

ENERGY STAR®

Data Center Infrastructure Rating Development
Question and Answer Session



Web Conference
May 6, 2008

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Data Center Rating Goals



- Build on existing ENERGY STAR platform with methodology similar to existing ratings (1-100 scale)
- Usable for both stand-alone data centers and data centers housed within office or other buildings
- Assess performance at building level to explain how a building performs, not why it performs a certain way
- Provide users with additional resources to help determine next steps after receiving an energy performance rating
- Offer the ENERGY STAR label to data centers with a rating of 75 or higher

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Data Center Rating Goals



- Ideal high level metric: kBtu / useful work
- Challenge: how to measure “useful work”?
- Next Steps
 - Agree on “useful work” – challenge industry to reach consensus
 - Implement working metrics for end users while industry discusses definition of “useful work.”

What is the ENERGY STAR Rating for Data Center Infrastructure?



- **Unit of Analysis:** IT Energy/Total Energy
- **What:** Measure of infrastructure efficiency
 - Captures impact of cooling and support systems
 - Does not capture IT efficiency
- **Why:** Best available whole building measure *at this time*
 - Ideal metric would be measure of energy use/useful work
 - Industry still discussing how to define useful work
 - The critical first step is to start tracking and measuring energy consumption
 - You cannot manage what you do not measure

What is the ENERGY STAR Rating for Data Center Infrastructure?



- **How:** Express ratio (IT Energy/Total Energy) as an ENERGY STAR 1-to-100 rating
 - Each point on rating scale equals 1 percentile of performance
 - Adjust for operating constraints outside of the operators' control (e.g. climate or tier level)
 - Factors for adjustment to be determined based on results of data collection and analysis

Data Needed to Build Rating



- Required data
 - Climate zone (zip code)
 - Type of data center (function)
 - Reliability (Tier Level)
 - Total IT plug energy (12 months of data)
 - Total facility energy usage (12 months of data for all fuels)
- Data needed from a wide variety of facilities (large/small, stand-alone/within larger bldg, etc.)
- EPA estimates that we need good data from a diverse sample of data centers in order to develop the rating

Rating Development Process Overview



- ✓ Consult with industry stakeholders to develop consensus on the use of an IT Energy/Total Energy ratio
- ✓ Develop data collection template, instructions, and support materials
- Gather data on actual energy use from at least 100 existing data centers - **IN PROCESS**
- Analyze data to develop rating models
- Launch ENERGY STAR Data Center Infrastructure Rating in Portfolio Manager

Data Collection and Rating Development Process



- **June 1, 2008**
 - Participant Expression of Interest forms due
 - Data center operators begin collecting data
- **July 2008:** Participants submit first month of data (as soon as it is collected)
- **Quarterly 2008 – 2009**
 - Interim data submitted
 - EPA holds update web conferences
- **June 1, 2009:** Submit final data
- **January 2010:** EPA launches rating in Portfolio Manager (subject to change)

NOTE: If there are an insufficient number of participating data centers by June 2008, the rating may be delayed at least 6 months.

Current Status

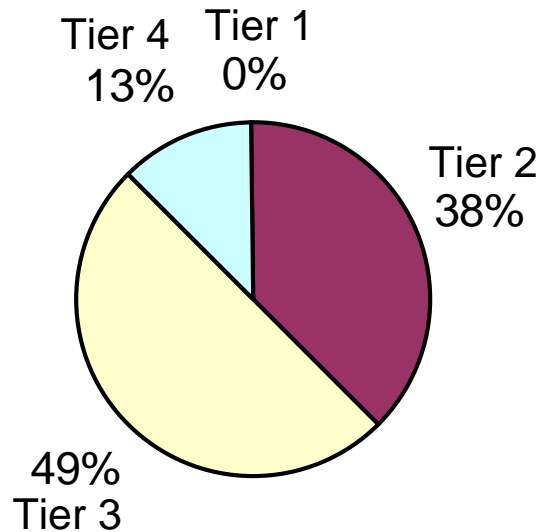


- As of May 5, only 22 companies participating with 43 data centers representing about 3.2 million square feet
- We welcome your participation!

Breakout by Building Type and Tier Level					
	Tier I	Tier II	Tier III	Tier IV	Total
Stand-Alone	0	6	8	2	16
Within a Larger Building	2	11	6	8	27
Total	2	17	14	10	43

Current Status

Stand-Alone Data Centers

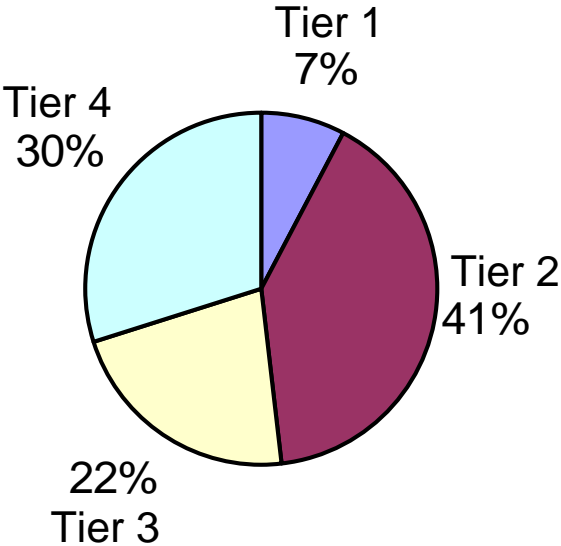


Current Status



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Data Centers Within A Larger Building



Frequently Asked Questions



- Can international data centers be included in the data collection?
 - Yes. Please give us the data.
 - Cannot guarantee a valid international rating -- we will then evaluate and prioritize locations depending upon the geographical response and climatic data.
- What is the threshold of significance at which the office and other support spaces can be included as part of the data center consumption?*
- How should chilled water be accounted for?
- Does the data collection only include data centers that have chillers?
- How should changes in equipment or equipment power usage be reported?

Frequently Asked Questions



- Can international data centers be included in the data collection?
- What is the threshold of significance at which the office and other connected space can be included as part of the data center consumption?
 - If the total “other spaces” or office space is less than 10% of the load, it can be included with the data center.
 - **Polling Question:** Have you experienced difficulties determining what space should be included in the data center square footage?
- How should chilled water be accounted for?
- Does the data collection only include data centers that have chillers?
- How should changes in equipment or equipment power usage be reported?



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Polling Question

Frequently Asked Questions



- Can international data centers be included in the data collection?
- What is the threshold of significance at which the office and other support spaces can be included as part of the data center consumption?
- **How should chilled water be accounted for?**
 - Use the temperature of the chilled water to provide a thermal unit (such as kBtu or therms)
- Does the data collection only include data centers that have chillers?
- How should changes in equipment or equipment power usage be reported?

Frequently Asked Questions



- Can international data centers be included in the data collection?
- What is the threshold of significance at which the office and other support spaces can be included as part of the data center consumption?*
- How should chilled water be accounted for?
- **Does the data collection only include data centers that have chillers?**
 - No, a data center with an alternative cooling system (i.e. direct expansion, condenser) can participate. Complete as many cooling-related questions as possible and note the mechanical system type in the Optional Elements form.
- How should changes in equipment or equipment power usage be reported?

Frequently Asked Questions



- Can international data centers be included in the data collection?
- What is the threshold of significance at which the office and other support spaces can be included as part of the data center consumption?*
- How should chilled water be accounted for?
- Does the data collection only include data centers that have chillers?
- How should changes in equipment or equipment power usage be reported?
 - If equipment changes, enter the average value for each quarterly data submission



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Additional Questions and Discussion

Get Involved Now!!!



- **Data Center Operators**
 - Complete and submit the **Participant Expression of Interest Form** ASAP
 - Ensure that **data center metering** is set up properly
 - Begin **completing the data collection template** and participate in EPA webinars to learn more
- **Industry Associations:** Encourage your members to participate in this important effort
- **Equipment Suppliers and Consultants:** Encourage your clients to participate in the data collection process

For More Information



Please send questions to:

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Check the ENERGY STAR Web site for updates:

www.energystar.gov/datacenters