IGBC Green Data Center

IGBC Green Data Center Rating System

Pilot Version

Abridged Reference Guide

October 2016

Confederation of Indian Industry

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Foreword from the Indian Green Building Council (IGBC)

Data centers have assumed tremendous importance in the last decade as India continues to become more and more digital. They contribute significantly to several National benefits including the ways Businesses are done, reduction in fossil fuel use by reducing travel for trade & domestic transactions, man-day savings involved in day-to-day activities, IT enabled services, speed of communications, employment generation and several others. IT infrastructure and data centers are vital in translating the country's vision of emerging as 'Digital India'.

IGBC, is a consensus driven not-for-profit Council comprising of about 2000 committed members. The Council enables incorporating the principles of sustainability in all forms of built environment. Since the last 15 years, several rating systems to suit different building types have been released.

The Green Building Movement in India has been spearheaded by IGBC since 2001. Thus far, the Council has been instrumental in enabling 3.8 Billion sq.ft of green buildings in the country (as on August 2016). The Council's activities have enabled a market transformation in embracing green building concepts, materials and technologies.

IGBC continuously works to provide tools that facilitate the adoption of green building practices in India. The development of IGBC Green Data Center Rating System is another important step in this direction. The Green Data center rating system is intended to enable construction and operation of data centers with enhanced resource efficiency, thereby leading to National benefits.

Acknowledgements

The IGBC Green Data Center Rating System Abridged Reference Guide has been made possible through the efforts of many dedicated volunteers, stake holders from Industry and others in the IGBC community.

The Abridged Reference Guide was developed by the IGBC Green Data Center technical Committee. IGBC places on record its sincere thanks to the participating organisations and individuals who enthusiastically volunteered to contribute for the development of the rating system.

IGBC would like to thank all the organisations for their participation and contribution in developing the rating programme, as mentioned in the table.

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IGBC Green Data Center Rating System

1. Introduction

The growth of Indian Data Centers is expected to grow several fold during the period 2016-2020. This augurs well for the country and now there is an imminent need to introduce green concepts in this sector, which can go a long way to support growth in a sustainable manner.

Introducing the principles of green in data centres can help address National issues like energy efficiency, water management and safe disposal of waste.

Against this background, the Indian Green Building Council (IGBC) has launched 'IGBC Green Data Center Rating System' to address National priorities.

2. Benefits of Green Data Centers

Green Data Center can have tremendous benefits, both tangible and intangible. The tangible benefits include 20-25% reduction in energy consumption, 25-30% reduction in water consumption.

The intangible benefits of green Data Center include enhanced air quality, excellent daylighting, health & well-being of the staff operating such facilities.

3. National Priorities Addressed in the Rating System

The IGBC Green Data Center Rating System addresses the most important National priorities which include reduction in energy demand & related infrastructure, savings in water & availability of such water for other sectors, increased share of renewable energy use and Waste segregation & proper disposal.

The rating system is India centric and requires applying National standards and codes such as the NBC, ECBC, MoEF guidelines, CPCB guidelines & several others. The overarching objective is to better the National standards so as to create new benchmarks.

- **Energy Efficiency:**

Data Centers are highly energy intensive. The IGBC Green Data Center Rating System enables improvement of Power Utilisation of Effectiveness by addressing energy consumption reduction in data processing, precision and comfort air conditioning systems, lighting & building envelop. The Data Center rating system aims at improving the average PUE of Data Centers in the country by about 20-25 % in the next 5 years.

- **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 Data Center Rating System encourages use of water in a sustainable manner through reduce, recycle and reuse strategies. The IGBC data center rating system enables implementation of water conservation measures leading to a potential saving of 25-30%.

❖ **Renewable Energy:**

India has a target of increasing the renewable energy installation by 175 GW by 2022 and reduce GHG emissions. IGBC Green Data center rating system encourages Data Centers to substitute conventional power consumption through onsite and offsite renewable energy sources. This will complement the efforts of the country to achieve renewable energy targets.

❖ **E - Waste management:**

E-Waste is increasingly turning out as a major area to be addressed in the country and Data Centers are one of the major generators of E waste. The IGBC Green Data center rating system encourages Data Centers to collect and handle such waste in an environmentally safe manner.

❖ **Reduced Dependency on Virgin Materials:**

The rating system encourages Data Centers to use recycled & reused materials, thereby reducing dependence on virgin materials. Furthermore, this would also help reducing environmental impacts associated with extraction and processing of natural resources.

❖ **Health and Well-being:**

Though the people occupancy in Data Centers is not dense, health and well-being of people is another important aspect addressed here. The rating system ensures providing adequate ventilation, daylight and occupant well-being facilities for the staff. It also recognises measures to minimise indoor air pollutants.

4. IGBC Green Data Center Rating System

IGBC has set up the Green Data Center technical Committee to develop the rating programme. The committee comprised of key stakeholders, including Data Center owners, operators, technology suppliers, HVAC technology suppliers and Consultants. The committee, with a diverse background and knowledge has enriched the rating system, both in its content and process.

A. Features

IGBC Green Data Center 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 Data Center Rating System is to come out with a tool that would help designers and operating personnel to incorporate green elements.

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 context and priorities.

Some of the unique aspects of the rating system are as follows:

- Emphasis on data centre equipment, rather than the building elements.
- Addressed both the IT areas and the non-technical spaces.
- Higher emphasis on management information systems, energy management and monitoring.
- Maintaining indoor air quality in IT spaces to achieve ISO standards, besides addressing air quality in non technical spaces.

- Proposed site visits before award of the rating.

B. Scope

IGBC Green Data Center Rating System is designed primarily for New Data Centers & Existing Data Center projects.

C. The Future of IGBC Green Data Center 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 undergo periodic revisions to incorporate the latest advancement and changes. It is important to note that project teams applying for IGBC Green Data Center 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).

5. Overview and Process

IGBC Green Data Center Rating System addresses green features under the following categories:

- Site Selection & Planning
- Energy Efficiency
- Operation & Maintenance
- Water Conservation
- Building Material and Resources
- Indoor Environmental Quality
- Innovation

The guidelines detailed under each requirement & credit enables the design & operation of Data Center projects of all sizes and types. Different levels of Green Data Center certification are awarded based on the total credits earned. However, every Green Data Center should meet certain mandatory requirements, which are non-negotiable.

The various levels of rating awarded are as below:

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

A. When to use IGBC Green Data Center Rating System

IGBC Green Data Center Rating System is designed for both New and Existing Data Centers. The project team can evaluate all the possible points to apply under the rating system using a suitable checklist. The project can apply for IGBC Green Data Center Rating System certification, if the project can meet all mandatory requirements and achieve the minimum required points.

B. Registration

Organisations interested in registering their projects under IGBC Green Data Center Rating System Certification are advised to first register on IGBC website (www.igbc.in). The website includes information on registration fee for IGBC member companies as well as non-members.

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

IGBC website provides all important details on IGBC Green Data Center rating system registration & certification - process, schedule and fee.

C. Certification

To achieve the IGBC Green Data Center rating, the data Center 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 Certification is valid for 3 years from the date of award, after which project is required to apply for the recertification.

The data Center needs to submit the following:

a) General information about the Data center, including
   i) Brief about data Center stating location, area statement, Data Center load, number of server/racks, office space, total number of staff etc.
b) General drawings (in PDF format):
   i) Master/ Site plan
   ii) Data Center floor plan
   iii) Elevations
   iv) Sections
   v) Floor wise HVAC plan
   vi) Electrical drawings
c) Photographs / Rendered images
d) Filled-in templates

1. 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 and credit.

   The project documentation is submitted in two phases - Preliminary submittal and Final submittal:

   Preliminary phase involves submission of all documents, which shall include the mandatory requirements and the 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.

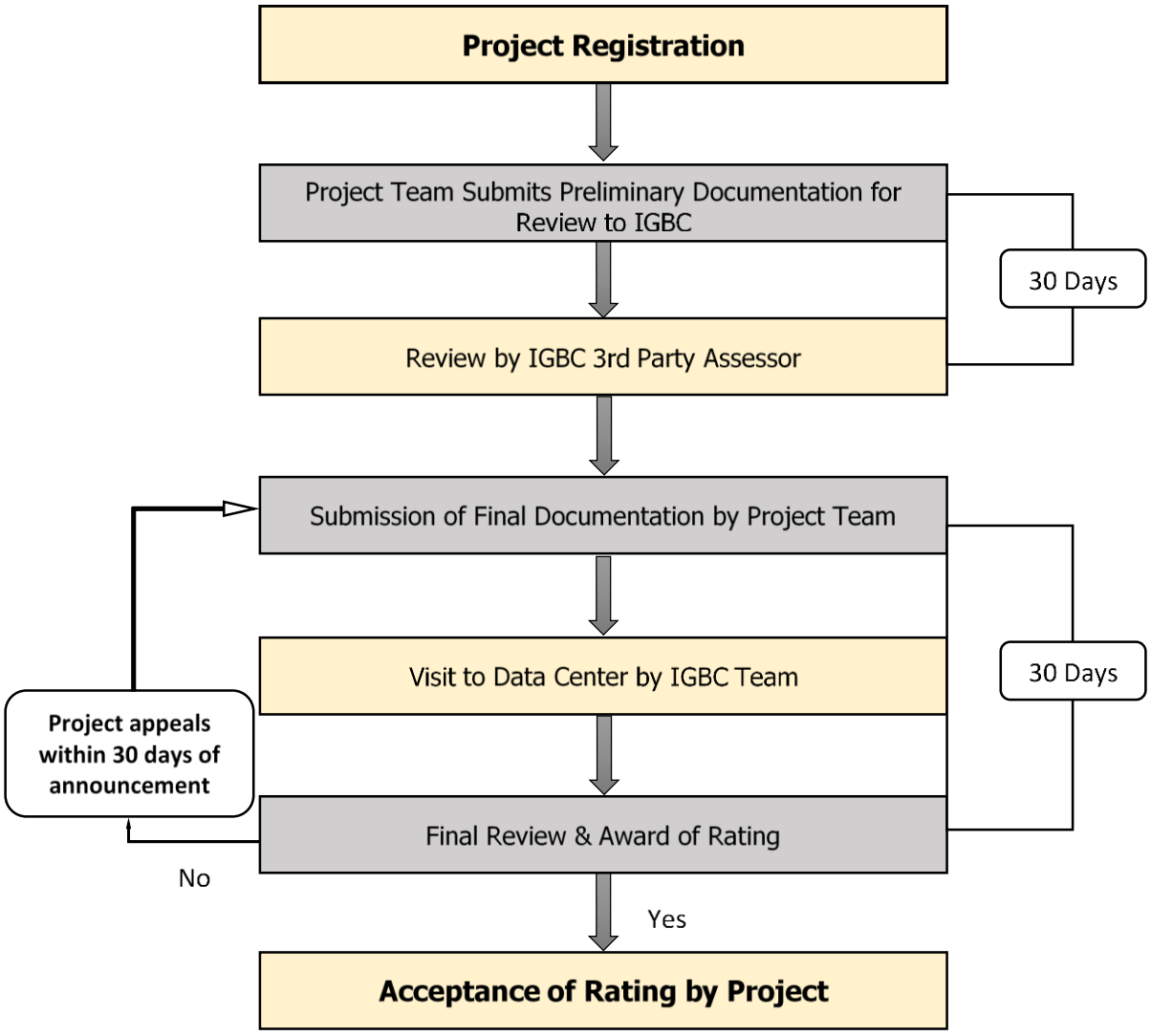
   It is important to note that the mandatory requirements and credits earned at the preliminary review are considered as almost achieved and indicated as 'Expected'. These mandatory requirements and credits are awarded after the final documents are submitted. If there are changes in any 'Expected' credits 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	Credit Points		Recognition
	New Data Center	Existing Data Center	
Certified	40 – 49	40 – 49	Good Practices
Silver	50 – 64	50 – 64	Best Practices
Gold	65 - 79	65 - 79	National Excellence
Platinum	≥80	≥80	Global Leadership

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

Certification Process



D. Credit Interpretation Ruling (CIR)

In some instances, there is a possibility that the team may encounter 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 address 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 encounters any difficulty:

- Refer the Abridged Reference Guide for description of the credit intent and compliance options.
- Review the intent of the mandatory requirement/ credit and self-evaluate whether the project satisfies the intent.
- Review the Credit Interpretation Ruling (CIR) web page for previous CIRs on the relevant mandatory requirement or credit. All projects registered under IGBC Green Data Center Rating System or similar 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 credit interpretation request. Two CIRs are answered without levying any fee, and for any CIR beyond the first two CIRs, a fee is levied.

E. 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 denying mandatory requirements/ credits. The documentation of the mandatory requirements / credits seeking appeal may be resubmitted to IGBC along with necessary fees. 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.

F. Fee

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

G. 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. The additions thereof will be suitably incorporated in the next version of the rating system.

Project Checklist

IGBC Green Data Center Rating System		Credit Points	
		New Data Center	Existing Data Center
Modules		**100**	**100**
Site Selection and Planning		**8**	**8**
SSP Mandatory Requirement 1	Local Building Regulations	Required	Required
SSP Credit 1	Natural Topography or Vegetation	2	2
SSP Credit 2	Universal Design	1	1
SSP Credit 3	Heat Island Reduction		
	Roof area	2	2
	Non Roof area	2	2
SSP Credit 4	Outdoor Light Pollution Reduction	1	1
Energy Efficiency		**51**	**52**
EE Mandatory Requirement 1	Ozone Depleting Substances	Required	Required
EE Mandatory Requirement 2	Commissioning Plan for Data Center Equipment & Systems	Required	NA
EE Mandatory Requirement 3	Minimum Energy Performance	Required	Required
EE Credit 1	Eco-friendly Refrigerants	1	1
EE Credit 2	Enhanced Commissioning	0	1
EE Credit 3	Energy Management System	2	2
EE Credit 4	Enhanced Energy Efficiency	42	42
EE Credit 5	Renewable Energy		
	On - Site	2	2
	Off - Site	4	4
Operation & Maintenance		**5**	**9**
OM Mandatory Requirement 1	Management Information System	Required	Required
O&M Credit 1	O&M Systems, measures and practices		
	Real time monitoring of Equipment and Performance	1	3
	Rack cooling index	2	3
	Temperature and Humidity Conditions	2	3

Water Conservation		**5**	**5**
WC Mandatory Requirement 1	Rainwater Harvesting, Roof & Non-roof	Required	Required
WC Credit 1	Water Metering	1	1
WC Credit 2	Water Efficient Plumbing Fixtures	2	2
WC Credit 3	Wastewater Treatment and Reuse	2	2
Building Material and Resources		**15**	**10**
BMR Mandatory Requirement 1	Policy on waste management	Required	Required
BMR Mandatory Requirement 2	Segregation of Wastes	Required	Required
BMR Credit 1	Use of Certified Green products, materials and equipment	10	5
BMR Credit 2	e - Waste Management	3	3
BMR Credit 3	Non-Hazardous waste & Operations	2	2
Indoor Environmental Quality		**10**	**10**
IEQ Mandatory Requirement 1	Tobacco Smoke Control	Required	Required
IEQ Mandatory Requirement 2	Minimum Fresh Air Ventilation	Required	Required
IEQ Credit 1	Indoor air quality Monitoring	3	3
IEQ Credit 2	Day Lighting	2	2
IEQ Credit 3	Low-emitting Materials	4	4
IEQ Credit 4	Occupant Well-being Facilities	1	1
Innovation and Development		**6**	**6**
ID Credit 1	Implementation of Innovative Ideas	5	5
ID Credit 2	IGBC Accredited Professional	1	1

Site Selection and Planning

Local Building Regulations

SSP Mandatory Requirement 1

Intent:

Ensure that the Data Center complies with necessary statutory and regulatory codes.

Compliance Options:

The project shall comply with following statutory approvals from the Government of India or State Government authorities, as applicable:

- ❖ Approved site plan (and/ or) building plans for construction, as applicable
- ❖ Status of Data Center project completion or Completion certificate of Data Center project signed by Owner or Third Party Commissioning Authority

Note*:*

Project with 20,000 sq m built-up area or more shall submit 'Environmental Clearance Certificate', approved by Ministry of Environment & Forests (MoEF) or State Environment Impact Assessment Authority (SEIAA) to show compliance for certification.

Documentation requirement:

New Data Center

- Approved site plan
- Environmental clearance (EC) certificate

Existing Data Center

- Approved site plan
- Completion certificate
- Environmental clearance (EC) certificate

Natural Topography or Vegetation

SSP Credit 1 Points: 2

Intent:

Minimise disturbances or restore the site so as to reduce long-term negative environmental impacts, thereby promoting habitat and biodiversity.

Compliance Options:

- **Option 1: Vegetation**

Avoid disturbance to the site by retaining natural topography (and/ or) design vegetated spaces on the ground, for at least 15% of the site area.

Points are awarded as below:

Percentage of Site Area with Vegetated Area	Points
≥ 15%	1
≥ 20%	2

Notes:

- In case of Data Centers located in large campus / building the requirements will be estimated in proportion to the area of the Data Centers.
- Only native / adaptive vegetation which consumes less water shall be considered for this credit calculation.
- Retaining Vegetation in its broad sense means preserving the natural features of the terrain such as exposed natural rocks, water body, etc.,
- Vegetation/ Soft landscape shall not be designed with monoculture plant species, since such species would not promote habitat and biodiversity.
- 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.
- Artificial vegetation shall not be considered for this credit calculation.

❖ Option 2: Vegetation over Built Structures

Restore disturbed site area by designing vegetated spaces over built structures and on the ground, for at least 30% of the site area (including development footprint).

Points are awarded as below:

Percentage of Site Area with Vegetation over built structures and on the ground	Points
≥ 30%	1
≥ 40%	2

Notes:

- In case of Data Centers located in large campus / building the requirements will be estimated in proportion to the area of the Data centers.
- Development footprint includes building footprint and other hardscapes areas such as parking, footpaths, walkways, roads, grass medians, grass pavers, etc.,
- Vegetation/ Soft landscape shall not be designed with monoculture plant species, since such species would not promote habitat and biodiversity.
- Vertical Landscaping to the external walls can also be considered for this credit calculation.
- Vegetation on the ground as well as vegetation over built structures such as roofs, basement, podiums, etc., can be considered.
- Partially vegetated areas and disturbed site areas such as grass pavers, grass medians, jogging track, open-air theatre, playground, is considered as site disturbances and 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.

Exemplary Performance:

The project is eligible for exemplary performance under Innovation in Design and O&M Process, if:

More than 25% of the site area is left undisturbed (i.e. retained with the natural topography and / or vegetated).

(Or)

More than 50% of the site area (including development footprint) is restored by designing vegetated spaces over built structures and on the ground.

Documentation requirement:

New Data Center

Submit the following:

- Site plan and calculations showing natural topography and proposed area for vegetation
- For option 2, provide plan for vegetation over built structure along with the area calculations

Existing Data Center

- Site plan and calculations showing natural topography retained and the vegetated area
- For option 2, provide the details of building structure area covered with vegetation along with the photographs

Universal Design

SSP Credit 2 Points: 1

Intent:

Ensure that the data center building design caters to differently abled.

Compliance Options:

Design the data center project to provide the following, as applicable, for differently abled persons in accordance with the guidelines of the National Building Code (NBC) of India 2005.

- Appropriately designed preferred car park spaces having an easy access to the main entrance or closer to the lift lobby.

  (Provide at least 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).
- Easy access to the main entrance of the building.
- Non-slippery ramps, with handrails on at least one side (as applicable).
- Seating area near lift lobbies.
- Uniformity in floor level for hindrance-free movement in common areas & exterior areas.
- Restrooms (toilets) in common areas designed for differently abled people.

  (Provide at least one restroom for the first 100 building occupants and one additional for every 250 occupants thereafter or as defined by local byelaw)
- Main walkways / pathways with adequate width in exterior areas.
- Visual warning signage in common areas & exterior areas.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation requirement:

New Data Center

- Site plan showing facilities for differently abled people

Existing Data Center

- Photographs showing the provisions for differently abled people in the facility
    - Non-slippery ramps for easy access to the main entrance of the building.
    - Uniformity in floor level for hindrance-free movement in common areas
    - Preferred car park space(s) having an easy access to the main entrance or closer to the lift lobby
    - Rest rooms (toilets) for differently abled people
    - Permanent signages for the above facilities

Heat Island Reduction, Roof & Non-roof

SSP Credit 3 Points: 4

Intent:

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

1. Heat Island Reduction, Non-roof (Points 2)

Compliance Options:

- **Option 1: Non-roof Impervious Areas**

  Provide one or combination of the following, for at least 50% of exposed non-roof impervious areas within the project site:

  - 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 at least 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:

- In case of Data Centers located in large campus / building the requirements will be estimated in non-roof areas in proportion to the area of the Data centers.
- Non-roof impervious areas include, but not limited to, footpaths, pathways, roads, driveways, uncovered surface parking, and other impervious areas.
- Trees / Saplings shall be in place at the time of occupancy.
- SRI values of reflectance materials shall be as per ASTM Standards.
- SRI materials that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

❖ **Option 2: Covered Parking**

Provide at least 50% of the parking spaces under cover.

Points are awarded as below:

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

Notes:

- In case of Data Centers located in large campus / building the requirements will be estimated based on the available car parking for the Data centers under cover vis-à-vis total number of car parking required for data center operator and maintenance personnel.
- 'Parking spaces under cover' here refers to structured covered parking.
- The exposed roof of the parking shall meet 'Heat Island Effect - Roof' criteria.

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 at least 29 (and not higher than 64).

❖ **Option 2:**

If more than 95% of the parking spaces are under cover.

2. Heat Island Reduction, Roof (Points 2)

Compliance Options:

❖ **Option 1: High Reflective Materials**

Use material with a high solar reflective index to cover at least 75% of the exposed roof area, 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 at least 50% of the exposed roof area, 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 at least 75% of the exposed roof area, including covered parking.

Points are awarded as below:

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

Notes:

- In case of Data Centers located in large campus / building the requirements will be estimated in proportion to the area of the Data centers.
- 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.
- SRI materials that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.
- Pavers installed over basement shall have SRI of at least 29 (and not higher than 64).

Exemplary Performance:

This credit is not applicable for exemplary performance.

Documentation requirement:

New Data Center

- Site plan along with calculations showing roof & non-roof areas
- Plan for measures to reduce Urban Heat Island (UHI) effect in roof and non-roof areas

Existing Data Center

- Site plan along with calculations showing roof & non-roof areas
- Photographs of hardscape areas (non-roof) covered with existing tree canopy/ open grid pavers / structured surface parking / solar panels
- In case of SRI coated roof and non-roof areas, provide test certificate of high reflective material indicating SRI value as per ASTM standard.

Outdoor Light Pollution Reduction

SSP Credit 4 Points: 1

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 30% for building exteriors areas vis-à-vis the ASHRAE Standard 90.1-2013 Table 9.4.2-2 Individual Lighting Power Allowance for Building Exteriors.

Notes:

- The requirements are the same for a data Center located in a large building. For a data center located in a campus the requirements will be estimated only for the exterior lighting of data Center building.
- Total initial designed fixture Lumens shall be based on the sum total of all fixtures installed on site of the data center.
- Classify the project under one of the lighting zones, as defined in ASHRAE Standard 90.1-2013, and follow all the requirements of the respective zone. The justification shall be provided for the selected lighting zone.
- Exterior light fixtures that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

Option 2: Simulation Approach

- **Upward Lighting:**

  Design exterior lighting such that all site and building-mounted luminaires produce a maximum initial illuminance values, as defined in ASHRAE Standard 90.1-2013.

(AND)

- **Lighting Power Density:**

  The lighting power density should be reduced by 30% for building facades and exterior areas vis-à-vis the ASHRAE Standard 90.1-2013 Table 9.4.2-2 Individual Lighting Power Allowance for Building Exteriors.

Notes:

- Classify the project under one of the lighting zones, as defined in ASHRAE Standard 90.1-2013, and follow all the requirements of the respective zone. The justification shall be provided for the selected lighting zone.
- Refer 'Table 9.4.2-1 Exterior Lighting Zones' for more details on lighting zones (Zone 0, Zone 1, Zone 2, Zone 3 or Zone 4) and corresponding lighting power density for exterior areas

Lighting zone	Description
0	Undeveloped areas within national parks, state parks, forest land, rural areas, and other undeveloped areas as defined by the authority having jurisdiction
1	Developed areas of national parks, state parks, forest land, and rural areas
2	Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed use areas
3	All other areas
4	High-activity commercial districts in major metropolitan areas as designated by the local jurisdiction

- Exterior light fixtures that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation requirement:

New Data Center

- Site plans showing exterior lighting layout
- Light Power Density (LPD) calculations or simulation output report for exterior areas

Existing Data Center

- Site plans showing exterior lighting layout along with the actual Light Power Density (LPD) calculations for exterior areas along with the details of all lighting fixtures

Energy Efficiency

Ozone Depleting Substances

EE Mandatory Requirement 1

Intent

Encourage use of eco-friendly refrigerants and halons, thereby minimizing negative impact on the ozone layer.

Compliance Options

- **CFC-free Refrigerants**

  Demonstrate that refrigerants used in the Data centers and the associated buildings' Heating, Ventilation & Air-conditioning (HVAC) equipment are CFC (Chloro Fluoro Carbon)-free.

(AND)

- **Halon-free Fire Suppression Systems**

  Demonstrate that fire suppression systems used in the building are free from Halons or any other ozone depleting substances.

Documentation requirement:

New & Existing Data Center

- Documents indicating the details of the refrigerant used in building HVAC
- Documents indicating the details of the chemicals / gases / agents used in the fire suppression systems

Commissioning Plan

EE Mandatory Requirement 2

Intent:

Verify and ensure that the data center's equipment & system are commissioned to achieve the energy performance as envisaged during the design stage

Compliance Options:

The project shall comply with the following requirements:

- Demonstrate that the project owner has signed an agreement with third party commissioning authority (CxA), not involved in the design. The commissioning authority is also required to have at least 3 years prior experience in equipment & systems.
- Document owners brief in terms of performance expectations from the building.
- Submit a plan to show how the data center would be audited for green performance after operation, with regard to the following:
  - HVAC systems - chiller, VRV systems, primary & secondary water pumps, cooling tower, Computer Room Air Conditioning (CRAC), Precision Air Handling Units (PAHU), fresh air fans and flow settings, VFDs, etc.
  - Unitary air-conditioners / direct expansion equipment
  - Temperature and RH measurements in individual spaces
  - Pumps & motors
  - Lighting systems
  - Renewable energy systems
  - Indoor Environmental Quality monitoring system
  - Energy and (or) Water metering
  - Building management system
  - DG sets or Back-up systems
  - Any other equipment and systems
- Report specific observations and variations identified by commissioning authority to the project owner, for each equipment & system, with respect to commissioning plan and how they were addressed
- Submit measurement & verification plan for yearly reporting

- ❖ Report on performance of the equipment & systems listed in commissioning plan. The report for each of the equipment & systems shall cover the following:
  - Equipment specifications
  - Test results with specific comments from the Commissioning Authority, at the time of commissioning
  - Key monitoring aspects to sustain performance
  - Estimated energy & water consumption

Documentation requirement:

New Data Center

- Submit Owner Project Requirement (OPR) and Basis of Design (BOD) report
- Copy of agreement between Commissioning Authority (CxA) and data center design / owner/ developer. Note that, CxA shall not be the part of be project design team and shall be handled at least three data center projects as a CxA.
- Submit list of equipment commissioned including documentation of testing and verification including but not limited to HVAC systems related to energy, water and indoor environmental quality. Objective must be to operate equipment efficiently to meet the design intent along with operational requirements.
- Submit Cx plan and report

Note:

Existing data centers are exempted to comply this prerequisite.

Minimum Energy Efficiency

EE Mandatory Requirement 3

Intent:

Optimise energy consumption to reduce negative environmental impacts from excessive energy use.

Compliance Options:

❖ **Power Usage Effectiveness (PUE)**

Minimise the Power Usage Effectiveness (PUE) of the data center by reducing the total facility energy consumption.

PUE is defined as

$$\textbf{Power Usage Effectiveness} = \frac{\textbf{Total Facility Energy (kWh)}}{\textbf{IT Equipment Energy (kWh)}}$$

Total Facility Energy

This includes all IT equipment energy which is used to manage, process, store, or route data within the compute space and everything that support the IT equipment using energy such as:

- Power delivery component, including UPS system, switch gear, generator, power distribution Unit (PDU), batteries and distribution losses external to the IT equipment
- Cooling system component such as chiller, cooling tower, pump, computer room air handling unit (CRAHs), computer room air-conditioning units (CRACs) and direct expansion air handler units
- Other miscellaneous loads such as data center lighting.

IT Equipment Energy

This includes, energy associated with all the IT Equipment (e.g. compute, storage and network equipment) along with supplemental equipment (e.g. KVM switches, monitors, and workstations or laptops, used to monitor or otherwise control the data center).

Total facility energy and IT equipment energy need to be measured as below:

- Total facility energy at utility-input
- IT Equipment at PDU output (kWh measurement taken either at PDU display or by an energy meter on the secondary side of PDU transformer

- The IT equipment energy and total facility energy need to be measured on daily basis

Establish the Power Usage Effectiveness of Data Center as per the above procedure and demonstrate that the PUE does not exceed threshold limit at 1/3 (33%) loading of the data center.

- **The Power Usage Effectiveness (PUE) of an existing Data Center shall not exceed 3.0**
- **The Power Usage Effectiveness (PUE) of a new Data Center shall not exceed 1.5**

Documentation Required

New Data Center

- Provide design documents or simulation report for the design PUE at 1/3 (33%) loading of the data center

Existing Data Center

- Energy consumption details including total facility energy (kWh) and IT equipment energy (kWh) measured on daily basis for the past one year.
- PUE calculations along with the percentage loading of data center

Eco-friendly Refrigerants

EE Credit 1 **Points: 1**

Intent

Encourage use of eco-friendly refrigerants in the facility, thereby minimising impact on the ozone layer.

Compliance Options

Demonstrate that refrigerants used in the data Center and building Heating, Ventilation & Air-conditioning (HVAC) equipment are eco-friendly and have low or no Ozone Depletion Potential (ODP) and Global Warming Potential (GWP).

The projects HVAC 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 CO_2 / kW-Year)
GWPr :	Global Warming Potential of Refrigerant (0 to 12,000 kg CO_2 / 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 HVAC&R equipment must be calculated using the following formula:

$$\sum \frac{(LCGWP + LCODP \times 10^5) \times Q_{unit}}{Q_{total}} \leq 13$$

Q_{unit} = Eurovent Certified cooling capacity of an individual HVAC or refrigeration unit (kW) (or) Gross AHRI rated cooling capacity of an individual HVAC or refrigeration unit (kW)

Q_{total} = Total Eurovent Certified cooling capacity of all HVAC or refrigeration (kW) (or) Total gross AHRI rated cooling capacity of all HVAC or refrigeration

Small HVAC units (containing less than 0.25 kg of refrigerant) need not be considered in calculation.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation Required

New & Existing Data Center

- Documentation for the type of refrigerant and fire suppression gases along with the ozone depleting and global warming potential
- Calculation in line with the compliance options

Enhanced Commissioning

EE Credit 2 Points: 1

Intent

Verify and ensure that the building equipment & systems are commissioned to achieve performance as envisaged at the design stage

Compliance Options:

The project shall comply with the following requirements:

- ❖ Report specific observations and variations vis-à-vis the plan drawn under EE MR 2, identified post installation and report how they were addressed.
- ❖ Demonstrate that there is an agreement in place between third party commissioning authority and project facility for a period of one year, to ensure that the commissioned equipment & systems perform efficiently.

Documentation Required

<u>New & Existing Data Center</u>

- Basis of Design report and Detailed project reporting clearing indicating the requirement of commissioning and detailed report showing that every mechanical system has installed as per the requirement
- Performance of every mechanical equipment shall be reported

<u>Note</u>:

In case of new data center, this particular credit is not applicable.

Energy Management System

EE Credit 3 Points: 2

Intent

Encourage continuous monitoring of energy consumption of IT & Non-Technical spaces to explore improvement opportunities for energy performance, thereby reducing environmental impacts.

Compliance Options

1. Demonstrate that the facility has online energy management system in place for monitoring the energy consumption on continuous basis and energy metering in place for the following systems:
   - Energy metering at Power Distribution Unit (PDU) level for measuring the power consumption of IT equipment
   - Precision air conditioning units for cooling the IT equipment
   - HVAC system for IT and Non-Technical spaces
   - Renewable Energy Generation
   - Interior lighting consumption
   - Power backup system such as DG set
2. Report energy consumption data to IGBC for the next 3 years, to facilitate data collection and research in this area (Data received shall be maintained confidential by IGBC).

Documentation Required

<u>New & Existing Data Center</u>

- Schematic diagram of the electrical system highlighting the locations of the meters
- Overall mimic of the energy management system highlighting monitoring of energy consumption at any given point in time
- Letter from owner to IGBC stating that energy consumption data for the next 3 years would be submitted.

Enhanced Energy Efficiency

EE Credit 4 Points: 1-42

Intent

Optimise energy consumption, to reduce negative environmental impacts arising from excessive energy use.

Compliance Options

❖ **Data Processing (IT Equipment Power)**

Demonstrate with the detailed calculations that the Power Usage Effectiveness (PUE) is lower than the threshold limit of 3.0.

The details of monthly energy consumption for the past one year at power distribution unit level and the utility meter level dedicated for the data center to be provided along with the power distribution diagram with the metering details.

Points are awarded based on the actual PUE measured for existing Data Centers as below:

S No.	PUE Range	Credit Points
1	2.91 - 3.00	1
2	2.81 - 2.90	2
3	2.71 - 2.80	3
4	2.61 - 2.70	5
5	2.51 - 2.60	7
6	2.41 - 2.50	9
7	2.31 - 2.40	11
8	2.21 - 2.30	13
9	2.11 - 2.20	15
10	2.01 - 2.10	18
11	1.91 - 2.00	21
12	1.81 - 1.90	24
13	1.71 - 1.80	27
14	1.61 - 1.70	30
15	1.51 - 1.60	34
16	1.41 - 1.50	38
17	< 1.40	42

Points are awarded based on the design PUE as below for new Data Centers:

S No.	PUE Range	Credit Points
1	1.50 - 1.40	20
2	1.39 - 1.30	24
3	1.29 - 1.20	28
4	1.19 - 1.10	34
5	< 1.10	42

Exemplary Performance

This credit is eligible for exemplary performance under innovation category if the energy savings significantly exceed the threshold limits mentioned.

Documentation Required

New Data Center

- Provide design documents or simulation report for the design PUE at 1/3 (33%) loading of the data center

Existing Data Center

- Energy consumption details including total facility energy (kWh) and IT equipment energy (kWh) measured at on daily basis for the past one year.
- PUE calculations along with the percentage loading of data center

Renewable Energy

EE Credit 5 Points: 1-6

Intent

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

Compliance Options

- **On-site**

  Demonstrate on site renewable energy generation of atleast 0.1 % of the annual facility energy consumption the data center. Points are awarded as below.

Renewable energy as % of Total Facility Energy Consumption	Credit Points
0.1	1
0.2	2

- **Off-site**

  Demonstrate that the project has invested in off-site renewable power and wheeling the power for meeting the energy consumption of the Data Center (or) Have in place a power purchasing agreement with the renewable power generator for a minimum of 2 years.

  Type of renewable energy source has to be in line with the definition as recommended by MNRE, Govt of India and respective state regulatory commission. Points are awarded as below.

Renewable energy as % of total Facility Energy Consumption	Credit Points
5	1
10	2
15	3
20	4

Exemplary Performance

The credit is eligible for exemplary performance under innovation category if the on-site / off site renewable power generation significantly exceeds the specified threshold limits.

Documentation Required

New Data Center

- Commitment from the project owner for installation of onsite renewable energy sources along with the detailed calculations on the availability of space and power generation potential in line with the requirements
- For offsite renewable sources, submit any of the following along with renewable energy sources indicating the capacity and power generation potential in line with the requirements
    - Investment plan for offsite renewable sources
    - Letter of intent or power purchase agreement with the RE producer

Existing Data Center

- Submit the details of installation of renewable energy sources along with the photographs
- Details of annual renewable energy generated from onsite renewable sources
- For offsite, submit a copy of power purchase agreement or contract for wheeling of renewable energy and details of annual renewable power purchased

Operation and Maintenance

Management Information System (MIS)

O & M Mandatory Requirement 1

Intent

Institute information systems on the current status and future needs for efficiently managing the data center, thereby reducing environmental impacts.

Compliance Options

Have in place data center management information system for providing required information at the following management level for taking appropriate actions for efficiently manage the Data center.

- Management level
- Operational level

Documentation Required

Provide a brief write up about:

- The existing management information system
- MIS as a tool to meet management goals related to
  - Availability
  - Efficiency

Operation & Maintenance Practices

O&M Credit 1 Points 1-9

Intent

Incorporate measures to enhance the reliability and availability of critical equipment through real-time monitoring systems to increase efficiency and reduce environmental impacts.

Compliance Options:

❖ Real-time monitoring system: Point 1-2

Demonstrate that there is a system in place for real time monitoring of equipment operating conditions and performance for the following:

- Computer room air-conditioning (CRAC) units, HVAC equipment
- Computer room air handling (CRAH) units
- Direct expansion air handlers
- Generator or Power back ups
- Pumps, Cooling Tower (CT)
- UPS system

Performance analysis and action taken: Point 1

Demonstrate that there is a system in place to analyse the real time data and corrective & preventive measures taken on daily / weekly basis.

❖ Rack Cooling Index Points 1-3

Demonstrate a system in place for monitoring Rack Cooling Performance Index online and predictive & corrective actions are taken to maintain the thermal conditions within the recommended range.

The points are awarded as below for RCI values:

Rack Cooling Performance Index (%)	Credit Points
Minimum 90%	1
91 -95%	2
≥ 96 %	3

Note:

If online system is not available, RCI_{hi} and RCI_{lo} can be calculated based on ASHRAE or technology suppliers' Maximum and minimum, allowable and recommended temperature levels as below.

RCI_{hi} = {1 - [{Σ (Tx − Tmax-rec)} / { (Tmax-all – Tmax-rec) n}] }100 %, for Tx>Tmax-rec

Where:

- Tx Mean temperature at intake x [°F or °C]
- n Total number of intakes
- Tmax-rec Max recommended temperature as per ASHRAE or Technology supplier [°F or °C]
- Tmax-all Max allowable temperature as per ASHRAE or Technology supplier in [°F or °C]

RCI_{lo} = {1 – [{ Σ (Tmin-rec – Tx)} /{(Tmin-rec – Tmin-all) n }] }100 %, for Tx<Tmin-rec

Where:

- Tmin-rec Min recommended temperature as per ASHRAE or Technology supplier [°F or °C]
- Tmin-all Min allowable temperature as per ASHRAE or Technology supplier [°F or °C]

❖ Operating Temperature and Humidity: Point 2-3

Demonstrate that the project has been maintaining the cold end or supply air temperature and humidity at a level more than the recommended operating range of ASHRAE 2008, 2011 standard or technology supplier.

Low end temperature	18°C (64.4°F)
High end temperature	27°C (80.6°F)
Low end moisture	5.5°C (41.9°F) dew point
High end moisture	60% relative humidity and 15°C (59°F) dew point

In case of existing Data Center project, one credit point shall be awarded for every 1°C increase above 24°C operating temperature compared to the recommended value by ASHRAE or O&M. The maximum achievable credit points shall be three.

The project shall submit design & operation strategies to show credit compliance. One credit point shall be awarded for every 1°C increase above 24°C operating temperature compared to the recommended value by ASHRAE or O&M. The maximum achievable credit points shall be two.

Note

For New Data Center, the Real time performance monitoring system, system to monitor Rack Cooling performance index and online temperature and humidity measurements need to be conceived by design and implemented. 1 Credit point will be allocated for each of these systems.

Documentation Required

- **Real-time monitoring system**
  a) Submit brief description of the existing real time performance monitoring system
  b) Details of parameters monitored and copy of documentation on corrective & preventive measures taken

- **Rack Cooling Performance Index**
  a) Submit the details of measured temperatures along with the calculations
  b) In case of online RCI measurement, provide the mimic or system details

- **Operating Temperature and Humidity**
  a) Submit the recommended range of temperature and RH by the OEMs
  b) Documentation on operating temperature and RH

Water Conservation

Rainwater Harvesting, Roof & Non-roof

WC Mandatory Requirement 1

Intent:

Enhance ground water table or utilize harvested rain water and reduce fresh water consumption.

Compliance Options:

- Design rainwater harvesting system to capture at least '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 the Table.

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

  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%

- In areas where the Central / State Ground Water Board does not recommend artificial rain water recharge (or) if the groundwater table is less than 4 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.
- 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 / 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, municipal storm water drains.

Runoff Coefficients for Typical Surface Types

S No	Surface Type	Runoff 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 Pool	0.95

Documentation Required:

New & Existing Data Center

- Site Plan showing the location of rain water harvesting systems including capacity of rain water harvesting structures (number of pits and their harvesting volumes).

- Additionally, submit photographs of rain water harvesting system/ percolation pit for existing data center project.

Water Metering

WC Credit 1 Points: 1

Intent:

Encourage sub-metering to enhance water management and reduce fresh water consumption.

Compliance Options:

Demonstrate sub-metering for at least three of the following water use applications, as applicable:

- Municipal water supply
- Bore water consumption
- Water consumption for air-conditioning cooling tower makeup
- Water consumption for vegetation
- Any other major source of water consumption

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation Required:

New & Existing Data Center

- Submit details of water meter installations and water balance chart covering entire facility

Water Efficient Plumbing Fixtures

WC Credit 2 Points: 1-2

Intent:

Enhance efficiency of plumbing fixtures, thereby minimizing potable water use.

Compliance Options:

Use water efficient plumbing fixtures (as applicable) whose flow rates are 10% less than the baseline criteria given Table - 5, in aggregate.

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 / Handheld 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
30 % less than baseline criteria	1
40 % less than baseline criteria	2

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 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.
- Plumbing fixtures that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

Exemplary Performance:

This credit is eligible for exemplary performance under ID and O&M Credit 1 - Innovation in Design and O&M Process, if water consumption is 50 % lesser than the baseline criteria.

Documentation Required:

New & Existing Data Center

- Overall annual water balance chart indicating the water use for all type of activities (such as HVAC, flushing, irrigation, etc.)
- Details indicating the flow rates and flush rates of all the fixture types
- Filled in templates and calculations as per the Annexure XX

Waste Water Treatment and Reuse

WC Credit 3 Points: 1-2

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: (1 Point)**

  Have an on-site treatment system to handle 100% of waste water generated in the Data Center, to the quality standards suitable for reuse, as prescribed by Central (or) State Pollution Control Board, as applicable.

  In case of Data centers located in large campus / building a centralized waste water treatment system will meet the requirement of this credit.

(And)

- **Waste Water Reuse: (1 Point)**

  Use treated waste water for at least 50% of the total water required for landscaping, flushing, and cooling tower make-up water (if the project uses water-cooled chillers).

Notes:

- Waste water here refers to both grey and black 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, then the project can show compliance 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 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.

Exemplary Performance:

This credit is eligible for exemplary performance under Innovation in Design and O&M Process, if treated waste water is used for at least 95% of the total water required for landscaping, flushing, and cooling make-up water (if the project uses water-cooled chillers).

Documentation Required:

<u>New & Existing Data Center</u>

- Overall annual water balance chart indicating the water use for all type of activities (such as HVAC, flushing, irrigation, etc.)
- Details indicating the flow rates and flush rates of all the fixture types
- Filled in templates and calculations as per the Annexure.

Building Materials and Resources

Waste Management Policy

BMR Mandatory Requirement 1

Intent:

Have a waste management policy that would guide the organization to derive wealth out of waste or at least dispose the waste in an environment friendly manner.

Compliance Options:

- ❖ Submit waste management policy including e-waste, wet and dry wastes.
- ❖ Highlight the strategies for deriving the wealth out of waste

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation Required:

<u>New & Existing Data Center</u>

- Submit a policy document signed by head of the organization / authorized signatory highlighting waste management within the organization

Segregation of Waste

BMR Mandatory Requirement 2

Intent:

Segregate wastes at source to encourage reuse or recycling of materials thereby avoiding waste being sent to landfills.

Compliance Options:

Non Hazardous waste

Provide separate bins to collect non-hazardous dry solid wastes such as paper, plastics, metals, glass etc. and wet wastes in the common areas as required. Divert the collected waste to a centralized facility which is easily accessible for hauling.

Hazardous waste

Provide a separate collection system for safe disposal of hazardous wastes such as Batteries, E-wastes, Lamps etc.

Follow hazardous waste management guidelines as prescribed by the Ministry of Environment and Forest (MOEF), Government of India.

Documentation Required:

New Data Center

- Submit plan for segregating waste including hazardous and non-hazardous

Existing Data Center

- The details of waste management practices adopted at data center
- Quantification of each type of waste including hazardous and non-hazardous waste along with certificate/ letter from designated recyclers for disposal or recycling of waste

Certified Green Building Materials, Products & Equipment

BMR Credit 1 Points: 1-10

Intent:

Use certified green building materials, products, and equipment, so as to reduce dependence on materials that have associated negative environmental impacts.

Compliance Options:

Ensure that the Data Center uses at least five passive or active green building materials, products or equipment that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label.

Points are awarded as below:

Number of Certified Green Products used	Credit Points
1	1
2	2
3	3
4	4
5	5

Notes:

- Passive Products & Materials include glazing, insulation, paints & coatings, adhesives & sealants, flyash blocks, cement, concrete, composite wood, certified wood, housekeeping chemicals, false ceiling materials, flooring materials, furniture, gypsum based products, high reflective materials & coatings, etc.,

- Active Products include Electrical systems (Lighting Systems & Controls, Pumps & Motors, etc.,), Mechanical systems (unitary air conditioners, etc.,), Plumbing Fixtures (faucets, showers, etc.,)

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation Required:

New and Existing Data Center

- Submit project specific invoice, purchase order for the procurement of certified green building materials, products and equipment

E-Waste Management

BMR Credit 2 Points: 3

Intent:

Manage E-Waste in an environmentally responsible manner, thereby reducing health hazards in handling such waste.

Compliance Options:

Disposal through an authorized E – Waste Recycler (1 Point)

- Data center has to collect, store in a designated place and handover the E- wastes only to an authorized recycler for recycling of E- Wastes.
- Data center to maintain an inventory of all the E-Waste generated with their total weight in a year

Waste prevention by Reuse (2 Points)

- Refurbish the E waste generated such as computers, monitors, keyboards, laptops etc and reuse either within the organization (Or) donate the refurbished electronic products to Schools, Non Profit organisations, lower income families and others who cannot otherwise afford.

  Credit points are awarded as below:

E-Wastes refurbished and reused - % by weight of total e-waste	Credit Points
10%	1
20%	2

Documentation Required:

<u>New and Existing Data Center</u>

- Commitment to dispose the e-waste only through authorized recycler
- For existing data center project, submit the total quantity of e-waste disposed in the preceding year to the authorized e-waste recycler along with the certificate.

Non-Hazardous waste & Operations

BMR Credit 3 Points: 2

Intent:

Facilitate reuse & recycling of non hazardous waste to avoid such waste being sent to landfills and reduce associated environmental impacts.

Compliance options

Demonstrate that the non-hazardous solid waste generated in a year is diverted from landfills for reuse or recycling.

Use consistent metrics either weight or volume to show compliance.

Credit points are awarded as below.

% of Non-Hazardous wastes diverted from landfills by weight or volume	Credit Points
50%	1
75%	2

Exemplary Performance

This credit is eligible for exemplary performance under Innovation in Design and O&M Process, if more than 95% of Non-hazardous solid wastes are diverted from landfill for reuse or recycling.

Documentation Required:

<u>New and Existing Data Center</u>

- Details of non-hazardous solid wastes generated along with their weight for the preceding year
- Details of disposal mechanisms and supporting documents for the same

Indoor Environmental Quality

Tobacco Smoke Control

IEQ Mandatory Requirement 1

Intent:

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

Compliance Options:

❖ **Case A: No Smoking**

Demonstrate that smoking is prohibited in the building, and is in accordance with the regulations of Ministry of Health & Family Welfare, Government of India.

(And / Or)

❖ **Case B : Outdoor Smoking Areas**

In case the Data Center has assigned outdoor smoking areas, locate such areas at a minimum of 7.6 meters from all outdoor air intakes (entrance doors, window openings etc.)

(And / Or)

❖ **Case C : Designated Smoking Rooms**

Alternately, compliance can be shown through designated smoking rooms which capture and remove tobacco smoke from the building.

Notes (Designing a Smoking Room):

- The smoking room shall be completely sealed.
- The conditioned air entry into the smoking zone shall not return back or be transferred to the air-handling units. This air shall be completely exhausted.
- The exhaust air louver / duct should be located at least 7.6 meters away from building entry or fresh air intakes.
- The smoking room shall be maintained at a negative pressure of 5 Pascals (0.00005 bar).

Documentation requirement

New & Existing Data Center

- Copy of HR policy indicating that smoking is prohibited in the facility/ premises.
- For existing data center project, submit photographs of 'No Smoking' signage displayed at various locations in the facility to educate occupants / visitors

Minimum Fresh Air Ventilation

IEQ Mandatory Requirement 2

Intent:

Provide adequate outdoor air ventilation so as to avoid pollutants affecting indoor air quality.

Compliance Options:

Air-conditioned Spaces

Demonstrate that the fresh air ventilation in all regularly occupied areas to meet the minimum ventilation rates, as prescribed in ASHRAE Standard 62.1 - 2013.

Documentation requirement

New & Existing Data Center

- For each regularly occupied air-conditioned space, provide calculations of outdoor air intake to show compliance with the reference standard
- For standard ventilation rates, please refer ASHRAE 62.1-2013

Indoor Air Quality

IEQ Credit 1 Points: 1-3

Intent:

Continuously monitor and control indoor air quality, to ensure dust free environment for equipment and comfort & well being for occupants.

Compliance Options:

- **IT Space**

Particulate Contamination (1 Point)

Demonstrate the data Center has installed filters to meet ASHRAE recommendation of achieving ISO Class 8 cleanliness.

Note
To achieve ISO Class 8 cleanliness, the following filtering mechanisms may be adopted by Data Centers.

- The room air be continuously filtered with MERV 8 filters (as recommended by ASHRAE standard 127).
- Fresh air entering the data center shall be filtered with MERV 11 to MERV 13 filters (as recommended in Particulate and Gaseous Contamination in Datacom Environments -ASHRAE 2009b).

- **IAQ Testing (1 Point)**

Conduct baseline IAQ testing using testing protocols consistent with the ISO method (listed in the Table) and demonstrate that the maximum concentration levels of contaminants are not exceeded, in the areas regularly occupied and IT-spaces. IAQ testing shall be performed annually, each testing cycle shall record quality of air for a minimum of 24 hours.

Contaminant	Maximum Concentration	ISO Method
Formaldehyde	27 parts per billion	ISO 16000-3
Particulates (PM10)	50 micrograms per cubic meter	ISO 7708
Total volatile organic compounds (TVOCs)	500 micrograms per cubic meter	ISO 16000-6
4-Phenylcyclohexene	6.5 micrograms per cubic meter	ISO 16000-6
Carbon monoxide (CO)	9 parts per million and no greater than 2 parts per million above outdoor levels	ISO 4224

❖ Non-technical Spaces (1 Point)

Demonstrate that the project has installed CO_2 sensors in return air ducts to maintain a differential CO_2 level of maximum 530 ppm in all regularly occupied areas.

Exemplary Performance:

This Credit is eligible for exemplary performance if the project continuously monitor, control, and record IAQ parameters as listed in the compliance approach defined for 'IAQ Testing'.

Documentation requirement

New & Existing Data Center

- Submit details of filter used for continuous air filtration and fresh air filtration installed in air handling units (AHU and PAHUs)
- Details of temperature and humidity sensor installed in each hot and cold aisle containment
- Details of CO2 sensor installed in the return air duct of each AHU
- IAQ testing shall be performed after AHU / PAHU and shall record parameters defined under IAQ Testing including Sulphur, Sox, Nox and particulates matter (PM2.5).

Daylighting

IEQ Credit 2 Points: 1-2

Intent:

Ensure connectivity between the interior and the exterior environment, by providing adequate daylighting.

Compliance Options:

The project 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	Credit Points
≥ 75%	1
≥ 95%	2

Notes:

- Regularly occupied areas (Non-technical) 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 (Non-technical) 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 (Non-technical) occupied areas include toilets, store rooms, etc.
- For non-technical 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.

❖ **Option 1: Simulation Approach**

Demonstrate through computer simulation that 75% of the regularly occupied spaces in the data center 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 the data center 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

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation requirement

New & Existing Data Center

- Submit simulation / measurement report of non-technical areas in the data center achieving daylight illuminance levels of minimum 110 Lux.

Low-emitting Materials

IEQ Credit 3 Points: 1-4

Intent:

Encourage use of materials and systems with low VOC emissions, so as to reduce adverse health impacts on building occupants in non-IT spaces.

Compliance Options:

Demonstrate that the project complies with any four of the following categories:

- **Paints & Coatings: (1 point)**

  Use paints and coatings (including primers) with low or no VOC content (as specified in Table given below) for 95% of interior wall and ceiling surface area

VOC Limits for Paints & Coatings

Type of Paints & Coatings	VOC Limit (g/L less water)
Non-flat (Glossy)	150
Flat (Mat)	50
Anti-corrosive/ Anti-rust	250
Clear Wood Finish: Varnish	350
Clear Wood Finish: Lacquer	550
Floor Coatings	100

Note:

Paints & Coatings that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

- **Adhesives: (1 point)**

For adhesives used within the interiors, ensure that the VOC content does not exceed the limits as specified in Table given below:

VOC Limits for Adhesives

Type of Adhesives	VOC Limit (g/L less water)
Glazing adhesives	100
Ceramic tile adhesives	65
Drywall and panel adhesives	50
Wood substrata adhesives	30
Wood flooring adhesives	100
HVAC duct insulation	850
Indoor Carpet adhesives	50
Multipurpose construction adhesives	70

Note:

Adhesives that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

Notes for Paints & Coatings and Adhesives:

- Volatile organic compounds (VOCs) are carbon compounds that participate in atmospheric photochemical reactions (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, and ammonium carbonate). The compounds vaporise at normal room temperatures.

- If the data Center has used small quantities of non-complying paints & coatings and / or adhesives, a VOC budget can be calculated to demonstrate that the weighted average VOC of all products (based on litres of each applied) is below the allowed limit, by each type.

❖ **Carpets: (1 point)**

All carpets installed in the Data center's interior must comply with GreenPro – Green Product Certification supported by IGBC or CRI Green Label Plus Carpet Programme.

Notes:

- Project is eligible for this credit point only if, the carpet is installed in at least 10% of the project total carpet area.

❖ **Composite Wood: (1 point)**

Composite wood and Agri-fiber materials used in the building must not contain added urea-formaldehyde resins.

Notes:

- Composite wood consists of wood or plant particles or fibers bonded together by a synthetic resin or binder. Examples include plywood, particle-board, and Medium-Density Fiberboard (MDF).
- Composite wood that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

New Wood Furniture:

New wood furniture items such as work stations, chairs, tables, cabinets, etc., shall comply with the indoor air concentrations that are less than or equal to those listed in table given below.

Maximum Indoor Air Concentrations

Chemical Contaminant	Emission Limits for System Furniture	Emission Limits for Seating
TVOC	0.5 mg/m^3	0.25 mg/m^3
Formaldehyde	50 parts per billion	25 parts per billion
Total Aldehydes	100 parts per billion	50 parts per billion
4 - Phenylcyclohexene (4 - PCH)	0.0065 mg/m^3	0.325 mg/m^3

Notes:

- Salvaged wood based materials shall not be considered under 'New Wood Furniture' category.
- New wood furniture that are certified by 'GreenPro' – Green Product Certification programme with the support of IGBC or having any other internationally accepted Eco Label, can be used by the project to show compliance.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation requirement

New & Existing Data Center

- Submit procurement invoice/ purchase order/ declaration that project shall use GreenPro certified products or products with low or ultra-low VOC content

Occupant Well-being Facilities

IEQ Credit 4 Points: 1

Intent

Provide occupant well-being facilities, so as to enhance physical, emotional and spiritual well-being of the operating and maintenance personnel.

Compliance Options:

Demonstrate that the data Center has atleast one of the well-being facilities (such as gymnasium, aerobics, yoga, meditation or any indoor / outdoor games).

In case data Center located in a large campus / building demonstrate that the common wellbeing facilities are accessible to the operating and maintenance personnel of Data center.

Exemplary Performance:

This credit is not eligible for exemplary performance.

Documentation requirement

<u>New & Existing Data Center</u>

- Plan for wellbeing facilities for new data center and for existing data center, the details of wellbeing facilities available along with the photographs.

Innovation and Development

Innovation and Development

ID Credit 1 Points: 1-5

Intent:

To encourage innovation in design, operation and maintenance of existing data centers so as to reduce environmental impacts

Compliance option

Option 1: Innovation

Implement measures that are not addressed in the Data Center rating system although can significantly reduce environmental impacts.

(Or)

Option 2: Exemplary performance

The project is eligible for exemplary performance, if the design and / O&M measures greatly exceed the credit requirements of the IGBC Green Data Center rating system.

Note:

The project can apply for maximum of 5 innovative measures for gaining points as part of this credit.

- 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 Data Center rating system are defined in respective credits.

General 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 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.

Documentation requirement:

New & Existing Data Center

Innovation Credits 1-5

- For each innovation credit, submit the following:
  - Intent
  - Strategies adopted
  - Measurable impacts
  - How these measures can be sustained in future
- Identify the Exemplary performance in IGBC Green Data Center Credits. If the project is crossing a maximum threshold of credit requirement, that credit is eligible for exemplary performance.

  Please note that, this is applicable for only credits, where Exemplary Performance is mentioned in the credit requirement.

IGBC Accredited Professional

ID Credit 2 Points: 1

Intent:

Support and encourage involvement of IGBC Accredited Professionals, so as to integrate appropriate green measures and streamline the certification process.

Compliance Options:

At least one principal participant of the project team shall be an IGBC Accredited Professional.

Documentation requirement:

- Submit the IGBC AP certificate of at least one of principal participants involved in the project

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IGBC

Confederation of Indian Industry

IGBC Green Data Centre Rating System, Pilot Version 2016

Addenda-1, 2017

CII-Indian Green Building Council (IGBC) launched an exclusive rating system to spearhead the green concepts in Data Centre Industry in 2016. Based on the feedback received from Data Centre projects /Stakeholders, Technical Committee of IGBC Green Data Centre rating system has proposed amendment in the PUE for both Existing and New Data Centre Projects.

The following amendment shall be considered by the project team for certification of New and Existing Data Centre Projects under IGBC Green Data Centre Rating system.

1. EE Mandatory Requirement 3 **Minimum Energy Efficiency**

Intent:

Optimise energy consumption to reduce negative environmental impacts from excessive energy use.

Compliance Options:

❖ **Power Usage Effectiveness (PUE)**

Minimise the Power Usage Effectiveness (PUE) of the data center by reducing the total facility energy consumption.

PUE is defined as

$$\text{Power Usage Effectiveness} = \frac{\text{Total Facility Energy (kWh)}}{\text{IT Equipment Energy (kWh)}}$$

Total Facility Energy

This includes all IT equipment energy which is used to manage, process, store, or route data within the compute space and everything that support the IT equipment using energy such as:

- Power delivery component, including UPS system, switch gear, generator, power distribution Unit (PDU), batteries and distribution losses external to the IT equipment
- Cooling system component such as chiller, cooling tower, pump, computer room air handling unit (CRAHs), computer room air-conditioning units (CRACs) and direct expansion air handler units
- Other miscellaneous loads such as data center lighting.

IT Equipment Energy

This includes, energy associated with all the IT Equipment (e.g. compute, storage and network equipment) along with supplemental equipment (e.g. KVM switches, monitors, and workstations or laptops, used to monitor or otherwise control the data center).

Total facility energy and IT equipment energy need to be measured as below:

- Total facility energy at utility-input
- IT Equipment at PDU output (kWh measurement taken either at PDU display or by an energy meter on the secondary side of PDU transformer

- The IT equipment energy and total facility energy need to be measured on daily basis

Establish the Power Usage Effectiveness of Data Center as per the above procedure and demonstrate that the PUE does not exceed threshold limit at 1/3 (33%) loading of the data center.

Project Type	Requirement of Pilot Version	Addenda-1
PUE (Power Usages Effectiveness) for Existing Data centre Project	The Power Usage Effectiveness (PUE) of an existing Data Center shall not exceed 3.0	The Power Usage Effectiveness (PUE) of an existing Data Center shall not exceed 3.0
PUE (Power Usages Effectiveness) for New Data Centre Project	The Power Usage Effectiveness (PUE) of a new Data Center shall not exceed 1.5	The Power Usage Effectiveness (PUE) of a new Data Center shall not exceed 1.69

2. Enhanced Energy Efficiency - Credit 4 Points: 1-42

Intent

Optimise energy consumption, to reduce negative environmental impacts arising from excessive energy use.

Compliance Options

❖ **Data Processing (IT Equipment Power)**

Demonstrate with the detailed calculations that the Power Usage Effectiveness (PUE) is lower than the threshold limit of 3.0.

The details of monthly energy consumption for the past one year at power distribution unit level and the utility meter level dedicated for the data center to be provided along with the power distribution diagram with the metering details.

Points are awarded based on the actual PUE measured for Existing Data Centers as below:

S No.	PUE Range	Credit Points	S No.	PUE Range	Credit Points
1	2.91 - 3.00	1	10	2.01 - 2.10	18
2	2.81 - 2.90	2	11	1.91 - 2.00	21
3	2.71 - 2.80	3	12	1.81 - 1.90	24
4	2.61 - 2.70	5	13	1.71 - 1.80	27
5	2.51 - 2.60	7	14	1.61 - 1.70	30
6	2.41 - 2.50	9	15	1.51 - 1.60	34
7	2.31 - 2.40	11	16	1.41 - 1.50	38
8	2.21 - 2.30	13	17	< 1.40	42
9	2.11 - 2.20	15	-	-	-

Points are awarded based on the design PUE, for new Data Centers:

S No.	PUE Range	Credit Points	PUE Range	Credit Points
Requirement as per Pilot Version			**Credit Requirement as per Addenda 1**	
1	1.50 - 1.40	20	1.69 - 1.60	20
2	1.39 - 1.30	24	1.59 - 1.50	24
3	1.29 - 1.20	28	1.49 - 1.40	28
4	1.19 - 1.10	34	1.39 - 1.30	34
5	< 1.10	42	< 1.30	42

The procedure of calculating PUE (Power Usage Effectiveness) and compliance requirement would remain same, as defined in the IGBC Green Data Centre Rating system, Pilot version. For further details or clarification, please get in touch with IGBC Team:

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