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Confederation of Indian Industry

A Joint Initiative of IGBC and LBNL US for

"Enhanced Energy Efficiency in Indian Data Centres"

24 Sep 2019

CII Data Center Blueprint Summit,

24 September 2019 | BKC, Mumbai

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Green Data Centers:
Initiative of IGBC and LBNL US for
"Enhanced Energy Efficiency in Indian Data Centres"

20 July 17, Bangalore

14 Sep 17, Mumbai

13 Feb 2019, Bangalore

17 July 2018 Bangalore, Ad. Group Meeting

24 Jul 2018, Mumbai

18 May 2018, Mumbai

IGBC

Green Data Centre Rating System

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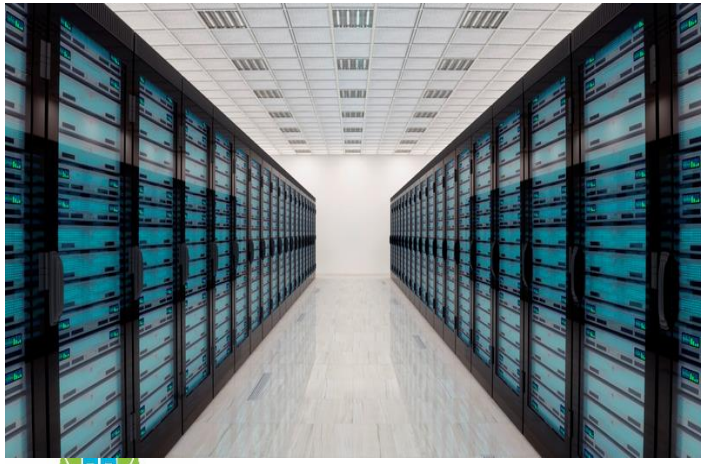

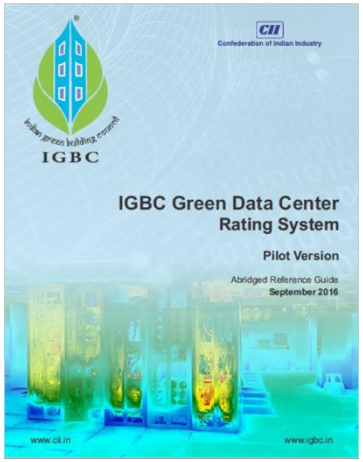

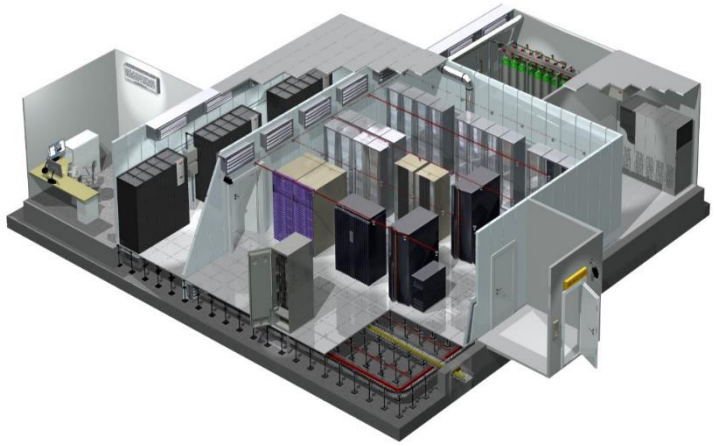

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Indian Green Building Council (IGBC)

❖ 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.

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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 managmenet
- Handholding for implementation of green features

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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

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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**

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

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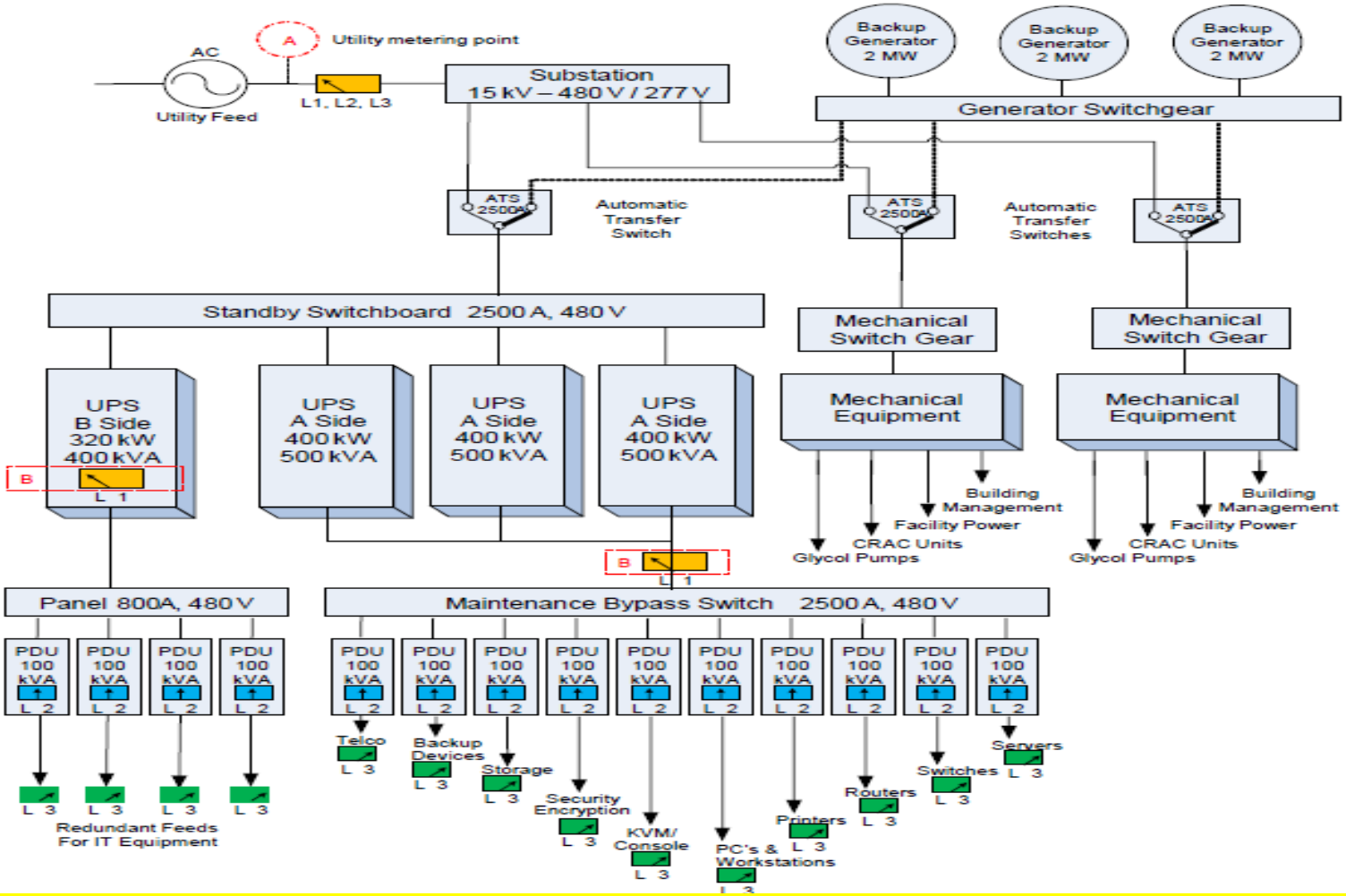
PUE Measurement



❖ **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

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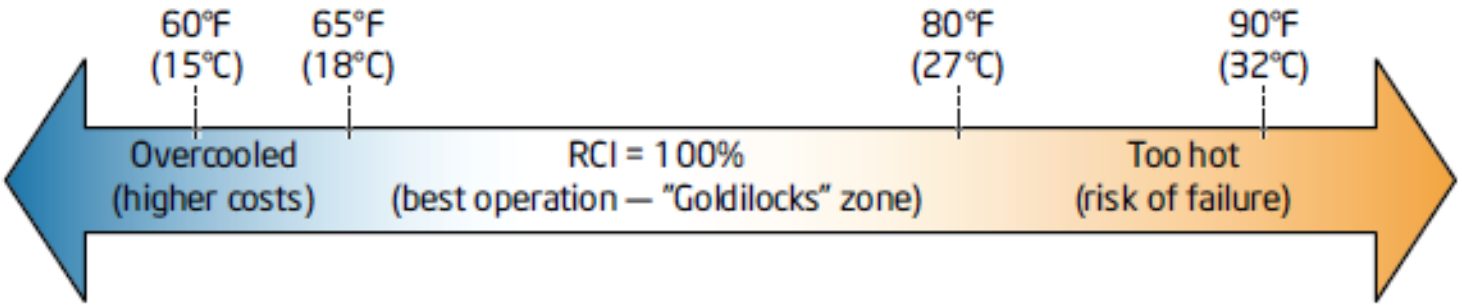
O&M Systems and Practices

- **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**

$$RCI_{HI} = \left[1 - \frac{\text{Total Over-Temp}}{\text{Max Allowable Over-Temp}}\right] 100\ \%$$

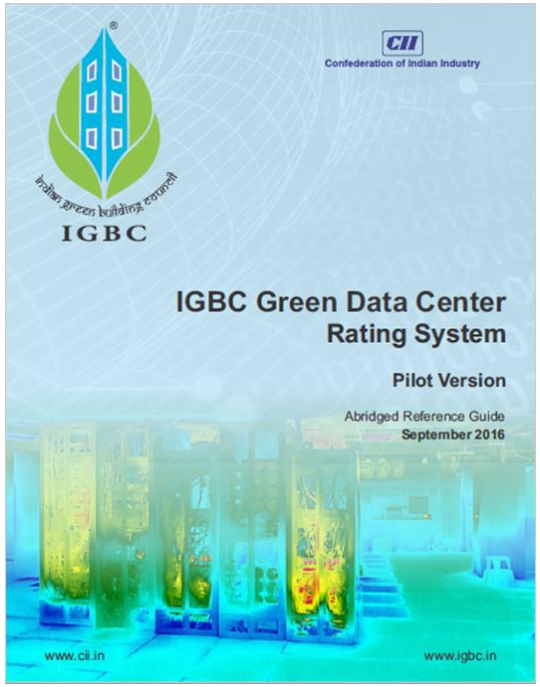


E – Waste Management

- **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



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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

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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 !