Welcome to Half-Day Workshop

<table>
<thead>
<tr>
<th>Supporter</th>
<th>Supporter</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGBC</td>
<td>CII</td>
</tr>
<tr>
<td></td>
<td>BERKELEY LAB</td>
</tr>
</tbody>
</table>

Half-day Online Workshop on
Green Data Centers: A Joint Initiative of IGBC and LBNL (DOE) US
“Enhanced Energy Efficiency in Indian Data Centers”

19 Aug 2020 | 1400 hrs to 1730 hrs

© Confederation of Indian Industry
Green Data Centre Rating and New Initiatives by IGBC and LBNL (DOE) US

16 July 2019 | Hyderabad

© Confederation of Indian Industry
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

© Confederation of Indian Industry
Green Building Movement in India

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

5,900 Registered Projects
7.51 Billion sq. ft.

© Confederation of Indian Industry
Unique Features of Green 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 Rating

- **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 and 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) =** \( \frac{\text{Total Facility Energy (kWh)}}{\text{IT Equipment Energy (kWh)}} \)
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

- Energy measurement at PDU level &
- PUE measurement on Daily Basis
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 Chiller, Cooling and Electrical systems

- **Performance Analysis and action taken**
  - System in place for Data analysis, Preventive and corrective measures taken

- **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

\[
RCI_{HT} = \left(1 - \frac{\text{Total Over-Temp}}{\text{Max Allowable Over-Temp}}\right) \times 100 \%
\]
Support from IGBC

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

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

- 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 energy efficiency requirements: ECBC 2017
    - Recommend higher performance rating: Level-I, Level II and Level-III
  - Develop User Guide for implementing the ECBC 2017
  - Document case studies of exemplary Data Centers
  - Capacity building – Spread awareness in DC industry
AGM and Task Force

❖ Key DC stakeholders are part of AGM

❖ Task Force Chairman

- **Chiller Plant**: Mr P.C. Lohia
  Vice President - HVAC, Reliance Industries Ltd.

- **Electrical Systems**: Mr Pritam Goyal
  Microsoft

- **Room Cooling**: Mr Raghuveer Singh
  Director - Thermal Management,
  Vertiv Energy Private Limited

- **IT Hardware & Management**: Mr Vivek Rajendran
  Director, Software Engineering,
  Dell EMC, Infrastructure
Launch of User Guide for ECBC 2017 for DCs and Case Studies (Exemplary Data Centers)

User Guide For Implementing ECBC in Data Centers

Complying With the Energy Conservation Building Code (2017) and Higher Rating Levels

Case studies of Exemplary data Centers
Capacity Building Programmes and AGM

20 July 17, Bangalore  
AGM 2018 Infosys, Bangalore

14 Sep 17, Mumbai  
AGM 2019 Hotel Taj West End Bangalore

13 Feb 2019, Bangalore

18 May 2018, Mumbai

CII-IGBC - ANSI – USTDA- BIS DC Conf

24 Jul 2018, Mumbai
Upcoming DC Activities

- Half-day workshop on Green Data Centers – Enhanced Energy Efficiency in Data Centers
  - Sep 2020

- AGM and Launch of User Guide and Case Studies
  - Sep 2020

- National Conference on Data Centers
  - Oct 2020

- Call for Data Center Research Project
  - Proposal is ready and would be shared with interested service providers and Manufactures
To sum up

❖ Excellent opportunity for Indian Data Centers to improve
  ▪ Improved Design Performance
  ▪ Enhanced Operation & Maintenance
  ▪ Benchmarking, Green Image and Recognition

❖ Aim for elevated performance
  ▪ Meet Performance Standards (Level-I)
  ▪ Exceed Performance – Level-II
  ▪ Demonstrate Leadership in Performance – Level-III

❖ Knowledge exchange and best practices
Thank You!

For any further support, please contact:
Mr Himanshu Prajapati or Himanshu.Prajapati@cii.in
Dr Shivraj Dhaka, shivraj.dhaka@cii.in | 9177577288