

ENERGY STAR® for Data Centers

Alyssa Quarforth US EPA, ENERGY STAR <u>Quarforth.Alyssa@epa.gov</u>

> Global Forum November 8, 2010



Learn more at energystar.gov



Reflecting on the state of the US building market....

And signs of changing times...

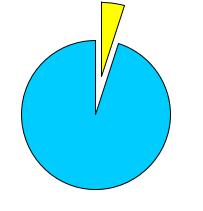


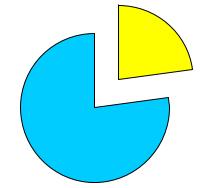
Americans Grapple with Global Warming

The US represents 5% of the world's population...

-But emits 19% of the world's carbon dioxide (CO_2)

- 2008 U.S. emissions of CO₂ equivalent: 7.0 billion metric tons
 - CO₂ is the most prevalent greenhouse gas driving climate change
- Over 94% of CO₂ emissions are from fossil fuel combustion







Energy efficiency legislation & building energy performance disclosure



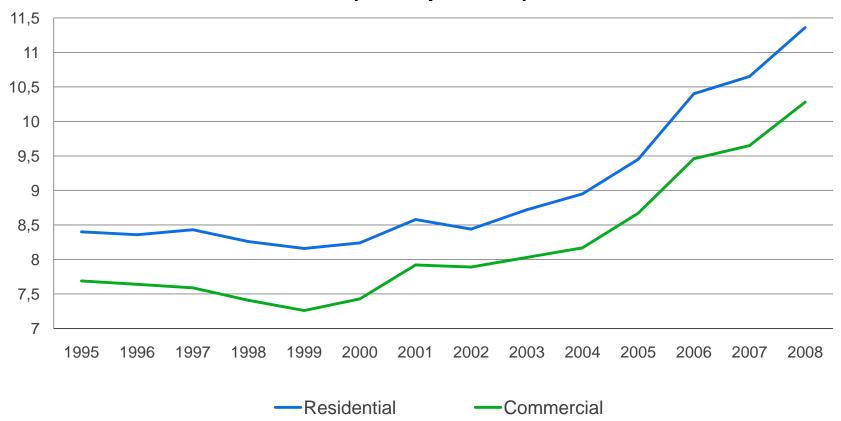


Sepa

Rising Energy Costs



Average Retail Price of Electricity (cents per kWh)

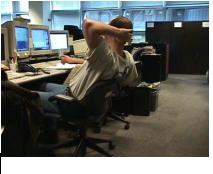


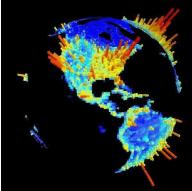


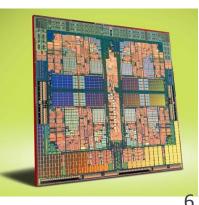
\$EPA

Impact of Data Center energy consumption

- Data center industry consumed 61 billion kWh for a total cost of \$4.5 billion
 - ~1.5% of total US electricity consumption
- National energy consumption by data centers could nearly double by 2011
 - > 100 billion kWh representing a \$7.4 billion annual electricity cost











How do "we" as market participants solve the energy puzzle?





... and how do you stay competitive in an evolving market?



Smart Decision Making is all about information...









Corn Flakes Calories: **100 cal** Salt: **200 mg** Sugar: **2 g**

Oatmeal Calories: **75 cal** Salt: **0 mg** Sugar: **0.5 g** Granola Calories: **598 cal** Salt: **20 mg** Sugar: **7 g**

- Each option offers a different combination of nutrition
 - Which choice is best for a low salt diet? Low calorie? High calorie?
- A nutrition label gives the consumer the ability to make an informed decision



Creating a competitive advantage with information



- EPA's ENERGY STAR Program has worked with commercial real estate sector for over 10 years
- After benchmarking and demonstrating superior energy performance, building managers can earn the ENERGY STAR
- Buildings that earn the ENERGY STAR:
 - Save \$.50 sq/ft (on average)
 - Consume 35% less energy
 - Have increased asset value from performance improvements
 - Have increased tenant satisfaction and retention
 - Have increased visibility (e.g. online listings in CoStar, Travelocity)
 - Have additional opportunities for savings (e.g discounted insurance rates)



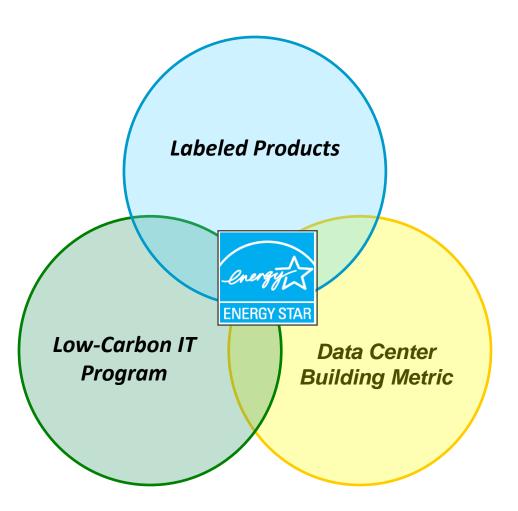


10

Bringing Information to the Market: Solutions from ENERGY STAR



- The Government is responding with a broad based effort to help data center operators reduce overhead by gaining control of rising energy costs
- EPA & DOE have developed tools targeted to break down key barriers to implementing efficiency efforts
- Solutions are broad based, holistic and focus on information first – rather than technology



ENERGY STAR Qualified Products



- Computer Servers
- Data Center Storage in development
- Uninterruptible Power Supplies (UPS) early development







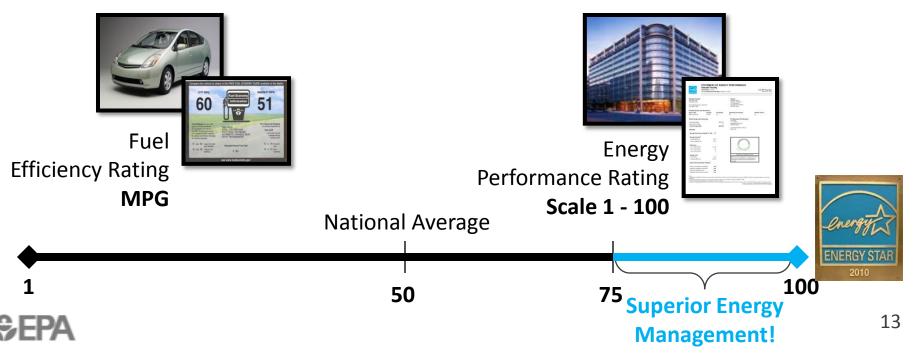
Standardized Building Performance Metric



- Assess whole building energy performance in an easy-tounderstand metric
- Compare a building's energy performance to national peer group

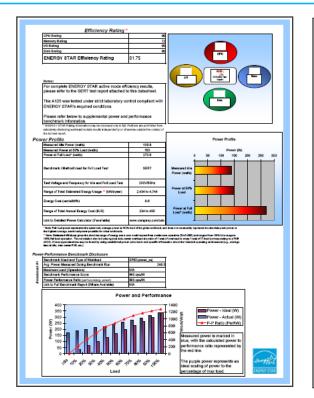
Is 51 MPG high or low for an automobile?

Is 90 kBtu/sf/year high or low for an office building?



ENERGY STAR Nutrition Label for Data Centers

- Information is a key component of both the ENERGY STAR products and buildings efforts
- The PPDS is being incorporated into efforts for servers, storage, and UPS
 - Communicates key efficiency, configuration, an d operational information
 - Assists with purchase comparisons, product research
- Portfolio Manager can create reports for <u>internal</u> business discussions



Power and Performance Data Sheet (Products)



average free meeted to 11 outflie Sorvie 6 hours includentie free for enteding energy data, PE facility impector, and constrain the evel of effort. Second converts reviewed to CMR contract surface to the Director Collector States in Dirichon (13, 1694 03/27). Th

The government estimates in suggestions for welcoing this Westimates, D.C. 20405

EPAForm 5900-1

MRNo 2000-0347 STATEMENT OF ENERGY PERFORMANCE Office Sample Facility Building ID: 1678984 For 12-n in th Period Ending: May 31, 2009 SED becomes inellalible: Date SEP Generated: August 27, 200 Facility Office Sample Facility 1234 Main Street Facility Owne Primary Contact for this Facilit Sample Owner 1500 Test Avenue Jane Smith 1500 Test Avenue hariotte, NC 2822 Charlotte, NC 28227 555-555-5555 Year Built: 2000 Gross Floor Area (114): 53.232 Energy Performance Rating2 (1-300) 8/ Site Energy Use Summary Electricity - Grid Purchase(kBtu) Natural Gas (kBtu)⁴ Total Energy (kBtu) 2,288,770 1,162,996 3,451,766 Energy Intensitys Site (kBtu/ft/lyr) Source (kBtu/ft/lyr) Emissions (based on site energy use) Greenhouse Gas Emissions (MCO,e/w Electric Distribution Utilit 102 261 -35% Office of my visit to this bu onal Average Source EUI Ventilation for Acceptable Indoor Air Quality John Doe oceptable Thermal Environmental Condition Adequate Illumination ENERGY STAR must be autoritise to EPA within 4 months of the Period Ending date. Maformation Rading is based on total source energy. A rading of 75 is the minimum to b memory comparison and the source of the so to estimation of the state of the

14

Tracking Number: SEP20090827000103716



Closing Thoughts



- Sustainability is a survival strategy
- Data center operators have opportunity to reduce energy consumption, costs, and GHG emissions
- Develop a long term plan & phase in over time
 Emphasize collaboration & learning to identify, measure and track -- before investing in "technology"
- ENERGY STAR provides tools and information that can be used to make decisions resulting in reduced energy consumption and costs

