Opportunities and Challenges for Indian Data Center Energy Efficiency: An Expert’s Perspective

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**Panelists:**
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Executive Summary: Introduction

• Energy use in data centers growing rapidly
  – Significant burden on operational costs and India’s sustainability.

• DOE/LBNL with assistance from USAID ECO-III and partners conducted multi-year R&D to identify energy efficiency (EE) challenges and opportunities.
  – The findings were determined after 2010 focus group meetings with industry experts.*

Executive Summary: Focus Group Objectives and Participants

• The key workshop objectives were to:
  – Update on current US and India data center R&D.
  – Take stock of data center efficiency activities since 2008.
  – Reassess current challenges to EE in Indian data centers.
  – Identify potential actions to overcome those challenges.
  – Refine data center EE goals and prioritize plans for going forward.

• Representative organizations included:
  – Intel, Cisco, Network Appliances, American Power Conversion, Qualcomm, Infosys, Wipro, Schneider Electric, Tata Communications, Cognizant Technologies, Schnabel DC Consultants, LSI Logics, NASSCOM, AEEE, Sobha Developers Ltd.
Executive Summary: Findings

• The workshops identified significant challenges that included:
  – Lack of awareness and the need for expertise (e.g., capacity building).
  – Lack of policies, regulations and enforcement of data center energy standards and lack of guidelines for voluntary standards and ratings.
  – Need for better benchmarking – performance metrics and measurement protocols, and more metering and measured data.
  – Need for design and assessment tools, as well as tools to better operate data centers.
  – Disconnect between design and operations, and between IT and facilities personnel.
  – Need for demonstrative information technology and infrastructure solutions (e.g., virtualization, cooling).
Executive Summary: Opportunities

• The overarching need was a consultancy “body” or center (a government/industry partnership) to disseminate:
  – Financial and technical resources aimed at a variety of target audiences (information clearinghouse for existing facility retrofits and new facility design)
  – Education and training materials.
  – Certification of designers and operators
  – Mandatory energy efficiency codes and reporting requirements
  – Award and recognition program(s)
  – Market analysis and opportunity assessment.
  – Expand benchmarking activities.

• Technology demonstrations and case studies would provide industry the confidence to adopt new best practices and emerging technologies (e.g., server virtualization).
Executive Summary: What’s Next?

• These findings should encourage both US and Indian Government agencies to take appropriate measures to improve data center EE and foster businesses and public-private partnerships between the two countries.

• The next steps would include:
  – developing a business plan and governance structure for a center of excellence,
  – initiating the additional activities listed in the opportunities (e.g. developing resource material, demonstrations).
Expert Panelists: How do we get there?

- BEE
- USAID ECO-III
- NASSCOM
- AEEE
- LBNL
Key Questions to Panelists

- LBNL: Demonstrations - US examples and studies in India?
- BEE: How does the public-private partnership foster meeting the data center EE goals in India?
- USAID: How opportunities used for exemplary studies to involve industries for technology demonstrations and deployments?
- AEEE: Where do you think the role of an entity such as AEEE fit?
- NASSCOM: Industry representations and associations, including BEE, NASSCOM, and CII, have to get involved in the “center.” How can NASSCOM help?