A Joint Initiative of IGBC and LBNL US for
“Enhanced Energy Efficiency in Indian Data Centres”

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Green Data Centers: Initiative of IGBC and LBNL US for “Enhanced Energy Efficiency in Indian Data Centres”
IGBC
Green Data Centre Rating System

Indian Green Building Council
Greening India since 2001

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Indian Green Building Council (IGBC)

❖ Vision of IGBC

➢ Enable ‘sustainable built environment for all’

➢ India to be one of the global leaders in sustainable built environment by 2025
Green Building Movement in India

In 2001, 1 Green Building 20,000 sq.ft.

5,174 Registered Projects
6.77 Billion sq. ft.
Unique Features of IGBC Data Centre Rating System

❖ Addresses Data Centre IT & Non-IT load

❖ At par with International standards

❖ Key focus areas
  ➢ Energy efficiency
  ➢ Operation & Maintenance
  ➢ Indoor Environment Quality (IEQ)
  ➢ e-Waste management

❖ Handholding for implementation of green features
Benefits of Green Data Center

❖ Tangible benefits
  ➢ Improvement in Power Usages Effectiveness (PUE)
  ➢ Increased reliability
  ➢ Reduction in water consumption in case of water cooled chillers

❖ Intangible benefits
  ➢ Enhanced e-waste management
  ➢ Improved Indoor Environment Quality (IEQ)
  ➢ Green image
  ➢ Benchmarking
Energy Performance

Intent:

- Optimize energy consumption, to reduce negative environmental impacts from excessive energy use

Compliance Options

- Minimise Power Usage Effectiveness (PUE) by reducing total facility energy consumption

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

- Energy measurement at PDU level &
- PUE measurement on Daily Basis
Minimum Energy Performance

- New Data Centers
  - To demonstrate through design document / simulation
  - PUE to be considered at 33% load

- Minimum Energy Performance
  - Power Usage Effectiveness (PUE)
    - Existing Data Centre
    - New Data Centre
O&M Systems and Practices

- Real time performance monitoring system
  - Demonstrate a system in place for real time monitoring of operating conditions and performance of
    - HVAC and Computer room air conditioning
    - Precision air handling units
    - Direct expansion air handlers
    - Generators / Power backups
    - UPS systems
    - Pumps, Cooling towers

- Performance Analysis and action taken
  - System in place for Data analysis, Preventive and corrective measures taken
O&M Systems and Practices

- Rack Cooling Index
  - Measure of how well the system is cooled within the specified temperature limits
  - Demonstrate system in place for measure of RCI and maintained within the limits
  - Encourages maintenance of temperature 24°C and above

\[
RCl_{HI} = [1 - \frac{\text{Total Over-Temp}}{\text{Max Allowable Over-Temp}}] \times 100 \%
\]

- Overcooled (higher costs)
- RCI = 100% (best operation — “Goldilocks” zone)
- Too hot (risk of failure)
E – Waste Management

- **Intent:**
  - Manage e-Waste in an environmentally responsible manner, thereby reducing health hazards in handling such wastes

- **Compliance Options:**
  - Disposal through an authorized E-Waste recycler
  - Refurbish e-Waste and reuse

- **IGBC would facilitate**
  - Learning from other leading Data Centers
  - Interaction/ tie-ups with authorized recyclers for increased value addition
Support from IGBC

- Feasibility study
  - Site visit
  - Present status with respect to Data Center rating
  - Improvement opportunities

- Facilitation and Handholding
  - Implementation of green features
  - Information sharing
    - Leading data centres
    - Technology suppliers
    - Service providers
Joint Initiative by IGBC and LBNL-US (DOE)

- Develop and Implement Policies and Programs Supporting
  - Greater Energy Efficiency in Indian Data Centres

Objectives of the initiative:
- Develop and recommend Energy Efficiency standards for Indian Data centres
  - To augment the minimum requirements included in the ECBC 2017
- Develop user guide for implementing the minimum ECBC standards
  - Identify and document case studies
- Capacity building – Spread awareness in DC industry
New Initiative: BEE-CII-KPMG

❖ Support in Financing for Energy Efficiency in Data Centres
  ❖ With support of Funder/ Forum

❖ Selection of DC projects for case studies
  ❖ Most energy efficient DC
  ❖ The DC which has significant energy saving potential
  ❖ New Technologies to drive energy efficiency
  ❖ Performance analysis for ECBC Compliance
To sum up

❖ Excellent opportunity for Indian Data Centers to improve

- Energy Performance
- Operation & Maintenance
- Benchmarking, Green Image and Recognition

❖ Request you to all be part of IGBC-LBNL initiative for improving energy performance
Thank You!