



# ENERGY STAR® for Data Centers

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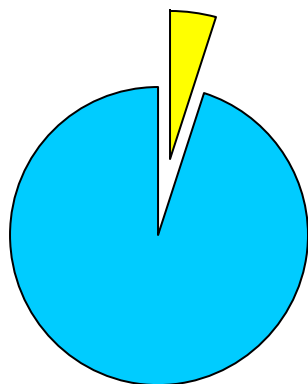
Learn more at [energystar.gov](http://energystar.gov)

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

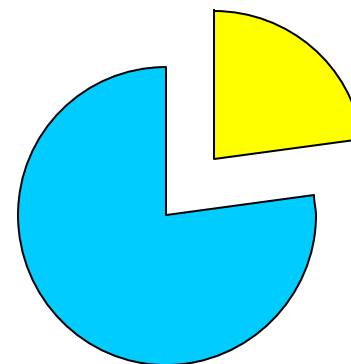
And signs of changing times...

# Americans Grapple with Global Warming

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

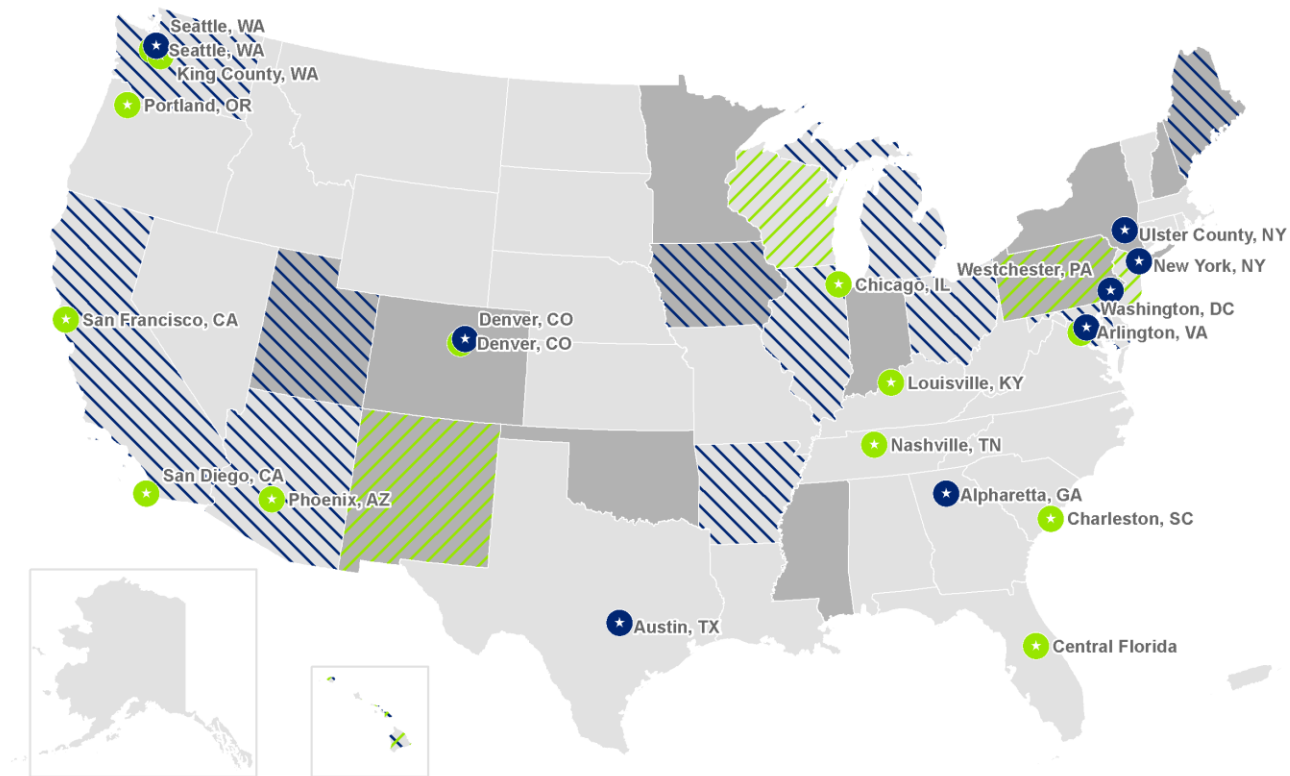


...But emits 19% of the world's carbon dioxide (CO<sub>2</sub>)



- 2008 U.S. emissions of CO<sub>2</sub> equivalent: 7.0 billion metric tons
- CO<sub>2</sub> is the most prevalent greenhouse gas driving climate change
- Over 94% of CO<sub>2</sub> emissions are from fossil fuel combustion

# Energy efficiency legislation & building energy performance disclosure

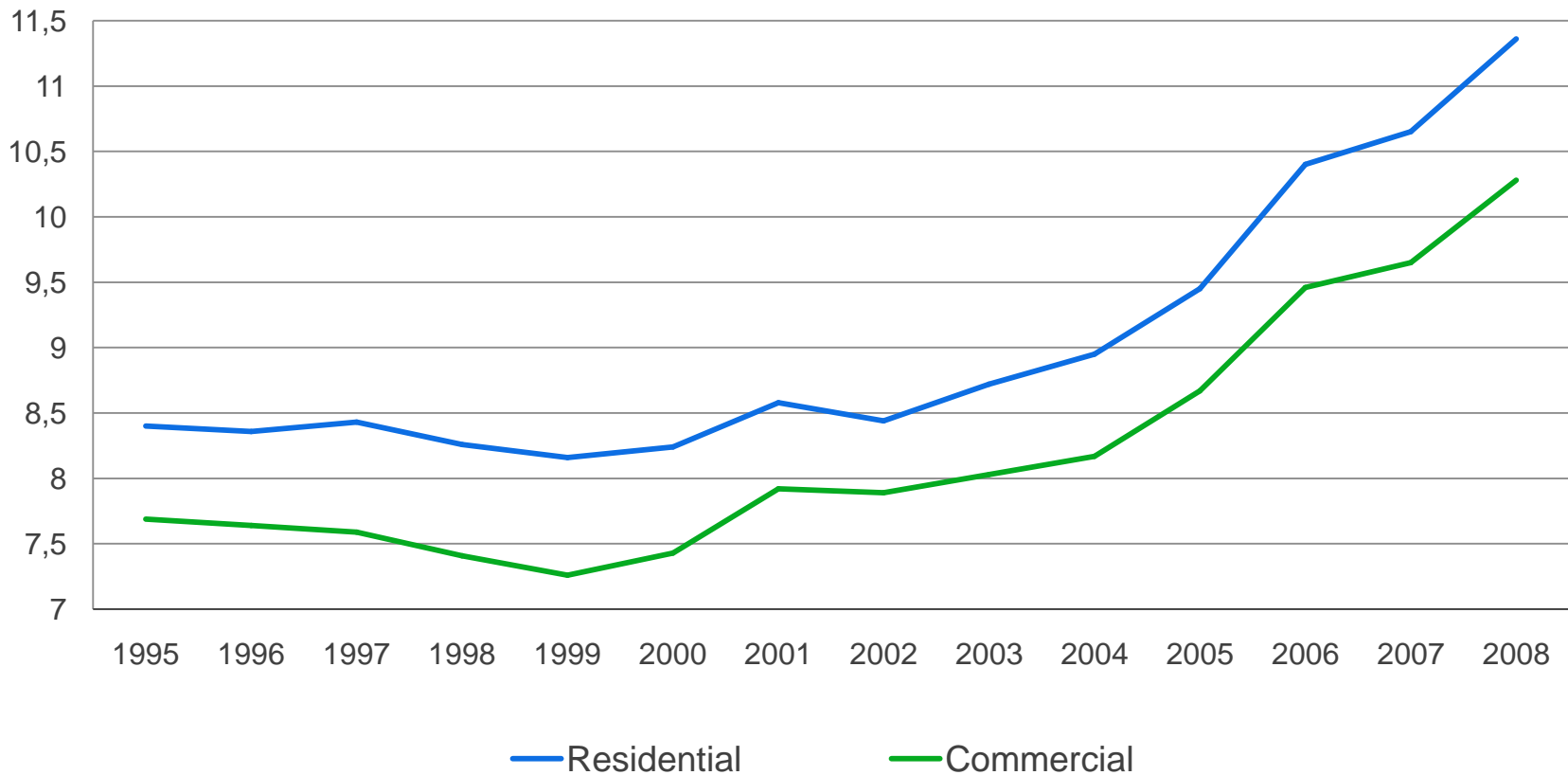


- Local Benchmarking
- Local Voluntary Program
- State Benchmarking
- State Voluntary Program
- State ARRA-Funded Program

# Rising Energy Costs



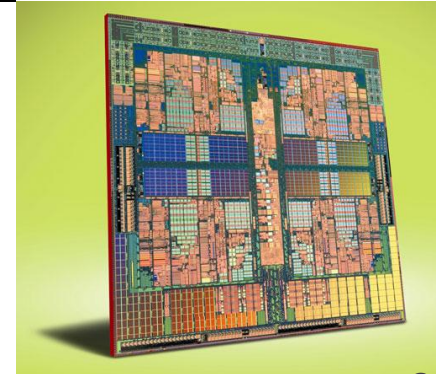
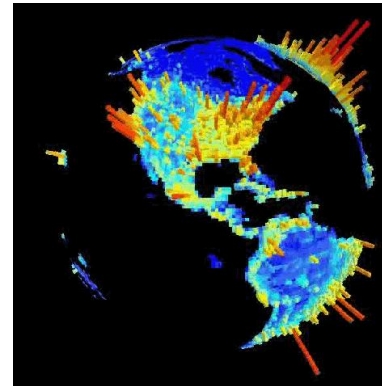
**Average Retail Price of Electricity  
(cents per kWh)**



# 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**



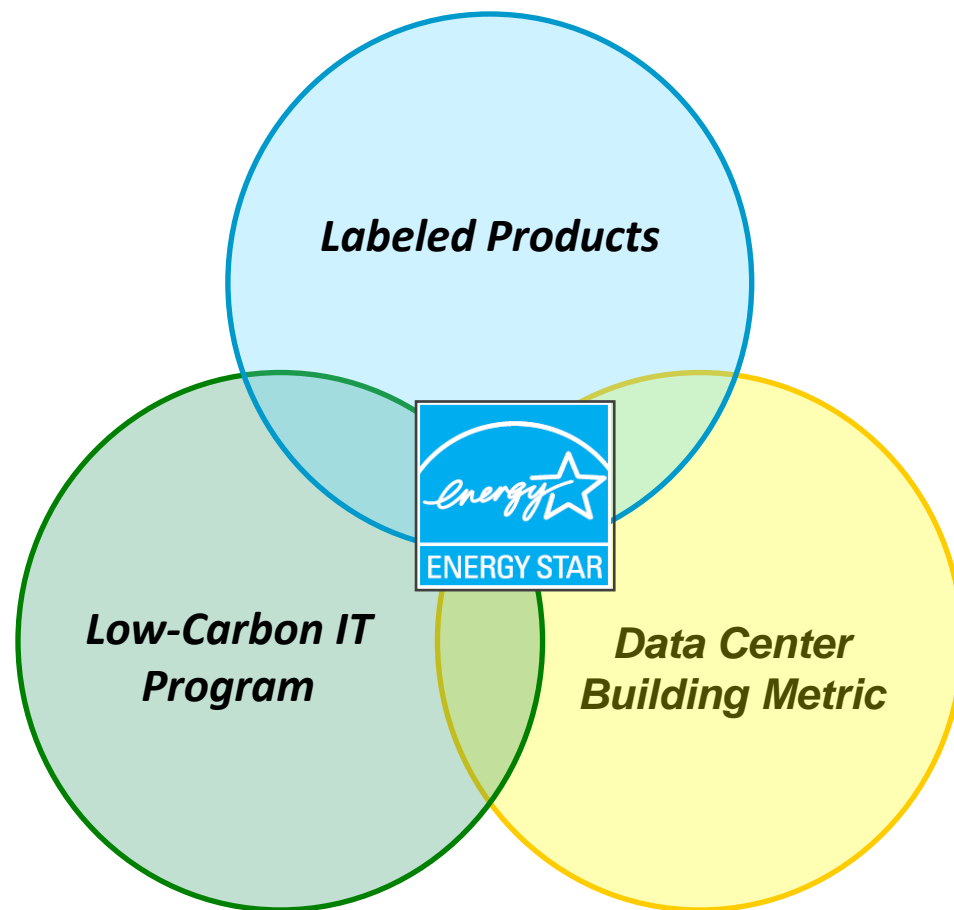
- EPA's ENERGY STAR Program has worked with commercial real estate sector for over 10 years
- After benchmarking and demonstrating superior energy performance, building managers can earn the ENERGY STAR
- Buildings that earn the ENERGY STAR:
  - ◆ Save \$.50 sq/ft (on average)
  - ◆ Consume 35% less 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)



# 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



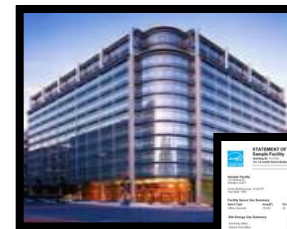
- Assess whole building energy performance in an easy-to-understand metric
- Compare a building's energy performance to national peer group

Is **51 MPG** high or low for an automobile?



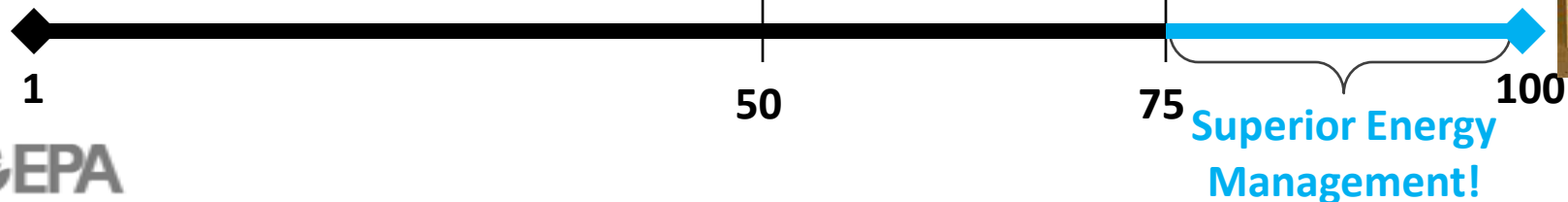
Fuel  
Efficiency Rating  
**MPG**

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



Energy  
Performance Rating  
**Scale 1 - 100**

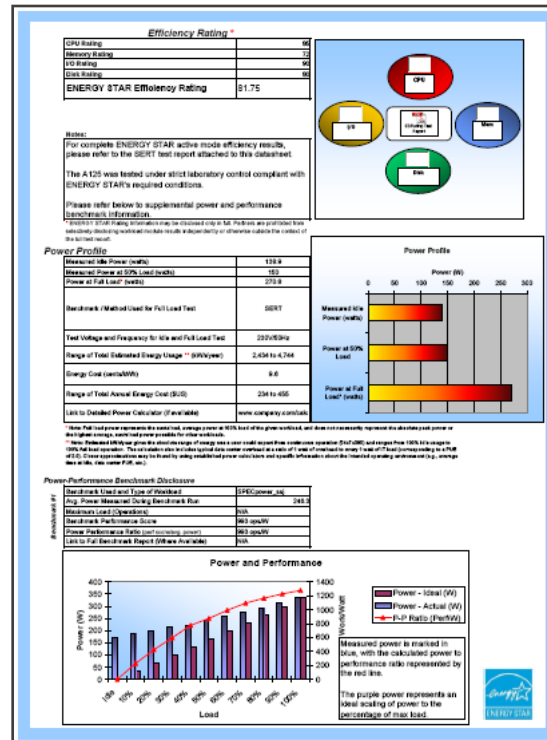
National Average



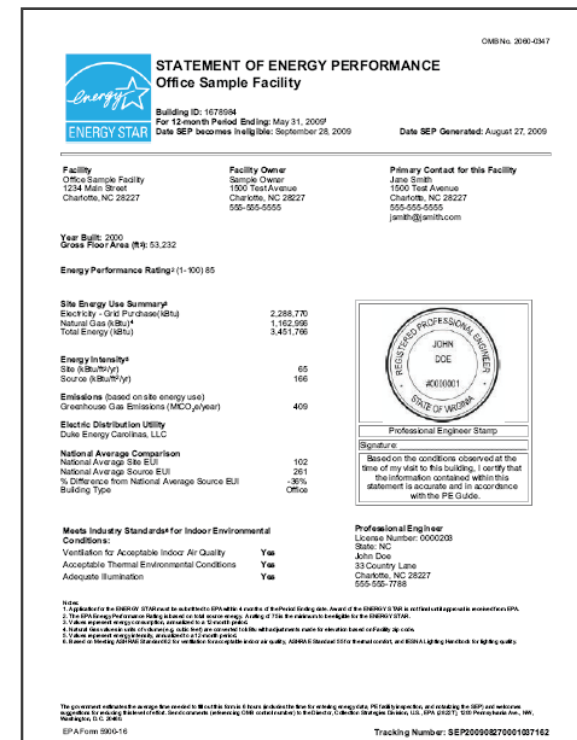
# ENERGY STAR Nutrition Label for Data Centers



- 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, and operational information
- Assists with purchase comparisons, product research
- Portfolio Manager can create reports for internal business discussions



## Power and Performance Data Sheet (Products)



## Statement of Energy Performance (Buildings)

# 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*