points)

Capacity of the Pump (kW)	Minimum Efficiency (%)
< 5	≥ 50
5 to 14	≥ 60
15 to 49	≥ 70
> 50	≥ 85

    - Motors (> 3.5 HP) with efficiency of atleast 85% *(1 point)*

Note:

- *Pumps & motors which are used only for domestic and sewage water supply should be considered*.
- *Pumps & motors which are used for firefighting and other non-regular applications need not be considered.*

➢ **Centralised Air-conditioning Systems:** *(3 points)*

o Campuses which have installed Centralised Air-conditioning systems shall have a COP/ IPLV of atleast 2.5% over ASHRAE Standard 90.1-2010 baseline.

Efficiency of Centralised Air-conditioning systems over ASHRAE Standard 90.1-2010 baseline	Points
≥ 2.5%	1
≥ 5%	2
≥ 7.5%	3

Note:

- *For projects where use of water cooled chillers is not allowed by the local authorities due to unavailability of water for cooling tower make-up, air cooled chillers can be considered in base case in lieu of water cooled chillers. Baseline COP/ IPLV of air cooled chillers will be as per ASHRAE Standard 90.1-2010.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if:

❖ Lighting Power Density (LPD) is reduced by atleast 55% for exterior areas over ASHRAE Standard 90.1-2010 baseline.

❖ COP/ IPLV of Centralised Air-conditioning systems is atleast 10% over ASHRAE Standard 90.1-2010 baseline.

On-site Renewable Energy

EE Credit 2 **Points: 1 - 5**

Intent:

Encourage the use of on-site renewable technologies, to minimise environmental impacts associated with the use of fossil fuel energy.

Compliance Options:

Demonstrate on-site renewable energy generation for atleast 10% of total annual energy consumption of the campus infrastructural equipment/ systems, excluding buildings.

Points are awarded as below:

Percentage of On-site Renewable Energy generated to the Total Annual Energy Consumption of the Campus Infrastructural Equipment/ Systems, excluding Buildings	Points
≥ 10%	1
≥ 20%	2
≥ 30%	3
≥ 40%	4
≥ 50%	5

Notes:

- *Infrastructural equipment shall include exterior lighting and centralised pumps & motors used only for domestic and sewage water supply. Pumps & motors which are used for firefighting and other non-regular applications need not be considered.*
- *Renewable energy sources include solar energy, wind power, bio-mass, bio-gas, geo-thermal energy, etc.*
- *Solar hot water systems cannot be considered as power generation source and cannot be subtracted from the total annual energy consumption.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if on-site renewable energy generation is atleast 60% of total annual energy consumption of the campus infrastructural equipment/ systems, excluding buildings.

Off-site Renewable Energy

EE Credit 3 **Points: 1 - 4**

Intent:

Encourage the use of off-site renewable technologies, to minimise the environmental impacts associated with fossil fuel energy use.

Compliance Options:

- **Option 1: Renewable Energy Certificates (RECs)**
  Demonstrate that the project has purchased Renewable Energy Certificates (RECs) equivalent to atleast 20% of total annual energy consumption of the campus infrastructural equipment/ systems, excluding buildings.

  Notes:
  - *1 REC is equal to 1 MWh*
  - *The RECs purchased shall be valid for a period of two years.*
  - *The RECs can be solar or non-solar or both.*

  Points are awarded as below:

Percentage of Renewable Energy Certificates (RECs) Purchased to the Total Annual Energy Consumption of the Campus Infrastructural Equipment/ Systems, excluding Buildings	Points
≥ 20%	1
≥ 30%	2
≥ 40%	3
≥ 50%	4

(OR)

- **Option 2: Off-site Renewable Energy Investments**
  Demonstrate that the project has invested in off-site renewable energy equivalent to atleast 20% of total annual energy consumption of the campus infrastructural equipment/ systems, excluding buildings.

  Note:
  - *The contract with the off-site renewable energy developer to generate energy shall be for a minimum period of two years*

  Points are awarded as below:

Percentage of Off-site Renewable Energy Generated to the Total Annual Energy Consumption of the Campus Infrastructural Equipment/ Systems, excluding Buildings	Points
≥ 20%	1
≥ 40%	2
≥ 60%	3
≥ 80%	4

General Notes:

- *Infrastructural equipment shall include exterior lighting and centralised pumps & motors used only for domestic and sewage water supply. Pumps & motors which are used for firefighting and other non-regular applications need not be considered.*
- *Type of renewable energy source shall be in compliance with the Ministry of New and Renewable Energy (MNRE), Government of India and respective State Regulatory Commissions.*
- *Off-site renewable energy so generated shall be counted only once.*
- *Hydro power projects with 25 MW or lesser size shall only be considered under this credit.*
- *For credit calculations, RECs purchased in the last 6 months of building operation can also be considered, to show compliance.*
- *In case, the Project purchases RECs through an Authorised Agency of exchange, then a legal contract should exist between the Authorised Agency and the Project.*

Exemplary Performance:

This credit is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if the project has purchased Renewable Energy Certificates (RECs) equivalent to atleast 60% (or) invested in off-site renewable energy equivalent to 100% of total annual energy consumption of the campus infrastructural equipment/ systems, excluding buildings.

Energy Metering

EE Credit 4 **Points: 1 - 2**

Intent:

Encourage sub-metering to improve energy performance, and thereby save energy.

Compliance Options:

Demonstrate sub-metering for atleast three of the following energy use applications, as applicable: *(1 point for every three measures; maximum 2 points)*

- Municipal water pumping
- Ground water pumping
- Treated waste water pumping
- Exterior area lighting, including landscapes
- Centralised air-conditioning systems
- Renewable energy generation
- Power backup systems (e.g. Generators sets)
- Building-level energy consumption
- Any other energy consuming equipment and systems

Exemplary Performance:

This credit is not eligible for exemplary performance.

MATERIAL AND RESOURCE MANAGEMENT

Segregation of Waste, Post-occupancy

MRM Mandatory Requirement 1

Intent:

Facilitate segregation of waste at source to encourage reuse or recycling of materials, thereby avoiding waste being sent to landfills.

Compliance Options:

- **Dry and Wet Waste**
  Provide separate bins to collect dry waste (paper, plastic, metals, glass, etc.,) and wet waste (Food), at all the exterior common areas of the campus, as applicable. Divert the collected waste to a centralised facility, which is easily accessible for hauling.

  (AND)

- **Hazardous Waste**
  In addition to dry and wet waste bins, provide separate bins for safe disposal of the following hazardous waste, at the centralised facility:

  - Batteries
  - 'e' waste
  - Lamps
  - Medical waste, if any

  ***Note**:*

  - *The project shall follow the Hazardous Waste Management Guidelines as prescribed by the Ministry of Environment & Forest (MoEF), Government of India.*

Organic Waste Management, Post-occupancy

MRM Credit 1 **Points: 1-3**

Intent:

Ensure effective waste management, so as to avoid organic waste being sent to landfills and to improve sanitation & health.

Compliance Options:

Install an on-site waste treatment system for handling organic (food and garden) waste generated in the campus, including buildings. The generated manure or bio-gas shall be utilised as appropriate.

Points are awarded as below:

Organic Waste	Percentage of Waste Treated	Points
Food waste	≥ 75%	1
Garden waste	≥ 25%	1
	≥ 50%	2

***Notes*:**

- *Food waste shall be considered for all campus occupants*
- *For calculation, food waste can be considered as 0.1 kg per person (i.e. 0.1 kg/ sq.m/ day) or as prescribed by the local byelaw, whichever is more stringent; landscaped waste can be considered as 0.2 kg per sq.m per day (i.e. 0.2 kg/ sq.m/ day).*

Exemplary Performance:

The project is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if atleast 95% of food waste and 75% of garden waste generated is treated.

Handling of Waste Materials, During Construction

MRM Credit 2 **Points: 1**

(Not applicable for Existing Campuses)

Intent:

Facilitate segregation of construction and demolition waste at source, to encourage reuse or recycling of materials thereby avoiding waste being sent to landfills.

Compliance Options:

Demonstrate that atleast 75% of waste generated during construction and demolition is diverted from landfills, for reuse or recycling. Use consistent metrics, either weight or volume, to show compliance.

***Notes*:**

- *Construction and demolition waste here refers to civil materials waste generated in the campus infrastructural facilities.*
- *Excavated earth & stones should not be considered under this credit, as these are natural resources.*
- *Temporary materials such as materials used for formwork, scaffolding, etc., shall not be considered for this credit calculation.*

Exemplary Performance:

The credit is not eligible for exemplary performance.

Local Materials

MRM Credit 3 **Points: 2**

(Not applicable for Existing Campuses)

Intent:

Encourage the use of building materials available locally, thereby, minimising the associated environmental impacts.

Compliance Options:

Ensure atleast 50% of the total building materials (by cost) used in the campus infrastructural facilities are manufactured locally within a distance of 400 km.

Points are awarded as below:

Percentage of Local Materials Sourced	Points
≥ 50%	1
≥ 75%	2

Notes:

- *Local Materials are those which are manufactured within a distance of 400 km. Assembly of building materials shall not be considered.*
- *Extraction and processing of raw materials need not be considered as part of this credit calculation.*

Exemplary Performance:

The project is eligible for exemplary performance under ID Credit 1 - Innovation in Design Process, if atleast 95% of the building materials are sourced locally for campus infrastructural facilities.

HEALTH & WELL-BEING

Tobacco Smoke Control

HWB Mandatory Requirement 1

Intent:

Minimise exposure of non-smokers to the adverse health impacts arising due to passive smoking.

Compliance Options:

- **Option 1 : No Smoking**
  Demonstrate that smoking is prohibited in the campus.

  (OR)

- **Option 2 : Outdoor Smoking Areas**
  In case the campus has outdoor smoking areas, such areas shall be located at a minimum of 7.6 meters away from all outdoor air intakes (such as entrance doors, window openings etc.,).

  Note:

  - *The compliance for Option 2: Outdoor Smoking Areas shall be in accordance with the regulations of Ministry of Health & Family Welfare, Government of India.*

Basic Amenities

HWB Credit 1

Points: 2 (for New Campuses)
Points: 1 (for Existing Campuses)

Intent:

Provide access to basic amenities, so as to encourage walking and thereby improve quality of life.

Compliance Options:

Provide atleast seven basic amenities within the campus, with pedestrian access.

***Notes*:**

- Basic amenities within a walking distance of 800 meters from the campus entrance(s) can also be considered to show compliance.
- The basic amenities shall be functional at the time of project completion.
- All amenities are to be considered only once.
- The amenities shall be accessible to campus occupants and visitors.

List of Basic Amenities:

- Accommodation facilities (Guest house, Hotel, Service apartment)
- ATM / Bank
- Automobile refuelling station
- Cafeteria/ Restaurant
- Educational facilities (Crèche, Primary School, & Secondary School)
- Hospital
- Laundry / Dry cleaners
- Leisure & Entertainment facilities (Auditorium, Amphitheatre, Theatre, etc.,)
- Park / Garden
- Post office / Courier service
- Retail Stores (Grocery store, Supermarket, etc.,)
- Saloon

Exemplary Performance:

This credit is not eligible for exemplary performance

Health & Well-being Facilities

HWB Credit 2 **Points: 2-4**

Intent:

Provide health & well-being facilities, so as to enhance physical, emotional and spiritual well-being of campus occupants.

Compliance Options:

- **Health & Well-being Facilities (2 points)**

  Demonstrate that the campus has health & well-being facilities to cater to atleast 10% of campus occupants, through the day.

  Health & well-being facilities include, but not limited to, aerobics, gymnasium, swimming pool, yoga, meditation, indoor games, outdoor games, playground, etc.,

  (AND/ OR)

- **Healthcare, Emergency & Security Facilities (2 points)**

  Additionally, provide healthcare, emergency & security facilities within the campus such as first-aid/ clinic, pharmacy, emergency alarm, surveillance system etc., in the campus.

Exemplary Performance:

This credit is not eligible for exemplary performance

Universal Design

HWB Credit 3

Points: 2 (for New Campuses)
Points: 1 (for Existing Campuses)

Intent:

Ensure that the campus design caters to differently abled and senior citizens.

Compliance Options:

Design the campus to provide the following measures for differently abled and senior citizens in accordance with the guidelines of the National Building Code (NBC) of India 2005.

- Easy access to the main entrance of the buildings
- Appropriately designed preferred car park spaces having an easy access to the building's main entrance or closer to the lift lobby

  (*Provide atleast one car park space for the first 100 car park spaces and one additional for every 250 car park spaces thereafter or as defined by local byelaw*)
- Non slippery ramps, with handrails on atleast one side (as applicable)
- Uniformity in floor level for hindrance-free movement in exterior common areas
- Restrooms (toilets) in campus/ building common areas designed for differently abled people

  (*Atleast one restroom shall be provided for differently abled in all buildings within the campus. Utility buildings need not be considered*)
- Main walkways / pathways with adequate width in exterior common areas
- Visual warning & Way finding signages in exterior common areas

Exemplary Performance:

This credit is not eligible for exemplary performance.

Basic Facilities for Construction Workforce

HWB Credit 4 **Points: 1**

(Not applicable for Existing Campuses)

Intent:

Promote welfare of the construction workforce by providing safe and healthy work conditions.

Compliance Options:

Provide basic facilities for construction workforce, to exceed the guidelines of 'The Building and other Construction Workers Act, 1996 & Rules, 1998'.

- Adequate housing to meet or exceed local / labour byelaw requirement
- Sanitary facilities:

  Provide atleast 3 toilet seats & 3 urinals for the first 100 workers and one additional toilet seat & urinal for every 100 workers thereafter (or) as defined by local / labour byelaw

  (*The sanitary measures should be provided separately for men and women*)
- First-aid and emergency facilities
- Adequate drinking water facilities
- Personal protective equipment (by owner / contractor)
- Dust suppression measures
- Adequate illumination levels in construction work areas
- Site emergency alarm
- Day care/ crèche facility for workers' children

  (*Only if, more than 50 female workers are employed full time*)

Note:

- *The project can consider 'Constructional Practices and Safety Guidelines' from National Building Code (NBC) of India 2005, Part 7 - Constructional Practices and Safety.*

Exemplary Performance:

This credit is not eligible for exemplary performance

GREEN EDUCATION

Green Education

GE Credit 1 **Points: 2**

Intent:

Promote green education by involving campus occupants, local communities & NGOs, to increase awareness levels and encourage implementation of eco-friendly practices.

Compliance Options:

- Organise atleast three outreach/ educational programmes in a year with the involvement of campus occupants, local communities & NGOs, to increase public awareness on environment sustainability and green features of the campus.

  The outreach/ educational programmes can include, but not limited to, promotional materials (posters, brochures, etc.,), information portals, awareness programmes.

- Constitute a formal committee/ forum with the involvement of campus occupants, local communities & NGOs, to identify and implement atleast two eco-friendly practices/ green initiatives within and outside the campus.

  The eco-friendly practices/ green initiatives can include, but not limited to, clean & green campaigns on waste segregation & recycling, water conservation, energy conservation, use of public transportation/ bicycles/ car pooling, world green building week, earth hour.

- Institute awards to acknowledge the efforts of campus occupants, local communities, NGOs for implementing eco-friendly practices/ green initiatives.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Green Campus Guidelines

GE Credit 2 **Points: 1**

Intent:

Provide campus occupants and facility team with descriptive guidelines that educate and help them implement and maintain green design and construction features.

Compliance Options:

Develop & publish the following:

- Project specific green campus guidelines providing information that helps campus occupants to implement and utilise the green features, post occupancy.
- Project specific green campus operation & maintenance and renovation guidelines providing information that helps facilities team to implement the green features, during operation and renovation process**.**

Exemplary Performance:

This credit is not eligible for exemplary performance.

INNOVATION IN DESIGN

Innovation in Design Process

ID Credit 1 **Points: 1-4**

Intent:

Provide projects an opportunity to be awarded points for innovative performance in green campus categories not specifically addressed by the IGBC Green Campus rating system and / or exemplary performance above the requirements set by the IGBC Green Campus rating system.

Compliance Options:

- **ID Credit 1.1: Innovation in Design Process**
  - **Option 1: Innovation**
    Identify the intent of innovation credit, requirement for compliance, approach used to meet the required measures, and documentation to demonstrate compliance.

    ***Notes*:**

    The project shall also meet the following criteria for achieving an Innovation point:

    - *Quantitative performance improvements (comparing a baseline and design case).*
    - *Strategy must be significantly better than standard sustainable design & construction practices.*
    - *Measures must be voluntary. Measures that are mandated by the local byelaws and not addressed in the rating system are not eligible for Innovation.*

    (Or)
  - **Option 2: Exemplary Performance**
    The project is eligible for exemplary performance, if the design and/ or construction measures greatly exceed the credit requirements of the IGBC Green Campus rating system.

    ***Notes*:**

    - As a general rule, points for exemplary performance are awarded for doubling the credit requirements and / or achieving the next incremental percentage threshold.
    - Eligibility criteria for various credits in the IGBC Green Campus rating system are defined in respective credits and Exhibit - A.

- **ID Credit 1.2: Innovation in Design Process**
  Same as credit 1.1
- **ID Credit 1.3: Innovation in Design Process**
  Same as credit 1.1
- **ID Credit 1.4: Innovation in Design Process**
  Same as credit 1.1

Exhibit A - List of Base Credits eligible for Exemplary Performance

Site Planning and Management	
SPM Credit 1	Option 1: Green Buildings within the Campus ➢ ≥ 45% Registered projects built-up area ➢ ≥ 35% Certified projects built-up area
SPM Credit 3	Green Cover or Vegetation ➢ ≥ 30% of the site area is with green cover/ vegetation
SPM Credit 4	Heat Island Reduction, Non-roof ➢ ≥ 95% (Non-roof Impervious Areas) ➢ ≥ 95% (Covered Surface Parking)
Sustainable Transportation	
ST Credit 2	Bicycle Lane Network ➢ 100% of the bicycle network is designed exclusively for bicycles
Water Conservation	
WC Credit 1	Rainwater Harvesting ➢ as defined in credit
WC Credit 2	Landscape Design ➢ ≥ 80% Drought tolerant species
WC Credit 4	Waste Water Treatment and Reuse ➢ ≥ 75% Reuse of treat waste water
Energy Efficiency	
EE Credit 1	Energy Efficiency in Infrastructural Equipment ➢ ≥ 55% reduction in LPD ➢ ≥ 10% efficiency in Centralised Air-conditioning systems
EE Credit 2	On-site Renewable Energy: ➢ ≥ 60% of Campus Infrastructural Equipment/ Systems, excluding Buildings
EE Credit 3	Off-site Renewable Energy: ➢ ≥ 60% (RECs) ➢ 100% (Off-site Renewable Energy Investments)
Material and Resource Management	
MRM Credit 1	Organic Waste Management, Post-occupancy ➢ ≥ 95% (food waste) and ≥ 75% (garden waste)
MRM Credit 3	Local Materials ➢ ≥ 95% of building materials are sourced locally

IGBC Accredited Professional

ID Credit 2 **Points: 2**

Intent:

Support and encourage involvement of IGBC Accredited Professional in green campus projects, so as to integrate appropriate design measures and streamline the certification process.

Compliance Options:

Atleast three participants of the project team shall be IGBC Accredited Professionals.

Annexure I – Mandatory Criteria for Green Features in the Campus Buildings

Annexure I - Mandatory Criteria for Green Features in the Campus Buildings

1) Water Efficient Plumbing Fixtures

Demonstrate that atleast 50% of the buildings in campus (with higher water consumption), use/ retro-fit water efficient plumbing fixtures (as applicable) whose flow rates meet the baseline criteria (in aggregate) given in the table below:

The total annual water consumption of those buildings should not exceed the total base case water consumption computed.

Note:

- *Use of treated waste water / captured rain water shall not be considered to show potable water savings.*

The baseline criteria is as below:

Baseline Flow Rates / Consumption for Plumbing Fixtures

Fixture Type	Maximum Flow Rate/ Consumption	Duration	Estimated Daily Uses per FTE**
Water Closets (Full-flush)	6 LPF	1 flush	1 for male; 1 for female
Water Closets (Half-flush)	3 LPF	1 flush	2 for female
Urinals	4 LPF	1 flush	2 for male
Faucets / Taps*	6 LPM	15 seconds	4
Health Faucet*	6 LPM	15 seconds	1
Showerhead / Hand-held Spray*	10 LPM	8 Minutes	0.1

Source: Uniform Plumbing Code - India

** Reporting pressure for these fixtures shall be at 3 bar.*

*** Full Time Equivalent (FTE) represents a regular building occupant who spends 8 hours per day in the building. Part-time or overtime occupants have FTE values based on their hours per day divided by 8.*

Notes:

- *Water fixtures do not include irrigation systems.*
- *Faucets / Taps installed for hand wash in rest rooms and canteen shall be considered; whereas, faucets / taps installed for dish washing and washing clothes need not be considered.*
- *Rain showers (if any) need to be considered in the calculations under 'Showerhead'.*
- *The baseline flows can be demonstrated at a flowing water pressure of 3 bar. Flowing water pressure of 3 bar does not mean that the water supply in the building is at 3 bar. The building fixtures can operate at lower pressures, however to show compliance under this credit, the design flow rates are to be submitted at 3 bar.*
- *Default occupancy shall be considered as 50% for male and female.*

- *FTE occupancy shall be considered in calculation, including visitors.*
- *In existing campuses, flow rates of the water fixtures can be measured on-site through weighted average approach and report the flow rates.*
- *Plumbing fixtures that are certified by CII under Green Product Certification Programme (GreenPro) or by a third-party agency approved by IGBC can be used by the project to show compliance*.

2) Energy Efficient Lighting Fixtures

Demonstrate that alteast 50% of the campus buildings (with higher energy demand) will comply with the Lighting Power Density (LPD) requirements of ASHRAE Standard 90.1-2010 baseline.

The LPD shall include building - interiors, common areas and parking areas.

Notes:

- *Compliance for the lighting power density shall be shown either through 'Building Area Method' or 'Space-by-Space Method'. If 'Building Area Method' is considered, compliance for parking area lighting shall be shown separately.*
- *The LPD should include power consumption of complete fixture, including lamps and ballasts.*

3) High Performance Air-conditioning Equipment

Demonstrate that alteast 50% of the campus buildings (with higher energy demand), which have installed air-conditioning equipment, will comply with the minimum efficiency/ COP requirements as prescribed in ASHRAE Standard 90.1-2010 baseline.

The air-conditioning equipment shall include Unitary, Packaged and Centralised system.

Annexure II – Criteria for Green Features in the Campus Buildings

Annexure II - Criteria for Green Features in the Campus Buildings

1) Passive Architecture *(2 points)*

Demonstrate that the buildings in the campus have implemented atleast one of the following passive measures that result in energy savings: *(1 point for each measure; maximum 2 points)*

❖ **Exterior Openings:**

Atleast 50% of the buildings in campus shall have a Projection Factor* of 0.5 or more for the exterior openings (fenestration). The compliance shall be met for atleast 75% of the exterior openings in each building.

**Projection Factor is a ratio of the length of overhang projection divided by height from window sill to the bottom end of the overhang (must be permanent). For more details, please refer Energy Conservation Building Code (ECBC).*

❖ **Skylights:**

Skylights shall comply with the maximum U-factor and maximum SHGC requirements as prescribed in Energy Conservation Building Code 2007 (ECBC), Table 4.6: Skylight U-Factor and SHGC Requirements

	Maximum U-factor		**Maximum SHGC**	
Climate Zone	**With Curb**	**Without Curb**	**0 - 2% SRR***	**2.1 - 5% SRR***
Composite	11.24	7.71	0.40	0.25
Hot and Dry	11.24	7.71	0.40	0.25
Warm and Humid	11.24	7.71	0.40	0.25
Moderate	11.24	7.71	0.61	0.40
Cold	11.24	7.71	0.61	0.40

**SRR: Skylight Roof Ratio which is the ratio of the total skylight area of the roof, measured to the outside of the frame, to the gross exterior roof.*

***Notes*:**

- *All enclosed roof areas, including podium, covered surface parking and utility blocks, which are exposed to the sky (at and above ground level) shall be considered for this credit calculation.*
- *Exposed roof area need not include equipment platforms, areas covered with solar photovoltaic & solar water heaters, water body, driveways, pathways, roads, helipads, play areas etc.,*
- *Skylights provided on the basement/ podium areas can also be considered for credit calculations*

❖ **Passive Cooling / Heating Technologies:**

Atleast 10% of the campus built-up area (excluding service areas) shall have Passive Cooling / Heating Technologies such as wind tower, earth tunnel and geothermal technologies.

2) Heat Island Reduction, Roof *(2 points)*

❖ Option 1: High Reflective Materials

Use material with a high solar reflective index to cover atleast 75% of the total exposed roof area of all the buildings in campus (in aggregate), including covered parking.

Note:

- *Material with high solar reflectance index (SRI) include white / light colored broken China mosaic tiles or white cement tiles or other high reflective materials / coatings.*

Minimum Solar Reflective Index (SRI) values for different roof types are provided below:

Solar Reflective Index (SRI) values for different roof types

Roof Type	Slope	Minimum SRI Value	Maximum SRI Value
Low-sloped roof	≤ 2:12	78	-
Steep-sloped roof	> 2:12	29	64

Points are awarded as below:

Percentage of roof area covered with High Reflective Material	Points
≥ 75%	1
≥ 95%	2

(OR)

❖ Option 2: Vegetation

Provide vegetation to cover atleast 50% of the total exposed roof area of all the buildings in campus (in aggregate), including covered parking.

Points are awarded as below:

Percentage of roof area covered with Vegetation	Points
≥ 50%	1
≥ 75%	2

(OR)

❖ Option 3: Combination of High Reflective Materials and Vegetation

Install combination of materials with high solar reflective index and vegetation to cover atleast 75% of the total exposed roof area of all the buildings in campus (in aggregate), including covered parking.

Points are awarded as below:

Percentage of roof area covered with High Reflective Material and Vegetation	Points
≥ 75%	1
≥ 95%	2

Notes:

- *All roof areas, including podium, covered surface parking and utility blocks, which are exposed to the sky (at and above ground level) shall be considered for this credit calculation.*
- *Exposed roof area need not include equipment platforms, areas covered with solar photovoltaic & solar water heaters, skylights, water body, driveways, pathways, roads, play areas etc.,*
- *Artificial vegetation shall not be considered.*
- *SRI values of high reflectance materials shall be as per ASTM Standards. Broken China mosaic tiles are exempted from showing SRI value.*
- *Pavers installed over basement shall have SRI of at least 29 (and not higher than 64).*

3) Water Efficient Plumbing Fixtures *(3 points)*

Demonstrate that atleast 50% of the buildings in campus, use/ retro-fit water efficient plumbing fixtures (as applicable) whose flow rates are 10% less than the baseline criteria (in aggregate) given in the table below:

Note:

- *Use of treated waste water / captured rain water shall not be considered to show potable water savings.*

The baseline criteria is as below:

Baseline Flow Rates / Consumption for Plumbing Fixtures

Fixture Type	Maximum Flow Rate/ Consumption	Duration	Estimated Daily Uses per FTE**
Water Closets (Full-flush)	6 LPF	1 flush	1 for male; 1 for female
Water Closets (Half-flush)	3 LPF	1 flush	2 for female
Urinals	4 LPF	1 flush	2 for male
Faucets / Taps*	6 LPM	15 seconds	4
Health Faucet*	6 LPM	15 seconds	1
Showerhead / Hand-held Spray*	10 LPM	8 Minutes	0.1

Source: Uniform Plumbing Code - India

** Reporting pressure for these fixtures shall be at 3 bar.*
*** Full Time Equivalent (FTE) represents a regular building occupant who spends 8 hours per day in the building. Part-time or overtime occupants have FTE values based on their hours per day divided by 8.*

Points are awarded as below:

Water Efficient Plumbing Fixtures (individually or in aggregate)	**Points**
10% less than baseline criteria	1
15% less than baseline criteria	2
20% less than baseline criteria	3

Notes:

- *Water fixtures do not include irrigation systems.*
- *Faucets / Taps installed for hand wash in rest rooms and canteen shall be considered; whereas, faucets / taps installed for dish washing and washing clothes need not be considered.*
- *Rain showers (if any) need to be considered in the calculations under 'Showerhead'.*
- *The baseline flows can be demonstrated at a flowing water pressure of 3 bar. Flowing water pressure of 3 bar does not mean that the water supply in the building is at 3 bar. The building fixtures can operate at lower pressures, however to show compliance under this credit, the design flow rates are to be submitted at 3 bar.*
- *Default occupancy shall be considered as 50% for male and female.*
- *FTE occupancy shall be considered in calculation, including visitors.*
- *In existing campuses, flow rates of the water fixtures can be measured on-site through weighted average approach and report the flow rates.*
- *Plumbing fixtures that are certified by CII under Green Product Certification Programme (GreenPro) or by a third-party agency approved by IGBC can be used by the project to show compliance.*

4) Waste Water Reuse *(2 points)*

Demonstrate that atleast 50% of the buildings in campus, use treated waste water for atleast 25% of the total water required for flushing, landscape (over built-structures) and cooling tower make-up water (if the project uses water-cooled chillers) of the campus buildings.

Points are awarded as below:

Application (in aggregate)	**Percentage of Water catered through Treated Waste Water**	**Points**
Flushing, landscape (over built-structures) and cooling tower make-up	≥ 25%	1
	≥ 50%	2

Notes:

- *Treated waste water sourced from other sites / local authorities through permanent piped connections or other means can also be considered to show compliance for 'waste water reuse'.*
- *Water from sources such as bore wells, natural wells, municipal water systems is considered as potable water.*
- *Captured rain water can also be considered to show compliance.*
- *The water requirement and average number of watering days for landscaping shall be considered as 6 liters per sq.m. per day (i.e. 6 liters / sq.m. / day) for a minimum of 300 days*
  (or)
  Justify if the water requirement and the average number of watering days for landscaping is less than the above requirement.
- *Potted plants shall not be considered under vegetation.*

5) Eco-friendly Refrigerants *(1 point)*

Demonstrate that refrigerants used in atleast 50% of the buildings in Air-conditioning equipment are eco-friendly and have low or no Ozone Depletion Potential (ODP) and Global Warming Potential (GWP).

The Air-conditioning equipment must comply with the following formula, which sets a maximum threshold for the combined contributions to ozone depletion and global warming potential:

$$LCGWP + LCODP \times 10^5 \leq 13$$

LCODP = [ODPr x (Lr x Life +Mr) x Rc]/Life

LCGWP = [GWPr x (Lr x Life +Mr) x Rc]/Life

LCODP: Lifecycle Ozone Depletion Potential (kg CFC 11 / kW-Year)

LCGWP: Lifecycle Direct Global Warming Potential (kg CO2 / kW-Year)

GWPr: Global Warming Potential of Refrigerant (0 to 12,000 kg CO2 / kg r)

ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 kg CFC 11 / kg r)

Lr: Refrigerant Leakage Rate (0.5% to 2.0%; default of 2% unless otherwise demonstrated)

Mr: End-of-life Refrigerant Loss (2% to 10%; default of 10% unless otherwise demonstrated)

Rc: Refrigerant Charge (0.065 to 0.65 kg of refrigerant per kW of gross AHRI rated cooling capacity or Eurovent Certified cooling capacity)

Life: Equipment Life (10 years; default based on equipment type, unless otherwise demonstrated)

Notes:

- *For multiple types of equipment, a weighted average of all base building Air-conditioning equipment must be calculated using the following formula:*

$$\Sigma \frac{(LCGWP + LCODP \times 105) \times Q_{unit}}{Q_{total}} \leq 13$$

Q_{unit} = *Eurovent Certified cooling capacity of an individual Air-conditioning unit (kW) (or) Gross AHRI rated cooling capacity of an individual Air-conditioning unit (kW)*

Q_{total} = *Total Eurovent Certified cooling capacity of all Air-conditioning (kW) (or) Total gross AHRI rated cooling capacity of all Air-conditioning*

- *Small Air-conditioning units (containing less than 0.25 kg of refrigerant) need not be considered in calculation.*

6) Energy Efficient Lighting Fixtures: *(3 Points)*

Demonstrate that alteast 50% of the campus buildings (with higher energy demand) have reduced the Lighting Power Density (LPD) by atleast 20% over ASHRAE Standard 90.1-2010.

The LPD shall include building - interiors, common areas and parking areas.

Points are awarded as below:

Reduction in Lighting Power Density	Points
≥ 20%	1
≥ 30%	2
≥ 40%	3

7) High Performance Air-conditioning Equipment: *(3 Points)*

Demonstrate that alteast 50% of the campus buildings (with higher energy demand), which have installed air-conditioning equipment, shall have an efficiency/ COP of atleast 2.5% over ASHRAE Standard 90.1-2010 baseline.

The air-conditioning equipment shall include Unitary, Packaged and Centralised system.

Efficiency of air-conditioning systems over ASHRAE Standard 90.1-2010 baseline	Points
≥ 2.5%	1
≥ 5%	2
≥ 7.5%	3

Note:

- *For projects where use of water cooled chillers is not allowed by the local authorities due to unavailability of water for cooling tower make-up, air cooled chillers can be considered in base case in lieu of water cooled chillers. Baseline COP of air cooled chillers will be as per ASHRAE Standard 90.1-2010.*

8) On-site Renewable Energy *(3 points)*

Demonstrate that atleast 50% of the campus buildings (with higher energy demand), which have on-site renewable energy generation for atleast 5% of total annual lighting energy consumption of the buildings considered, including interior & common areas.

Points are awarded as below:

Percentage of On-site Renewable Energy Generated to the Total Annual Lighting Energy Consumption	Points
≥ 5 %	1
≥ 10 %	2
≥ 15 %	3

Notes:

- *Renewable energy sources include solar energy, wind power, biomass, etc.*
- *Solar hot water systems cannot be considered as power generation source and cannot be subtracted from the total annual energy consumption of the proposed case.*
- *The total annual lighting energy consumption can be arrived either through Performance based approach or Prescriptive approach.*
- *If Prescriptive approach is considered, estimate the total annual lighting energy consumption of the building by calculating the energy consumption of all lighting fixtures based on the number of hours of operation per day.*

9) Daylighting *(2 points)*

The campus can choose any one of the following options or a combination, to show compliance:

- ❖ Option 1 - Simulation Approach
- ❖ Option 2 - Measurement Approach

Points are awarded as below:

Percentage of Regularly Occupied Areas with Daylighting	Points
≥ 75%	1
≥ 95%	2

Notes:

- *Regularly occupied areas are those where people sit or stand as they work, irrespective of the number of days occupied in a year. Regularly occupied areas shall include only enclosed spaces.*
- *Regularly occupied areas include work stations, cabins, meeting rooms, etc.; whereas, areas with audio-visual facilities such as auditoriums, conference rooms, etc., can be excluded from this credit calculation, with justification and supporting documents.*
- *Non-regularly occupied areas include toilets, store rooms, etc.,*
- *Regularly occupied areas which are used for multi-purposes, such as cafeteria-cum-meeting room, can be considered as separate spaces based on the function. The room boundary need not be a physical boundary.*
- *Tenant-occupied buildings should show compliance through feasible typical floor plans & sections.*
- *Non-enclosed spaces need not show compliance.*
- *Project with multiple buildings (including projects with common basement) must independently meet the Daylighting criteria for each building*

❖ **Option 1: Simulation Approach**

Demonstrate through simulation that 75% of the regularly occupied spaces in atleast 50% of the buildings in campus achieve daylight illuminance levels for a minimum of 110 Lux (and a maximum of 2,200 Lux) in a clear sky condition on 21st September at 12 noon, at working plane.

Areas with 2,200 Lux or more daylight illumination levels should not be considered.

❖ **Option 2: Measurement Approach**

Demonstrate through daylight illuminance measurement that 75% of the regularly occupied spaces in atleast 50% of the buildings in campus achieve daylight illuminance levels for a minimum of 110 Lux. Areas with 2,200 Lux or more daylight illumination levels shall be not considered.

Measurements shall be taken after installation of furniture, equipment & systems at work plane height at 9 am, 12 pm, and 3 pm, on a 10 foot square grid. To show compliance, consider the average of the measurements taken at 9 am, 12 pm, and 3 pm.

10) Outdoor Views *(1 point)*

For atleast 50% of the buildings in campus, achieve direct line of sight to vision glazing between 0.9 meters (3 feet) and 2.1 meters (7 feet) above the finished floor level, for building occupants in atleast 75% of all regularly occupied spaces.

Also, the project shall comply with the following criteria:

- The building occupants must not have any obstruction of views at least 8 meters (26.2 feet) from the exterior vision glazing.
  (Or)
- The building occupants must have access either to sky or flora & fauna or both.

Notes:

- *Regularly occupied areas are those where people sit or stand as they work, irrespective of the number of days occupied in a year. Regularly occupied areas shall include only enclosed spaces.*
- *Regularly occupied areas include work stations, cabins, meeting rooms, etc.; whereas, areas with audio-visual facilities such as auditoriums, conference rooms, etc., can be excluded from this credit calculation, with justification and supporting documents.*
- *Non-regularly occupied areas include toilets, store rooms, etc.,*
- *Regularly occupied areas which are used for multi-purposes, such as cafeteria-cum-meeting room, can be considered as separate spaces based on the function. The room boundary need not be a physical boundary.*
- *Internal courtyards with vegetation can be considered for this credit calculation.*
- *Tenant-occupied buildings shall show compliance through feasible typical floor plans & sections.*
- *Non-enclosed spaces need not show compliance.*
- *Project with multiple buildings (including projects with common basement) must independently meet the Daylighting criteria for each building.*

Annexure III - Documentation Required for Precertification and Certification

Site Planning & Management

SPM Mandatory Requirement 1: Green Buildings within the Campus

Precertification

Option 1: Green Buildings Built-up Area within the Campus

- **Details** of the projects that are registered/ certified under the IGBC rating systems. Details shall include - Name of the project, Location, Registration number, Type of rating system, Built-up area (excluding parking), Year of registration/ certification (as applicable)
- **Tentative calculation** indicating the percentage of registered/ certified buildings built-up area (excluding parking) to the total built-up area of the buildings (excluding parking) within the campus

Option 2: Green features within the Campus Buildings

Water Efficient Plumbing Fixtures

- **List** of plumbing fixtures (flow and flush) proposed in the project, with respective make & model and flow rates
- **Tentative FTE occupancy calculations** considering the building occupants and the visitors
- **Manufacturer data sheets/ brochures/ letters** indicating the flow rates of the plumbing fixtures (flow and flush) at 3 bar flowing water pressure
- **Tentative water use reduction calculations** for the plumbing fixtures, considering atleast 50% of the buildings in campus (with higher water consumption)

Energy Efficient lighting Fixtures

- **Details** of the proposed lighting fixtures (with make) in the project
- **Tentative LPD calculations,** as per ASHRAE Standard 90.1-2010 baseline, considering atleast 50% of the buildings in campus (with higher energy demand). The LPD shall include building - interiors, common areas and parking areas
- Conceptual interior lighting layouts. (Optional)

High Performance Air-conditioning Equipment

- **Details** of the proposed air-conditioning systems indicating the Efficiency/ COP values. air-conditioning equipment shall include Unitary, Packaged and Centralised system
- **Tentative calculation** indicating the percentage improvement of air-conditioning system Efficiency/ COP over base case values as per ASHRAE Standard 90.1-2010 baselines

Certification

Option 1: Green Buildings Built-up Area within the Campus

- **Details** of the projects that are registered/ certified under the IGBC rating systems. Details shall include - Name of the project, Location, Registration number, Type of rating system, Built-up area (excluding parking), Year of registration/ certification (as applicable)

- **Calculation** indicating the percentage of registered/ certified buildings built-up area (excluding parking) to the total built-up area of the buildings (excluding parking) within the campus

Option 2: Green features within the Campus Buildings

Water Efficient Plumbing Fixtures

- **List** of plumbing fixtures (flow and flush) installed in the project, with respective make & model and flow rates
- **FTE occupancy calculations** considering the building occupants and the visitors
- **Manufacturer data sheets/ brochures/ letters** indicating the flow rates of the plumbing fixtures (flow and flush) at 3 bar flowing water pressure
- **Water use reduction calculations** for the plumbing fixtures, considering atleast 50% of the buildings in campus (with higher water consumption)
- **Purchase invoice** of plumbing fixtures (flow and flush) with make & model. *(On a case-to-case basis, assessor may request to submit purchase invoices) (Optional)*

Energy Efficient lighting Fixtures

- **Details** of the lighting fixtures (make & model) installed in the project
- **LPD calculations,** as per ASHRAE Standard 90.1-2010 baselines, considering atleast 50% of the buildings in campus (with higher energy demand). The LPD shall include building - interiors, common areas and parking areas
- **Photographs** showing the typical lighting fixtures
- Interior lighting layouts *(Optional)*

High Performance Air-conditioning Equipment

- **Details** of the installed air-conditioning systems indicating the Efficiency/ COP values. Air-conditioning equipment shall include Unitary, Packaged and Centralised system
- **Calculation** indicating the percentage improvement of air-conditioning system Efficiency/ COP over base case values as per ASHRAE Standard 90.1-2010 baselines
- **Purchase invoice** of air-conditioning systems with make & model

  (On a case-to-case basis, assessor may request to submit purchase invoices) (Optional)

SPM Mandatory Requirement 2: Soil Erosion Control

Precertification

- **Narrative** describing the Erosion and Sedimentation Control (ESC) measures proposed in the project, during construction and post occupancy
- **Conceptual site drawings** highlighting ESC measures proposed on-site, during construction and post occupancy
- **Photographs** showing ESC measures taken at various stages of construction, before construction and during construction, as applicable based on current status of project

Certification

- **Narrative** describing the Erosion and Sedimentation Control (ESC) measures implemented, during construction and post occupancy
- **Site drawings** highlighting ESC measures implemented on-site, during construction and post occupancy
- **Photographs** showing ESC measures taken at various stages of construction, before construction, during construction and post occupancy

SPM Credit 1: Green Buildings within the Campus

Precertification

Option 1: Green Buildings Built-up Area within the Campus

- **Details** of the projects that are registered/ certified under the IGBC rating systems. Details shall include - Name of the project, Location, Registration number, Type of rating system, Built-up area (excluding parking), Year of registration/ certification (as applicable)
- **Tentative calculation** indicating the percentage of registered/ certified buildings built-up area (excluding parking) to the total built-up area of the buildings (excluding parking) within the campus

Option 2: Green features within the Campus Buildings

Passive Architecture

- **Narrative** describing the strategies proposed to design passive architecture measures, as applicable
- **Conceptual drawings and rendered images** (such as site plan, floor plans, sections & elevations, images, as applicable) showing the passive architectural features

Exterior Openings (Projection Factor):

- **Tentative calculations** indicating the number of exterior openings (fenestration) having a Projection Factor of 0.5 or more to the total number of the exterior openings (fenestration), in percentage

Skylights:

- **Tentative calculations** indicating the roof area with skylights to the total net roof area, in percentage
- U-value and SHGC details of proposed skylight

Daylight:

- **Site/ master plan** showing all the buildings
- **Conceptual building floor/ roof plans** with window and skylight schedule
- **Draft daylight simulation report** with sky conditions (such as date & month; time; ambient lux levels) and wall, floor & roof reflectance properties, for all the regularly occupied spaces in the building. During simulation, consider shading devices and 'shadow effect' of adjacent buildings
- **Manufacturer brochure/ cut-sheet/ letter** of the glass proposed in the project showing the Visual Light Transmittance (VLT)

Passive Cooling / Heating Technologies:

Narrative describing the passive cooling / heating technologies proposed in the project, along with conceptual drawings and other supporting documents

Heat Island Reduction, Roof

Option 1: High Reflective Materials

- **Narrative** describing the strategies proposed to reduce heat island effect from roof areas
- **Tentative roof area calculations** indicating the total area covered with high reflective roof materials to the total exposed roof area (excluding service & utility areas), in percentage
- **Conceptual roof plans** highlighting the area to be covered with high reflective roof materials
- **List** of the high reflective materials (make & model) proposed in the project

Option 2: Vegetation

- **Narrative** describing the strategies proposed to reduce heat island effect from roof areas
- **Tentative roof area calculations** indicating the total area covered with vegetation to the total exposed roof area (excluding service & utility areas), in percentage
- **Conceptual roof plans** highlighting the area to be covered with vegetation in the project

Option 3: Combination of High Reflective Materials and Vegetation

- **Narrative** describing the proposed strategies to reduce heat island effect from roof areas
- **Tentative roof area calculations** indicating the area covered with high reflective roof materials and vegetation to the total exposed roof area (excluding service & utility areas), in percentage
- **Conceptual roof plans** highlighting the area to be covered with high reflective roof materials and/ or vegetation installed in the project

List of the high reflective materials (make & model) proposed in the project

Water Efficient Plumbing Fixtures

- **List** of plumbing fixtures (flow and flush) proposed in the project, with respective make & model and flow rates
- **Tentative FTE occupancy calculations** considering the building occupants and the visitors
- **Manufacturer data sheets/ brochures/ letters** indicating the flow rates of the plumbing fixtures (flow and flush) at 3 bar flowing water pressure
- **Tentative water use reduction calculations** for the plumbing fixtures, considering atleast 50% of the buildings in campus (with higher water consumption)

Waste Water Reuse

- **Tentative calculations** indicating the water requirement for terrace landscaping, flushing and air-conditioning cooling tower make-up water (as applicable)
- **Tentative daily and annual water balance** of the project

Note:

The water balance shall include calculations (approximate) showing water demand for terrace landscaping, flushing and air-conditioning cooling tower make-up water (if the project uses water-cooled chillers), and quantity of waste water reused for such applications

- **Schematic drawing** showing proposed dual plumbing lines, if treated waste water is reused for flushing

Eco-friendly Refrigerants

- **Type of refrigerants** proposed in the air-conditioning systems
- **Calculations** indicating the combined contributions of the refrigerant proposed in the air-conditioning system, to ozone depletion and global warming

Energy Efficient lighting Fixtures

- **Details** of the proposed lighting fixtures (with make) in the project
- **Tentative LPD calculations,** as per ASHRAE Standard 90.1-2010 baselines, considering atleast 50% of the buildings in campus (with higher energy demand). The LPD shall include building - interiors, common areas and parking areas
- Conceptual interior lighting layouts (Optional)

High Performance Air-conditioning Equipment

- **Details** of the proposed air-conditioning systems indicating the Efficiency/ COP values. Air-conditioning equipment shall include Unitary, Packaged and Centralised system
- **Tentative calculation** indicating the percentage improvement of **a**ir-conditioning system Efficiency/ COP over base case values as per ASHRAE Standard 90.1-2010 baselines

On-site Renewable Energy

- **Narrative** describing the on-site renewable energy systems proposed in the project
- **Conceptual drawing** showing the location of the renewable energy systems
- **Feasibility study report** with technical details of the renewable energy systems
- **Tentative calculations** indicating the total annual energy generation from the on-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the building (interior, common & parking areas), in percentage. Also, provide the details of

capacity of the renewable energy system (kW)

Daylighting

Option 1: Simulation Approach

- **Draft daylight simulation report** with sky conditions (such as date & month; time; ambient Lux levels) and wall, floor & roof reflectance properties, for all the regularly occupied spaces in the building. During simulation, consider shading devices and 'shadow effect' of adjacent buildings
- **Site/ master plan** showing all the buildings
- **Conceptual elevations and floor/ roof plans** with window and skylight schedule
- **Manufacturer brochure/ cut-sheet/ letter** of the glass proposed in the project showing the Visual Light Transmittance (VLT) **(Optional)**

Outdoor Views

- **Site/ master plan** showing all the buildings
- **Conceptual furniture layouts** of all the typical floors
- **Sectional drawings** indicating the direct line of sight to vision glazing, for each typical floor

Tentative calculations (floor-wise) indicating the regularly occupied spaces having access to outdoor views to the total regularly occupied space

Certification

Option 1: Green Buildings Built-up Area within the Campus

- **Details** of the projects that are registered/ certified under the IGBC rating systems. Details shall include - Name of the project, Location, Registration number, Type of rating system, Built-up area (excluding parking), Year of registration/ certification (as applicable)
- **Calculation** indicating the percentage of registered/ certified buildings built-up area (excluding parking) to the total built-up area of the buildings (excluding parking) within the campus

Option 2: Green features within the Campus Buildings

Passive Architecture

- **Narrative** describing the strategies proposed to design passive architecture measures, as applicable.
- **Drawings and photographs** (such as site plan, floor plans, sections & elevations, images, as applicable) showing the passive architectural features

Exterior Openings (Projection Factor):

- **Detail calculations** indicating the number of exterior openings (fenestration) having a Projection Factor of 0.5 or more to the total number of the exterior openings (fenestration), in percentage

Skylights:

- **Calculations** indicating the roof area with skylights to the total net roof area, in percentage.
- U-value and SHGC details of installed skylight

Daylight:

Simulation Approach

- **Site/ master plan** showing all the buildings
- **Building elevations and Floor/ roof plans** with window and skylight schedule
- **Daylight simulation report** with sky conditions (such as date & month; time; ambient lux levels) and wall, floor & roof reflectance properties, for all the regularly occupied spaces in the building. During simulation, consider shading devices and 'shadow effect' of adjacent buildings
- **Manufacturer brochure/ cut-sheet/ letter** of the glass installed in the project showing the Visual Light Transmittance (VLT)

Measurement Approach

- **Site/ master plan** showing all the buildings
- **Floor/ roof plans** with window and skylight schedule
- **Daylight analysis report** indicating daylight illuminance levels measured at work plane height, for all the regularly occupied spaces in the building
- **Manufacturer brochure/ cut-sheet/ letter** of the glass installed in the project showing the Visual Light Transmittance (VLT)

Passive Cooling / Heating Technologies:

- **Narrative** describing the passive cooling / heating technologies, along with drawings and other supporting documents

Heat Island Reduction, Roof

Option 1: High Reflective Materials

- **Narrative** describing the strategies implemented to reduce heat island effect from roof areas
- **Roof area calculations** indicating the total area covered with high reflective roof materials to the total exposed roof area (excluding service & utility areas), in percentage

- **Roof plans** highlighting the area covered with high reflective roof materials
- **Purchase invoice/ Payment receipt** of the high reflective roof materials sourced for the project *(Optional)*
- **Manufacturer letters/ brochures** indicating the Solar Reflective Index (SRI) of high reflective roof materials used in the project
- **Photographs** showing the measures to reduce heat island effect from roof areas

Option 2: Vegetation

- **Narrative** describing the strategies implemented to reduce heat island effect from roof areas
- **Roof area calculations** indicating the total area covered with vegetation to the total exposed roof area (excluding service & utility areas), in percentage
- **Roof plans** highlighting the area covered with vegetation in the project
- **Declaration letter** from the owner/ developer stating that the vegetated areas on the roof surfaces will be retained for life
- **Photographs** showing the measures to reduce heat island effect from roof areas

Option 3: Combination of High Reflective Materials and Vegetation

- **Narrative** describing the strategies implemented to reduce heat island effect from roof areas
- **Roof area calculations** indicating the area covered with high reflective roof materials and vegetation to the total exposed roof area (excluding service & utility areas), in percentage
- **Roof plans** highlighting the area covered with high reflective materials and / or vegetation installed in the project
- **Declaration letter** from the owner/ developer stating that the vegetated areas on the roof surfaces will be retained for life
- **Purchase invoice/ Payment receipt** of the high reflective roof materials sourced for the project *(Optional)*
- **Manufacturer letters/ brochures** indicating the Solar Reflective Index (SRI) of high reflective roof materials used in the project
- **Photographs** showing the measures to reduce heat island effect from roof areas

Water Efficient Plumbing Fixtures

- **List** of plumbing fixtures (flow and flush) installed in the project, with respective make & model and flow rates

- **FTE occupancy calculations** considering the building occupants and the visitors
- **Manufacturer data sheets/ brochures/ letters** indicating the flow rates of the plumbing fixtures (flow and flush) at 3 bar flowing water pressure
- **Water use reduction calculations** for the plumbing fixtures, considering atleast 50% of the buildings in campus (with higher water consumption)
- **Purchase invoice** of plumbing fixtures (flow and flush) with make & model. *(On a case-to-case basis, assessor may request to submit purchase invoices) (Optional)*

Waste Water Reuse

- **Calculations** indicating the water requirement for terrace landscaping, flushing and air-conditioning cooling tower make-up water (including evaporative losses, blow down losses and drift losses)
- **Daily and annual water balance** of the project

  Note:

  The water balance shall include calculations (approximate) showing the water demand for terrace landscaping, flushing and air-conditioning cooling tower make-up water (if the project uses water-cooled chillers), and quantity of waste water reused for such applications

- **Schematic drawing** showing dual plumbing lines, if treated waste water is reused for flushing

Eco-friendly Refrigerants

- **Type of refrigerants** installed in the **a**ir-conditioning systems
- **Calculations** indicating the combined contributions of the refrigerant installed in the air-conditioning system, to ozone depletion and global warming

Energy Efficient lighting Fixtures

- **Details** of the lighting fixtures (make & model) installed in the project
- **LPD calculations,** as per 'ASHRAE Standard 90.1-2010 baselines, considering atleast 50% of the buildings in campus (with higher energy demand). The LPD shall include building - interiors, common areas and parking areas
- **Photographs** showing the typical lighting fixtures
- Interior lighting layouts**.** *(Optional)*

High performance Air-conditioning Equipment

- **Details** of the installed air-conditioning systems indicating the Efficiency/ COP values. Air-conditioning equipment shall include Unitary, Packaged and Centralised system

- **Calculation** indicating the percentage improvement of air-conditioning system Efficiency/ COP over base case values as per ASHRAE Standard 90.1-2010 baselines
- **Purchase invoice** of air-conditioning systems with make & model

  (On a case-to-case basis, assessor may request to submit purchase invoices) (Optional)

On-site Renewable Energy

- **Narrative** describing the installed renewable energy systems, along with the technical details
- **Drawing** showing the location of installed renewable energy systems
- **Calculations** indicating the total annual energy generation from the on-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the building (interior, common & parking areas), in percentage. Also, provide the details of capacity of the renewable energy system (kW)
- **Purchase invoice/ Payment receipts** of the installed renewable energy systems *(Optional)*
- **Photographs** showing the renewable energy systems

Daylighting

Option 1: Simulation Approach

- **Daylight simulation report** with sky conditions (such as date & month; time; ambient Lux levels) and wall, floor & roof reflectance properties, for all the regularly occupied spaces in the building. During simulation, consider shading devices and 'shadow effect' of adjacent buildings
- **Site/ master plan** showing all the buildings
- **Floor/ roof plans** with window and skylight schedule
- **Manufacturer brochure/ cut-sheet/ letter** of the glass installed showing the Visual Light Transmittance (VLT)
- **Photographs** showing the building elevations (all sides) and interiors spaces at different floors

Option 2: Measurement Approach

- **Daylight analysis report** indicating daylight illuminance levels measured at work plane height, for all the regularly occupied spaces in the building
- **Site/ master plan** showing all the buildings
- **Floor/ roof plans** with window and skylight schedule
- **Manufacturer brochure/ cut-sheet/ letter** of the glass installed showing the Visual Light Transmittance (VLT)

- **Photographs** showing the building elevations (all sides) and interiors spaces at different floors

Outdoor Views

- **Site/ master plan** showing all the buildings
- **Furniture layouts** of all the floors
- **Sectional drawings** indicating the direct line of sight to vision glazing, for each typical floor
- **Calculations (floor-wise)** indicating the regularly occupied spaces having access to outdoor views to the total regularly occupied space
- **Photographs** showing the outdoor views, for all the floors

SPM Credit 2: Site Preservation

(Not Applicable for Existing Campuses)

Precertification

- **Narrative** describing the strategies proposed to retain the existing landscape, existing natural rocks, preserve or transplant existing trees, site contour, and existing water bodies and channels, as applicable
- **Conceptual site survey plan/ sectional drawings** showing the retention/ preservation measures for each of the site features, before and after development, as applicable:
  - Existing landscape, without any disturbance whatsoever
  - Existing natural rocks
  - Preserve or transplant existing trees
  - Site contour
  - Existing water bodies and channels
- **Tentative calculations** indicating the site features retained/ preserved, before and after development, in percentage

Certification

- **Narrative** describing the strategies implemented to retain the existing landscape, existing natural rocks, preserve or transplant existing trees, site contour, and existing water bodies and channels, as applicable
- **Site survey plan/ Sectional drawings** showing the retention/ preservation measures for each of the following site features, before and after development, as applicable:
  - Existing landscape, without any disturbance whatsoever
  - Existing natural rocks
  - Preserve or transplant existing trees
  - Site contour
  - Existing water bodies and channels
- **Calculations** indicating the site features retained/ preserved, before and after development, in percentage
- **Photographs** showing the site features retained/ preserved, before and after development

SPM Credit 3: Green Cover or Vegetation

Precertification

Case A: Green Cover or Vegetation:

- **Conceptual site drawing** highlighting the area with green cover or vegetation
- **Tentative calculations** indicating the total area with green cover or vegetation on the ground to the total site area, in percentage

Case B: Plantation of Tree Saplings:

- **Narrative** describing the strategies proposed to plant new saplings and retention of existing trees, within the project site
- **Conceptual landscape drawing** highlighting the tree saplings and existing trees
- **Tentative calculations** indicating the total site area (in acres), tree saplings and existing trees

Certification

Case A: Green Cover or Vegetation:

- **Site drawing** highlighting the area with green cover or vegetation
- **Calculations** indicating the total area with green cover or vegetation on the ground to the total site area, in percentage
- **Photographs** showing the site area with green cover or vegetation

Case B: Plantation of Tree Saplings:

- **Narrative** describing the strategies implemented to plant new saplings and retention of existing trees, within the project site
- **Landscape drawing** highlighting the tree saplings and existing trees
- **Calculations** indicating the total site area (in acres), tree saplings and existing trees
- **Photographs** showing the tree saplings and existing trees

SPM Credit 4: Heat Island Effect, Non-roof

Precertification

Option 1: Non-roof Impervious Areas

- **Narrative** describing the proposed strategies to reduce heat island effect from non-roof areas
- **Conceptual site drawing** highlighting the non-roof impervious (hardscape) areas and the areas covered with shade from tree cover within 5 years, (and/ or) open grid pavers, including grass pavers (and/ or) hardscape materials with SRI of atleast 29 (and not higher than 64)
- **Tentative calculations** indicating the area covered with shade from tree cover, (and/ or) open grid pavers, including grass pavers (and/ or) hardscape materials with SRI of atleast 29 (and not higher than 64) to the total exposed non-roof impervious area, in percentage
- **Tentative list** of the existing trees/ plant species which can mature into fully grown up trees for shading, within the next 5 years

Option 2: Covered Parking

- **Narrative** describing the proposed strategies to reduce heat island effect from non-roof areas
- **Tentative calculations** indicating the total number of parking spaces provided under cover to the total number of parking spaces, in percentage
- **Conceptual parking layouts** highlighting the parking areas under cover

Certification

Option 1: Non-roof Impervious Areas

- **Narrative** describing the strategies to reduce heat island effect from non-roof areas
- **Site drawing** highlighting the non-roof impervious (hardscape) areas and the areas covered with shade from tree cover within 5 years, (and/ or) open grid pavers, including grass pavers (and/ or) hardscape materials with SRI of atleast 29 (and not higher than 64)
- **Calculations** indicating the area covered with shade from tree cover, (and/ or) open grid pavers, including grass pavers (and/ or) hardscape materials with SRI of atleast 29 (and not higher than 64) to the total exposed non-roof impervious area, in percentage

- **List** of the existing trees/ plant species which can mature into fully grown up trees for shading, within the next 5 to 8 years
- **Purchase invoice/ Payment receipt** of the reflective materials, if sourced *(Optional for existing campuses)*
- **Manufacturer letters/ brochures** indicating the Solar Reflective Index (SRI) of the reflective materials *(Optional for existing campuses)*
- **Photographs** showing the measures implemented to reduce heat island effect from non-roof areas

Option 2: Covered Parking

- **Narrative** describing the strategies to reduce heat island effect from non-roof areas
- **Calculations** indicating the total number of parking spaces provided under cover to the total number of parking spaces, in percentage
- **Parking layouts** highlighting the parking areas under cover
- **Photographs** showing the measures to reduce heat island effect from non-roof areas

SPM Credit 5: Outdoor Light Pollution reduction

Precertification

Option 1: Prescriptive Approach

- **Narrative** describing the design strategies proposed for outdoor light pollution reduction and exterior LPD
- **Tentative calculations** indicating the upward lighting for each typical lighting fixture. The calculations shall include the lighting fixture type, quantity, total lumens, upward lumens and upward lighting percentage
- **Tentative LPD calculations**, along with the list of the exterior lighting fixtures (with make & model) proposed in the project
- **Conceptual site drawing** highlighting the exterior lighting fixtures proposed in the project

Option 2: Simulation Approach

- **Narrative** describing the design strategies proposed for outdoor light pollution reduction and exterior LPD
- **Conceptual site drawing** highlighting the exterior lighting fixtures proposed in the project
- **Draft simulation report** showing compliance with outdoor light pollution reduction criteria. The report shall include the list of proposed lighting fixtures (with make & model), photometric data and LDP calculations

Certification

Option 1: Prescriptive Approach

- **Narrative** describing the strategies implemented for outdoor light pollution reduction and exterior LPD
- **Calculations** indicating upward lighting for each typical lighting fixture. The calculations shall include the lighting fixture type, quatity, total lumens, upward lumens and upward lighting percentage
- **LPD calculations,** along with the list of the exterior lighting fixtures (with make & model) proposed in the project
- **Site drawing** highlighting the exterior lighting fixtures
- **Photographs** showing the typical exterior lighting fixtures

- **Manufacturer letters/ brochures** of the exterior lighting fixtures. *(Optional for existing campuses)*

Option 2: Simulation Approach

- **Narrative** describing the strategies implemented for outdoor light pollution reduction and exterior LPD
- **Site drawing** highlighting the exterior lighting fixtures
- **Simulation report** showing compliance with outdoor light pollution reduction criteria. The report should include the list of lighting fixtures (with make & model), photometric data and LDP calculations
- **Photographs** showing the typical exterior lighting fixtures
- **Manufacturer letters/ brochures** of the exterior lighting fixtures. *(Optional for existing campuses)*

Sustainable Transportation

ST Credit 1: Pedestrian Network

Precertification

- **Conceptual site plan** showing pedestrian network areas with tree cover or structured cover, within the campus, between main buildings and basic amenities
- **Table** showing tentative illumination levels for pedestrian network within the campus as per NBC of India

Certification

- **Site plan** showing pedestrian network areas with tree cover or structured cover, within the campus, between main buildings and basic amenities
- **Table** showing illumination levels for pedestrian network within the campus as per NBC of India
- **Photographs** showing pedestrian network areas with tree cover or structured cover and external light fixtures installed along the pedestrian network

ST Credit 2: Bicycle Lane Network

Precertification

Bicycle Lane Network:

- **Conceptual site plan** showing the following:
  - bicycle lane network areas within the campus between main buildings & basic amenities
  - designated bicycle parking areas at all main buildings/ basic amenities, within a walking distance of 100 meters
- **Table** showing tentative illumination levels for bicycle lane network within the campus as per NBC of India

Bicycles Provision:

- **Tentative calculation** indicating the number of bicycles to be provided for campus occupants.
- **Conceptual site plan** showing the proposed location of the bicycle serving facilities

Certification

Bicycle Lane Network:

- **Site plan** showing the following:
  - bicycle lane network areas within the campus between main buildings & basic amenities
  - designated bicycle parking areas at all main buildings/ basic amenities, within a walking distance of 100 meters
- **Table** showing illumination levels for bicycle lane network within the campus as per NBC of India

Bicycles Provision:

- **Calculation** indicating the number of bicycles provided for campus occupants
- **Site plan** showing the location of the bicycle serving facilities

ST Credit 3: Access to Sustainable Transportation

Precertification

Option 1: Public Transport

- **Site vicinity map** (with scale) highlighting the location of intra-city railway station (or) a bus-stop, within 800 meters from the campus entrance(s). Also, show pedestrian access from the entrance(s) to the public transport facility
- **Photographs** showing the intra-city railway station (or) a bus-stop *(Optional)*

Option 2: Shuttle Services

- **Draft copy of contract agreement** that will be signed between the project owner and the shuttle service provider. (as applicable)
- **Tentative details of shuttle services** - type (fuel used) and number of vehicles, frequency (peak and non-peak hours), seating capacity, route details (boarding & destination points), etc.,
- **Tentative calculations** indicating the number of campus occupants catered through electric vehicles/ CNG-powered vehicles/ fossil fuel based vehicles in the project to the total number of building occupants, in percentage
- **Tentative calculations** indicating the total number of electric vehicles and the number of parking spaces with electric charging facilities in the project, in percentage. (as applicable)
- **Site vicinity map** (with scale) highlighting the location of CNG filling station, within 5 km from the campus entrance(s). (as applicable)
- **Site plan** showing the alighting point of shuttle services

Certification

Option 1: Public Transport

- **Site vicinity map** (with scale) highlighting the location of intra-city railway station (or) a bus-stop, within 800 meters from the campus entrance(s). Also, show pedestrian access from the entrance(s) to the public transport facility
- **Photographs** showing the intra-city railway station (or) a bus-stop

Option 2: Shuttle Services

- **Copy of contract agreement** that will be signed between the project owner and the shuttle service provider. (as applicable)
- **Details of shuttle services** - type (fuel used) and number of vehicles, frequency (peak and non-peak hours), seating capacity, route details (boarding & destination points), etc.,

- **Calculations** indicating the number of campus occupants catered through electric vehicles/ CNG-powered vehicles/ fossil fuel based vehicles in the project to the total number of building occupants, in percentage
- **Calculations** indicating the total number of electric vehicles and the number of parking spaces with electric charging facilities in the project, in percentage. (as applicable)
- **Site vicinity map** (with scale) highlighting the location of CNG filling station, within 5 km from the campus entrance(s). (as applicable)
- **Site plan** showing the alighting point of shuttle services

Water Conservation

Annexure III - **Documentation Required for Precertification and Certification**

WC Mandatory Requirement 1: Rainwater Harvesting

Precertification

Case A: Rainwater Harvesting

- **Narrative** describing the strategies proposed to capture/ harvest rain water from roof & non-roof areas
- **Tentative calculations** indicating the run-off volume captured/ harvested from roof and non-roof
- **Conceptual external storm water drain layout** highlighting the location of rain water harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings

Case B: High Groundwater Table

- **Hydrology report** (approved by third-party) indicating the level of water table, at different locations within the project site

Certification

Case A: Rainwater Harvesting

- **Narrative** describing the strategies implemented to capture/ harvest rain water from roof & non-roof areas
- **Calculations** indicating the run-off volume captured/ harvested from roof and non-roof
- **External storm water drain layout** highlighting the location of rain water harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings of rain water harvesting systems
- **Photographs** of rain water harvesting systems, taken during and after construction

Case B: High Groundwater Table

- **Hydrology report** (approved by third-party) indicating the level of water table, at different locations within the project site

WC Credit 1: Rainwater Harvesting

Precertification

Case A: Rainwater Harvesting

- **Narrative** describing the strategies proposed to capture/ harvest rain water from roof & non-roof areas
- **Tentative calculations** indicating the run-off volume captured/ harvested from roof and non-roof
- **Conceptual external storm water drain layout** highlighting the location of rain water harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings

Case B: High Groundwater Table

- **Hydrology report** (approved by third-party) indicating the level of water table, at different locations within the project site
- **Narrative** describing the strategies proposed to capture/ harvest rain water from roof & non-roof areas
- **Tentative calculations** indicating the run-off volume captured/ harvested from roof and non-roof
- **Conceptual external storm water drain layout** highlighting the location of rain water harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings

Certification

Case A: Rainwater Harvesting

- **Narrative** describing the strategies implemented to capture/ harvest rain water from roof & non-roof areas
- **Calculations** indicating the run-off volume captured/ harvested from roof and non-roof
- **External storm water drain layout** highlighting the location of rain water harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings of rain water harvesting systems
- **Photographs** of rain water harvesting systems, taken during and after construction

Case B: High Groundwater Table

- **Hydrology report** (approved by third-party) indicating the level of water table, at different locations within the project site
- **Narrative** describing the strategies implemented to capture/ harvest rain water from roof & non-roof areas
- **Calculations** indicating the run-off volume captured/ harvested from roof and non-roof
- **External storm water drain layout** highlighting the location of rain water harvesting - ponds, pits, storage tanks, etc., as applicable, including cross-sectional drawings of rain water harvesting systems
- **Photographs** of rain water harvesting systems, taken during and after construction

WC Credit 2: Landscape Design

Precertification

- **Conceptual landscape plan(s)** highlighting landscaped area covered with turf, drought tolerant species, native, adaptive & other plant species on the ground
- **Tentative calculations** indicating the total landscape area (on the ground) to the total site area, in percentage
- **List** of turf, drought tolerant, native and adaptive species proposed in the project

Turf:

- **Tentative calculations indicating** the area covered with turf (on the ground) to the total landscape area, in percentage

Drought Tolerant Species:

- **Tentative calculations indicating** the area covered with drought tolerant species/ native/ adaptive species (on the ground) to the total landscape area, in percentage

Certification

- **Landscape plan(s) highlighting** the area covered with turf, drought tolerant species & other plant species, on the ground
- **Calculations** indicating the total landscape area (on the ground) to the total site area, in percentage
- **List** of turf, drought tolerant, native and adaptive species used in the project
- **Photographs** showing the landscaped areas

Turf:

- **Calculations indicating** the area covered with turf (on the ground) to the total landscape area, in percentage

Drought Tolerant Species:

- **Calculations indicating** the area covered with drought tolerant species/ native/ adaptive species (on the ground) to the total landscape area, in percentage

WC Credit 3: Management of Irrigation Systems

Precertification

- **Narrative** describing the water efficient irrigation systems and techniques proposed in the project
- **Conceptual landscape plan** highlighting the irrigation systems, including soil moisture sensors
- **Manufacturer cut-sheets/ brochures** of the proposed water efficient irrigation systems and techniques. **(Optional)**

Certification

- **Narrative** describing the water efficient irrigation systems and techniques installed in the project
- **Landscape plan** highlighting the irrigation systems, including soil moisture sensors
- **Manufacturer cut-sheets/ brochures** of the installed water efficient irrigation systems and techniques. *(Optional for existing campuses)*
- **Photographs** showing the installed irrigation systems and techniques

WC Credit 4: Waste Water Treatment and Reuse

Precertification

Waste Water Treatment

- **Narrative** describing the on-site waste water treatment system proposed in the project, along with quality standards of the treated waste water
- **Tentative daily and annual water balance** of the project
- **Site plan** highlighting the location of on-site waste water treatment system, proposed in the project

Waste Water Reuse

- **Tentative calculations** indicating the water requirement for landscaping and centralised air-conditioning cooling tower make-up water
- **Tentative daily and annual water balance** of the project

  Note:

  The water balance shall include calculations (approximate) showing water demand for landscaping, flushing and air-conditioning cooling tower make-up water (if the project uses water-cooled chillers), and quantity of waste water reused for such applications

Certification

Waste Water Treatment

- **Narrative** describing the installed on-site waste water treatment system, along with the capacity & efficiency of treatment plant and the quality standards of waste water treated
- **Daily and annual water balance** of the project
- **Site plan** highlighting the location of installed on-site waste water treatment system
- **Photographs** showing the on-site waste water treatment system installed

Waste Water Reuse

- **Calculations** indicating the water requirement for landscaping and centralized air-conditioning cooling tower make-up water (including evaporative losses, blow down losses and drift losses)
- **Daily and annual water balance** of the project

  Note:

  The water balance shall include calculations (approximate) showing the water demand for

landscaping, flushing and air-conditioning cooling tower make-up water (if the project uses water-cooled chillers), and quantity of waste water reused for such applications

WC Credit 5: Optimize Water Use for Construction

(Not Applicable for Existing Campuses)

Precertification

- **Narrative** describing the strategies proposed to reduce potable water consumption for campus infrastructural construction activities (concrete mixing, plastering works and curing)
- **Tentative calculations** indicating the reduction in potable water requirement for campus infrastructural construction activities by the use of treated waste water and admixtures & curing compounds to the total potable water requirement, in percentage
- If treated waste water is proposed for use, specify the **source and quality standards/ test results**. Also, provide a **single line diagram** showing the source of treated waste water to the project location
- If admixtures & curing compounds are proposed for use, provide **manufacturer brochures/ cut-sheets**

Certification

- **Narrative** describing the strategies implemented to reduce potable water consumption for campus infrastructural construction activities (concrete mixing, plastering works and curing)
- **Calculations** indicating the reduction in potable water requirement for campus infrastructural construction activities by the use of treated waste water and admixtures & curing compounds to the total potable water requirement, in percentage
- If treated waste water is used, specify the **source and quality standards/ test results**. Also, provide a **single line diagram** showing the source of treated wastewater to the project location (or) gate passes for sourcing treated waste water
- If admixtures & curing compounds are used, provide **test reports, purchase invoices** and **manufacturer brochures/ cut-sheets,** as applicable

WE Credit 6: Water Metering

Precertification

- **Narrative** describing the list of water meters, proposed in the project
- **Schematic diagram** showing the location of water meters, proposed in the project

Certification

- **Narrative** describing the water meters, installed in the project
- **Schematic diagram** showing the location of water meters, installed in the project
- **Manufacturer cut-sheets/ brochures** of the installed water meters. *(Optional for existing campuses)*
- **Photographs** of the installed water meters

Energy Efficiency

EE Credit 1: Energy Efficiency in Infrastructural Equipment

Precertification

Lighting Systems

- Narrative describing the lighting fixtures proposed in the exterior areas of the campus
- Tentative LPD calculations, along with the type of the exterior lighting fixtures proposed in the project
- Conceptual site drawing highlighting the exterior lighting fixtures proposed in the project
- Declaration letter signed by the project owner/ lighting consultant indicating the proposed LPD

Lighting Controls

- Details of the proposed lighting systems and controls

Pumps and Motors

- Details of the proposed pumps & motors indicating the efficiency

Centralised Air-conditioning Systems

- Details of the centralised air-conditioning system proposed indicating the COP/ IPLV values
- Calculation indicating the percentage improvement of centralised air-conditioning system COP/ IPLV over base case values as per ASHRAE Standard 90.1-2010 baseline

Certification

Lighting Systems

- Narrative describing the lighting fixtures installed in the exterior areas of the campus
- LPD calculations, along with the type of the exterior lighting fixtures (make & model) installed in the project
- Site drawing highlighting the exterior lighting fixtures installed in the project
- Photographs showing the typical exterior lighting fixtures
- Manufacturer brochures indicating the wattage of exterior lighting fixtures

Lighting Controls

- Details of the lighting systems and controls installed
- Photographs showing the lighting systems and controls installed

Pumps and Motors

- Details of the pumps & motors indicating the efficiency, along with make and model

Centralised Air-conditioning Systems

- Details of the centralised air-conditioning system installed indicating the COP/ IPLV values
- Calculation indicating the percentage improvement of centralised air-conditioning system COP/ IPLV over base case values as per ASHRAE Standard 90.1-2010 baseline

EE Credit 2: On-site Renewable Energy

Precertification

- **Narrative** describing the on-site renewable energy systems proposed in the project
- **Conceptual drawing** showing the location of the renewable energy systems
- **Feasibility study report** with technical details of the renewable energy systems
- **Tentative calculations** indicating the total annual energy generation from the on-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the campus infrastructural equipment/ systems, excluding buildings in percentage. Also, provide the details of capacity of the renewable energy system (kW)

Certification

- **Narrative** describing the installed renewable energy systems, along with the technical details
- **Drawing** showing the location of installed renewable energy systems
- **Calculations** indicating the total annual energy generation from the on-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the campus infrastructural equipment/ systems, excluding buildings in percentage. Also, provide the details of capacity of the renewable energy system (kW)
- **Photographs** showing the renewable energy systems

EE Credit 3 : Off-site Renewable Energy

Precertification

Option 1: Renewable Energy Certificates (RECs)

- **Extract copy from Organisation policy/ annual report**, signed by the top management, highlighting the organisation's policy on off-site renewable energy through RECs
- **Tentative calculations** indicating the total annual energy generation from the off-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the campus infrastructural equipment/ systems, excluding buildings in percentage

Option 2: Off-site Renewable Energy Investments

- **Extract copy of contract agreement** signed between the project owner/ developer and the green power developer

  (Or)

  Extract copy from Organisation policy/ annual report, signed by the top management, highlighting the organisation's policy on off-site renewable energy
- **Tentative calculations** indicating the total annual energy generation from the off-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the campus infrastructural equipment/ systems, excluding buildings in percentage
- **Feasibility study report** with technical details of the off-site renewable energy systems

Certification

Option 1: Renewable Energy Certificates (RECs)

- **Calculations** indicating the total annual energy generation from the off-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the campus infrastructural equipment/ systems, excluding buildings in percentage
- **Copy** of Renewable Energy Certificates (RECs)

Option 2: Off-site Renewable Energy Investments

- **Extract copy of contract agreement** signed between the project owner/ developer and the green power developer
- **Calculations** indicating the total annual energy generation from the off-site renewable energy systems (kWh) to the total annual energy consumption (kWh) of the campus infrastructural equipment/ systems, excluding buildings in percentage
- **Detailed report** with technical details of the off-site renewable energy systems

EE Credit 4: Energy Metering

Precertification

- **Narrative** describing the energy meters proposed in the project
- **Single line drawing** showing the proposed energy meters

Certification

- **Narrative** describing the energy meters installed in the project
- **Single line drawing** showing the energy meters

Material and Resource Management

MRM Mandatory Requirement 1: Segregation of Waste, Post Occupancy

Precertification

- **Narrative** describing the strategies proposed to:
  - Segregate and divert dry waste (paper, plastic, metals, glass, etc.,) and wet waste from the common areas of the campus, to the easily accessible common facility
  - Divert dry & wet waste and other waste such as batteries, e-waste, lamps, and medical waste (if any), from the common areas of the campus
- **Conceptual site plan** showing the location of waste bins at common areas of the campus, as applicable
- **Conceptual site plan** showing the location of the centralized facility for segregation of waste

Certification

- **Narrative** describing the strategies proposed to:
  - Segregate and divert dry waste (paper, plastic, metals, glass, etc.,) and wet waste from the common areas of the campus, to the easily accessible common facility
  - Divert dry & wet waste and other waste such as batteries, e-waste, lamps, and medical waste (if any), from the common areas of the campus
- **Site plan** showing the location of waste bins at common areas of the campus, as applicable
- **Site plan** showing the location of the centralized facility for segregation of waste

MRM Credit 1: Organic Waste Management, Post-occupancy

Precertification

- **Narrative** describing the strategies proposed to handle Food waste and Garden waste generated in the campus (including buildings), and the on-site organic waste treatment system
- **Conceptual site plan** highlighting the location of on-site organic waste treatment system proposed in the project
- **Tentative calculations** indicating the quantity of organic waste (Food and Garden) treated in the project (including buildings) to the quantity of organic waste generated, in percentage
- **Manufacturer brochure/ cut-sheet** of the organic waste treatment system proposed in the project

Certification

- **Narrative** describing the strategies to handle Food waste and Garden waste generated in the campus (including buildings), and the on-site organic waste treatment system
- **Site plan** highlighting the location of on-site organic waste treatment system installed in the project
- **Calculations** indicating the quantity of organic waste (Food and Garden) treated in the project (including buildings) to the quantity of organic waste generated, in percentage
- **Manufacturer brochure/ cut-sheet** of the installed organic waste treatment system. *(Optional for existing campuses)*
- **Purchase invoice/ payment receipts** of the installed organic waste treatment system. *(Optional for existing campuses)*
- **Photographs** showing the installed organic waste treatment system

MRM Credit 2: Handling of Waste Materials, During Construction

(Not Applicable for Existing Campuses)

Precertification

- **Narrative** describing the strategies proposed to handle construction waste

  Note: The narrative shall also include the following:

  - *List of construction waste materials likely to be generated and diverted for reuse, recycle & land-fill*
  - *Proposed applications of construction waste materials diverted for reuse, within or outside the project*
- **Site plan** highlighting the proposed construction waste management yard
- **Tentative calculations** indicating the quantity of construction waste generated to the total quantity of construction waste reused, recycled and sent to landfill, in percentage

Certification

- **Narrative** describing the strategies implemented to handle construction waste

  Note: The narrative shall also include the following:

  - *List of construction waste materials generated and diverted for reuse, recycle & land-fill*
  - *Applications of construction waste materials diverted for reuse, within or outside the project*
- **Site plan** highlighting the construction waste management yard
- **Calculations** indicating the quantity of construction waste generated to the total quantity of construction waste reused, recycled and sent to landfill, in percentage
- **Letters** from scrap dealers/ contractors stating the type and quantity of construction waste received/ reused from the project site, for recycling/ reuse
- **Photographs** taken at various stages of the project showing the construction waste management yard

MRM Credit 3: Local Materials

(Not Applicable for Existing Campuses)

Precertification

- **Narrative** describing the strategies proposed to source local materials

  Note: The narrative shall also include a tentative list of local materials with manufacturer's name, specifying approximate distance from the project site to the place of manufacturing unit

- **Tentative calculations** indicating the local materials sourced (in terms of cost) to the total materials cost of campus infrastructural facilities, in percentage

Certification

- **Narrative** describing the strategies implemented to source local materials

  Note: The narrative should also include the list of local materials with manufacturer's name, specifying approximate distance from the project site to the place of manufacturing unit.

- **Calculations** indicating the local materials sourced (in terms of cost) to the total materials cost of campus infrastructural facilities, in percentage
- **Manufacturer letters** indicating the distance from the project site to the place of manufacturing unit

Health & Well-being

HWB Mandatory Requirement 1: Tobacco Smoke Control

Precertification

Option 1: No Smoking

- **Copy of organisation's policy on 'no smoking'** (or) **Declaration letter** from the project owner/ developer stating that 'smoking' will be prohibited in the campus
- **Narrative** describing the strategies proposed (eg. signages, posters, brochures, campus guidelines, etc.,) to communicate 'no smoking policy' to all the campus occupants and visitors

Option 2: Outdoor Smoking Areas

- **Copy of organisation's policy** highlighting that smoking is allowed in designated outdoor smoking areas only
- **Narrative** describing the strategies proposed (eg. signages, posters, brochures, campus guidelines, etc.,) to communicate 'outdoor smoking areas' to all the campus occupants and visitors

Certification

Option 1: No Smoking

- **Copy of organisation's policy on 'no smoking'** (or) **Declaration letter** from the project owner/ developer stating that 'smoking' will be prohibited in the campus
- **Narrative** describing the strategies (eg. signages, posters, brochures, campus guidelines, etc.,) to communicate 'no smoking policy' to all the campus occupants/ tenants and visitors
- **Photographs** showing 'no smoking' signages installed in the campus

Option 2: Outdoor Smoking Areas

- **Copy of organisation's policy** highlighting that smoking is allowed in designated outdoor smoking areas only
- **Narrative** describing the strategies (eg. signages, posters, brochures, campus guidelines, etc.,) to communicate 'outdoor smoking areas' to all the campus occupants and visitors
- **Photographs** of the designated outdoor smoking areas showing the signages

HWB Credit 1: Basic Amenities

Precertification

- **Site vicinity map** (with scale) highlighting the location of existing/ proposed basic amenities within campus or 800m walking distance from the campus entrance(s). Also, show pedestrian access from the campus entrance(s) to the basic amenities, if basic amenities are outside the campus
- **Photographs** of the basic amenities. *(Optional)*

Certification

- **Site vicinity map** (with scale) highlighting the location of existing basic amenities within campus or 800m walking distance from the campus entrance(s). Also, show pedestrian access from the campus entrance(s) to the basic amenities, if basic amenities are outside the campus
- **Photographs** of the basic amenities

HWB Credit 2: Health & Well-being Facilities

Precertification

Health & Well-being Facilities

- **List** of health & well-being facilities (such as aerobics, gymnasium, swimming pool, yoga, meditation, indoor games, outdoor games, play ground) proposed in the campus, with the location details
- **Conceptual site/ floor plans** highlighting the location of occupant health & well-being facilities
- **Tentative calculations** indicating the number of building occupants catered through occupant health & well-being facilities to the total number of building occupants, in percentage

Healthcare, Emergency & Security Facilities

- **List** of healthcare, emergency & security facilities (such as first-aid/ clinic, pharmacy, emergency alarm, surveillance system) proposed in the campus, with the location details
- **Conceptual site/ floor plans** highlighting the location of occupant healthcare, emergency & security facilities

Certification

Health & Well-being Facilities

- **List** of health & well-being facilities (such as aerobics, gymnasium, swimming pool, yoga, meditation, indoor games, outdoor games, play ground) provided in the campus, with the location details
- **Site/ floor plans** highlighting the location of occupant health & well-being facilities
- **Calculations** indicating the number of building occupants catered through occupant health & well-being facilities to the total number of building occupants, in percentage
- **Photographs** showing the occupant health & well-being facilities

Healthcare, Emergency & Security Facilities

- **List** of healthcare, emergency & security facilities (such as first-aid/ clinic, pharmacy, emergency alarm, surveillance system) provided in the campus, with the location details
- **Site/ floor plans** highlighting the location of occupant healthcare, emergency & security facilities
- **Photographs** showing the occupant healthcare, emergency & security facilities

HWB Credit 3: Universal Design

Precertification

- **Narrative** describing the measures proposed in the campus for differently abled people and senior citizens
- **Tentative calculations** indicating the total number of preferred car park spaces (for differently abled people and senior citizens) to the total number of car park spaces
- **Tentative calculations** indicating the total number of rest rooms (toilets) provided in the common areas (for differently abled people and senior citizens) of each building in the campus
- **Conceptual drawings** highlighting the measures proposed for differently abled people and senior citizens

Certification

- **Narrative** describing the measures implemented in the campus for differently abled people and senior citizens
- **Calculations** indicating the total number of preferred car park spaces (for differently abled people and senior citizens) to the total number of car park spaces
- **Calculations** indicating the total number of rest rooms (toilets) provided in the common areas (for differently abled people and senior citizens) of each building in the campus
- **Drawings** highlighting the measures implemented for differently abled people and senior citizens.
- **Photographs** showing all the measures implemented
- **Manufacturer brochures** for the measures implemented, as applicable. *(Optional for existing campuses)*

HWB Credit 4: Basic Facilities for Construction Workforce

(Not Applicable for Existing Campuses)

Precertification

- **Narrative** describing the basic facilities proposed in the project for construction workforce
- **Tentative calculations** indicating the total number of construction workers and the total number of toilet seats & urinals proposed in the project, for men and women
- **Conceptual drawings** highlighting the basic facilities proposed in the project for construction workforce
- **Extract** of the construction contract agreement highlighting the facilities proposed (or) Declaration letter signed by the project owner/ contractor listing the facilities proposed in the project

Certification

- **Narrative** describing the basic facilities provided in the project for construction workforce
- **Calculations** indicating the total number of construction workers and the total number of toilet seats & urinals provided in the project, for men and women
- **Drawings** highlighting the basic facilities provided for construction workforce
- **Extract** of the construction contract agreement highlighting the facilities provided
- **Photographs** showing the measures implemented

Green Education

GC Credit 1: Green Education

Precertification

- Narrative describing the following:
  - Proposed outreach/ educational programmes that will be organized to increase public awareness on environment sustainability and green features of the campus
  - Formation of a committee/ forum to identify and implement atleast two eco-friendly practices/ green initiatives within and outside the campus, with the involvement of campus occupants, local communities & NGOs

    Also, define roles & responsibilities for the committee/ forum members with an action plan for implementation of eco-friendly practices/ green initiatives
  - Awards to acknowledge the efforts of campus occupants, local communities, NGOs for implementing eco-friendly practices/ green initiatives

Certification

- Narrative describing the outreach/ educational programmes that will be organized to increase public awareness on environment sustainability and green features of the campus
- List of the committee/ forum members formed along with the implemented eco-friendly practices/ green initiatives within and outside the campus. Supporting documents demonstrating the implementation of eco-friendly practices/ green initiatives such as narratives, photographs, press releases/ bulletins, etc.,
- Also, submit the roles & responsibilities of the committee/ forum members allocated for implementation of eco-friendly practices/ green initiatives
- Awards instituted to acknowledge the efforts for implementing eco-friendly practices/ green initiatives, with supporting documents

GE Credit 2: Green Campus Guidelines

Precertification

Green Campus Guidelines

- **Narrative** describing the strategies proposed by the project team to create awareness among the prospective tenants and facilities team
- **Draft/ Final copy** of the green campus guidelines providing information which helps the campus occupants to implement and utilise the green features, post occupancy

Green Campus Renovation Guidelines

- **Draft/ Final copy** of green campus renovation guidelines providing information which helps the facilities team to implement the green features, during campus renovation process

Certification

Green Campus Guidelines

- **Narrative** describing the strategies adopted by the project team to create awareness among the campus occupants/ tenants and the facilities team
- **Copy** of the green campus guidelines providing information which helps the campus occupants to implement and utilise the green features, post occupancy

Green Campus Renovation Guidelines

- **Copy** of green building renovation guidelines providing information which helps the facilities team to implement the green features, during building renovation process

Innovation in Design

ID Credit 1.1: Innovation in Design Process

Precertification

Innovation:

- **Narrative** describing intent, requirements, potential strategies and technologies proposed to achieve the innovation credit. Strategies adopted must be significantly better than standard sustainable design practices
- **Table** indicating tentative quantitative performance improvements, comparing baseline and design case
- **Other supporting documents** such as drawings, illustrations, cut-sheets, test reports, etc., as applicable

Exemplary Performance:

- **Narrative** describing the strategies proposed to achieve exemplary performance in the respective base credit

  Note:

  - *Provide supporting documents in the respective base credit folder*

Certification

Innovation:

- **Narrative** describing intent, requirements, strategies and technologies implemented to achieve the innovation credit. Strategies adopted must be significantly better than standard sustainable design practices
- **Table** indicating quantitative performance improvements, comparing baseline and design case
- **Other supporting documents** such as drawings, illustrations, cut-sheets, test reports, etc., as applicable

Exemplary Performance:

- **Narrative** describing the strategies implemented to achieve exemplary performance in the respective base credit

  Note:

  - *Provide supporting documents in the respective base credit folder*

ID Credit 1.2: Innovation in Design Process

Please refer to the ‘Documentation required’ under ID Credit 1.1 - Innovation in Design Process

ID Credit 1.3: Innovation in Design Process

Please refer to the ‘Documentation required’ under ID Credit 1.1 - Innovation in Design Process

ID Credit 1.4: Innovation in Design Process

Please refer to the ‘Documentation required’ under ID Credit 1.1 - Innovation in Design Process

ID Credit 2: IGBC Accredited Professional

Precertification

- **IGBC Accredited Professional certificate** of atleast 3 participants involved in the project

Certification

- **IGBC Accredited Professional certificate** of atleast 3 participants involved in the project

Confederation of Indian Industry

Confederation of Indian Industry
CII-Sohrabji Godrej Green Business Centre

Survey No. 64, Kothaguda Post,
Near Hi-Tech City Hyderabad - 500 084.
Tel : + 91 40 23112971-74, Fax: 040-44185189
Email: igbc@cii.in
Web: www.igbc.in