IGBC and LBNL Project Review Meeting

13 Feb 2019 |Bangalore

- ❖ **1100 hrs – Updates on IGBC and LBNL Initiative by Shivraj**

- ❖ **1105 hrs – Self Introduction**

- ❖ **1110 hrs – Paradigm Shift in Data Centres by Mr Murari Sinhal**

- ❖ **1120 hrs – Recommendations – Chillers by Mr Hiren Shah**

- ❖ **1140 hrs – Recommendations – Cooling by Mr Raghuveer Singh**

- ❖ **1200 hrs - Recommendations – Electrical by Mr Pritam Goyal**

- ❖ **1220 hrs - Recommendations – IT Hardware & Software**
  by Mr Vivek Rajendran

- ❖ **1240 hrs – Discussions**

- ❖ **1300 hrs – Close**

Workshop on Green Data Centres:

A Joint Initiative of IGBC and LBNL US for

"Enhanced Energy Efficiency in Indian Data Centres"

13 Feb 2019 | Bangalore

Supported by:

Green Data Centers:
Initiative of IGBC and LBNL US for
"Enhanced Energy Efficiency in Indian Data Centres"
13 Feb 2019 | Bangalore

20 July 17, Bangalore

14 Sep 17, Mumbai

18 May 2018, Mumbai
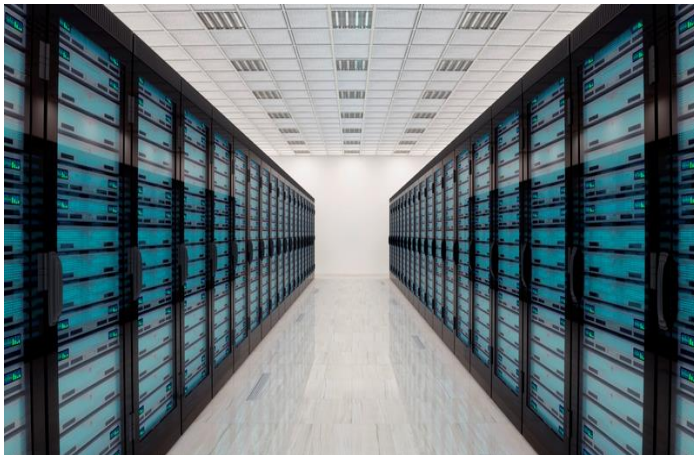
17 July 2018 Bangalore
Advisory Group Meeting

24 July 2018, Mumbai
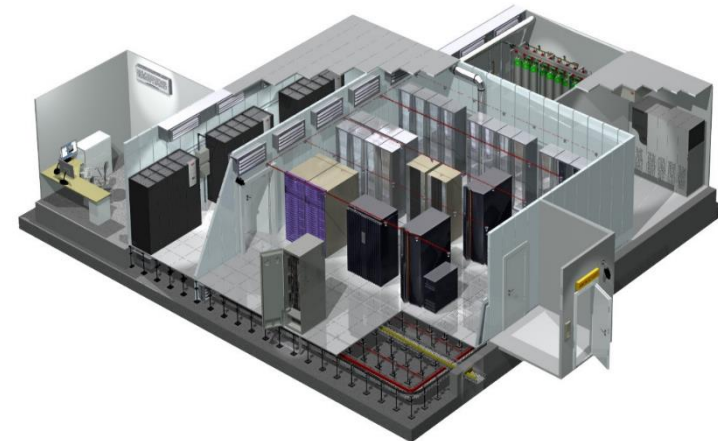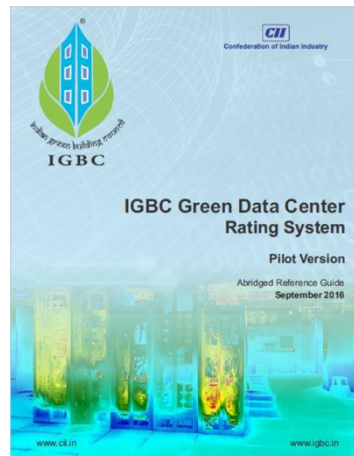National Workshop

IGBC
Green Data Centre Rating System

Indian Green Building Council
Greening India since 2001

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**

Indian Green Building Council
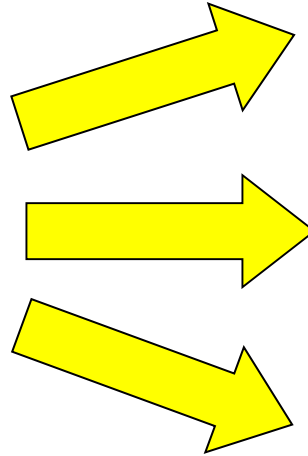*Greening India since 2001*

Indian Green Building Council
Greening India since 2001

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Green Building Movement in India

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

5,030 **Registered Projects**
6.63 Billion sq. ft.

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Indian Green Building Council
Greening India since 2001

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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)**

    ➢ **Waste management :e-Waste**

❖ **Handholding for implementation of green features**

Indian Green Building Council
Greening India since 2001

Benefits of Green Data Center

❖ **Tangible benefits**

➢ **Improvement in Power Usages Effectiveness (PUE)**

➢ **Increased reliability**

➢ **Reduction in water consumption in case of water cooled chiller**

❖ **Intangible benefits**

➢ **Enhanced e-waste management**

➢ **Improved Indoor Environment Quality (IEQ)**

➢ **Excellent daylighting**

➢ **Green image**

➢ **Benchmarking**

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Indian Green Building Council
Greening India since 2001
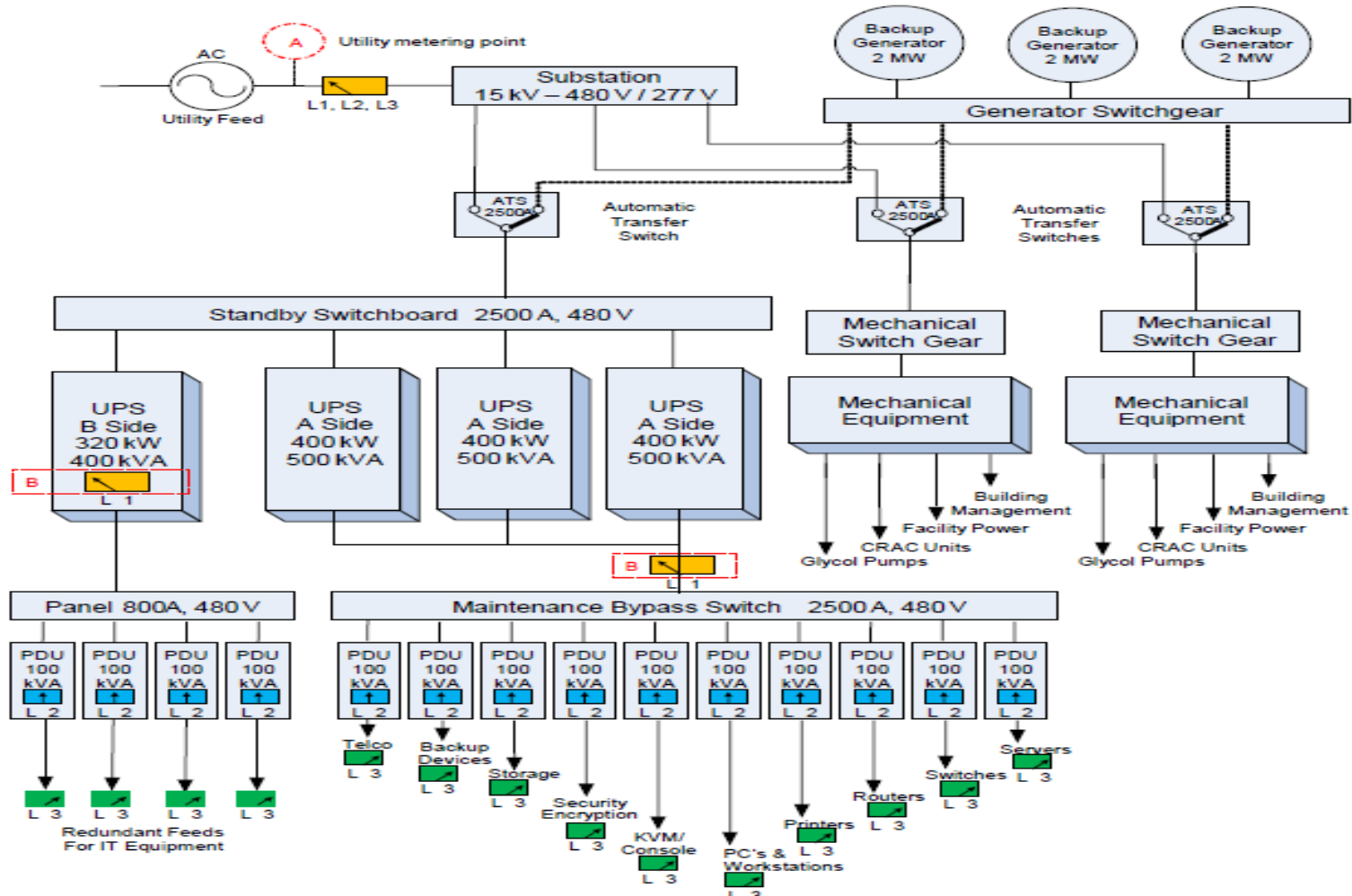
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Energy Performance

- **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**

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

PUE Measurement

IT Equipment 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**

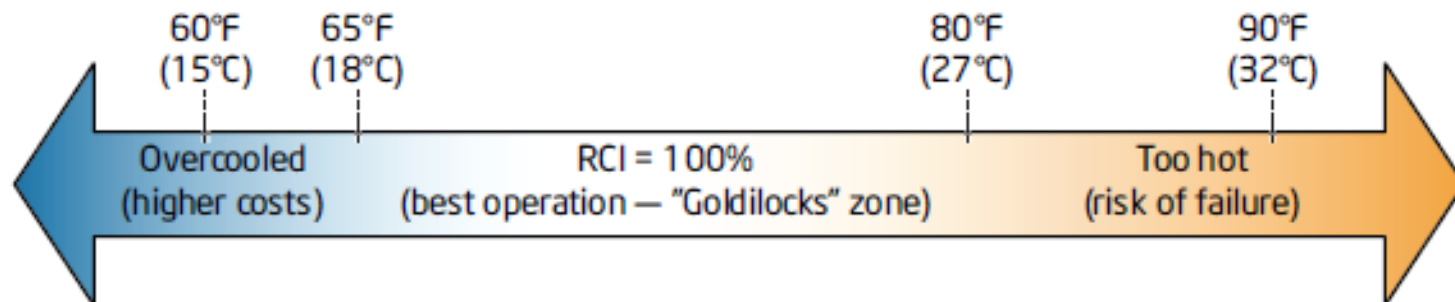- **Performance Analysis and action taken**

  - **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**

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

60°F (15°C)	65°F (18°C)		80°F (27°C)	90°F (32°C)
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 the E-Waste and Reuse

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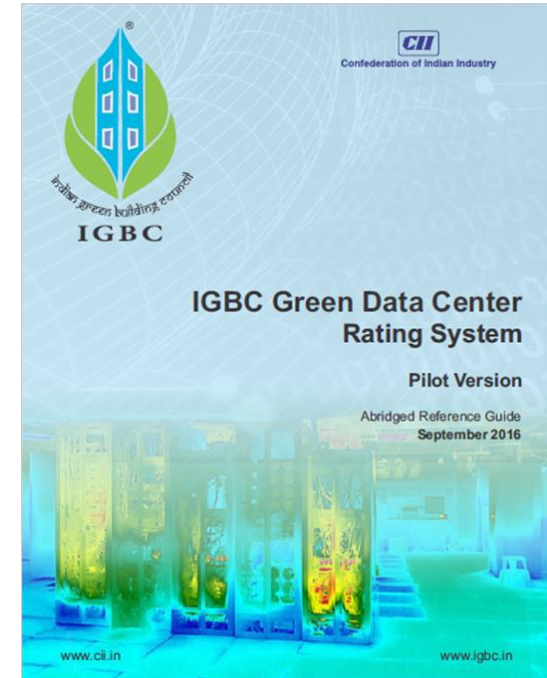
Support from IGBC

- **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**

IGBC Green Data Center Rating System
Pilot Version
Abridged Reference Guide
September 2016

www.cii.in   www.igbc.in

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**

Announcements

❖ **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 and Green Image**

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

❖ **IGBC would be glad to sport in all aspects**

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Thank You !