



U.S. Department of Energy
Energy Efficiency and Renewable Energy

federal energy management program

Energy Efficient Data Centers

Federal Utility Partnership Working Group

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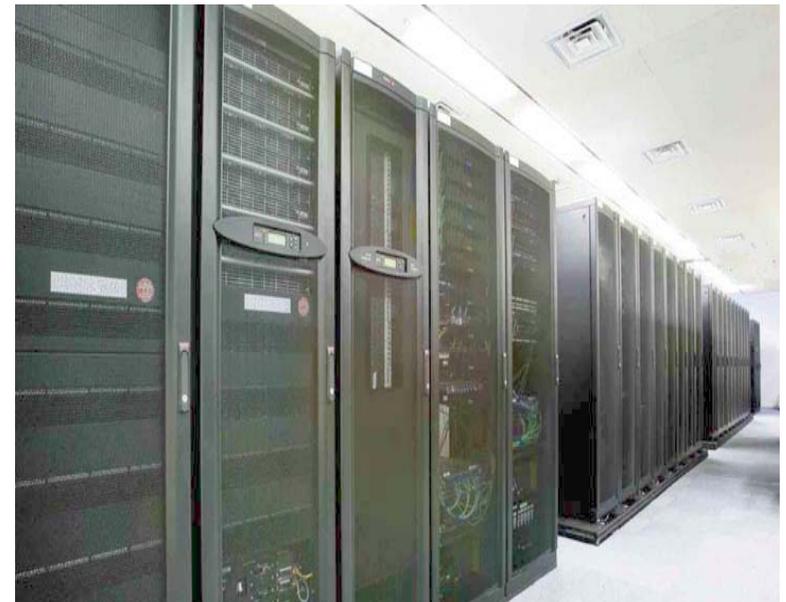
November 28, 2007

San Diego, CA



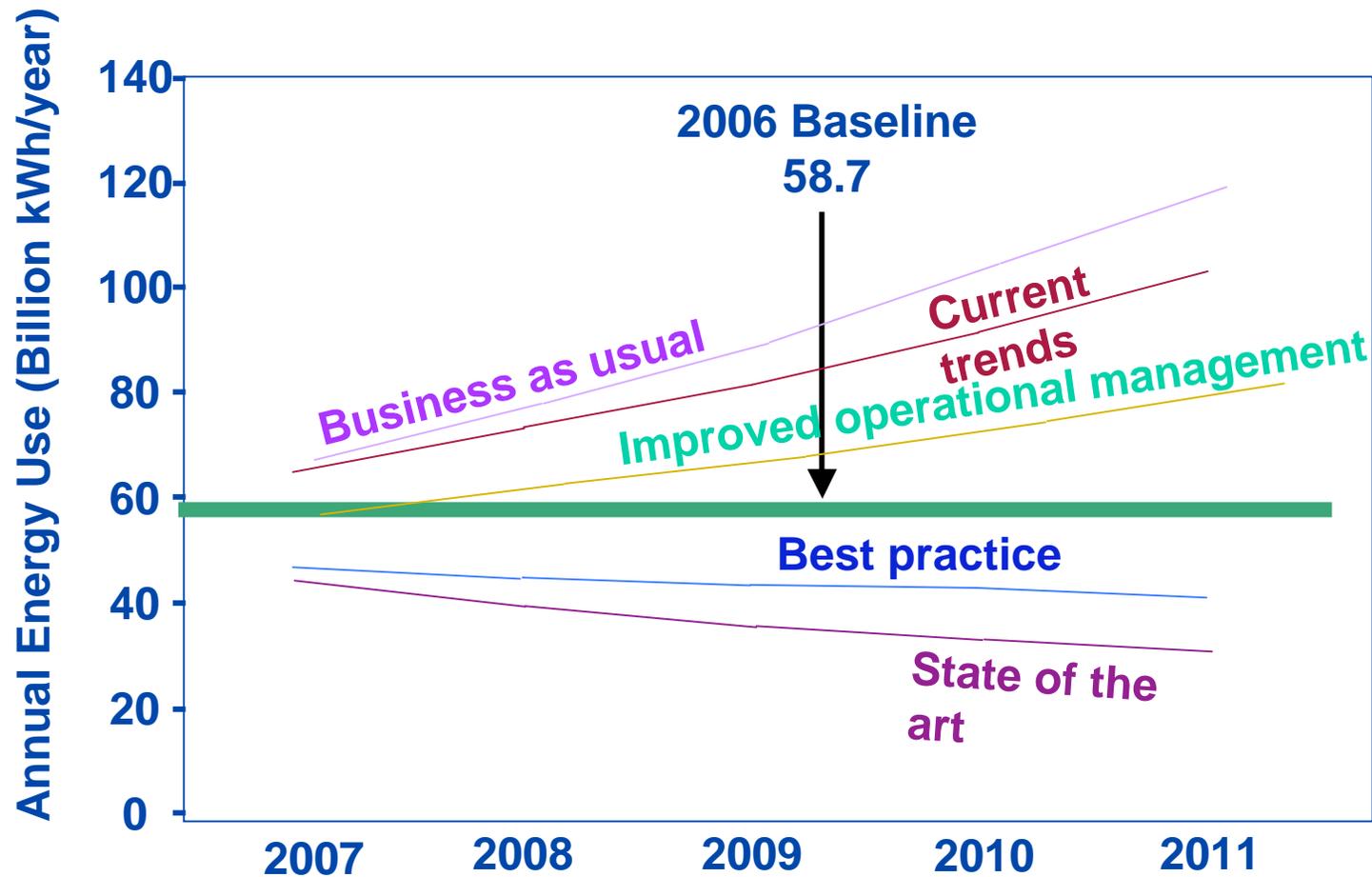
Why Data Centers?

- **Data centers are highly energy intensive and growing at a rapid rate**
 - Consume 10 to 100 times more energy per square foot than typical office building
- **Data centers consumed about 45 billion kWh in 2005 and 61 billion kWh in 2006**
 - This accounts for nearly 1.2% and 1.5% of all U.S. electricity respectively
- **At current rate, power requirements for data centers could double in 5 years**





Comparison of Projected Electricity Use - All Scenarios 2007 to 2011





Potential Benefits of Improved Data Center Energy Efficiency

- **Save 20 billion kWh per year by 2015**
 - Equivocates to savings of nearly \$2 billion
 - About equal to annual electricity use in 1.8 million American homes
- **Potentially defer need to build 2,300 MW of new generating capacity**
 - Avoiding 3.4 million metric tons of carbon emissions (like taking 675,000 cars off the road)





What DOE Is Doing

- **DOE and Green Grid MOU**
 - Signed in September 2007
- **MOU focuses on:**
 - Devising best energy management practices in data centers
 - Common Energy Assessment Protocol and Tool Suite
 - Robust training program
 - Certified specialists to assist with data center operations
 - Common metrics and benchmarking process for data centers to self-assess their level of energy efficiency





- **Conduct assessments at up to 15 DOE datacenters integrated with DOE's TEAM initiative** to refine evaluation tools, training curriculum and identify energy efficiency opportunities.
- **Deliver Webinars from the training curriculum tailored to the Federal audience** (includes energy savings companies and utility company service providers).
- **Sponsor datacenter track at next Labs21 Conference in San Jose, CA** on Sept 16-18, 2008 to bring together datacenter designers, owner representatives, and equipment and service providers to advance datacenter energy efficiency.
- **Develop best practice case studies** for super computer centers and datacenters.
- **Partner with other Federal agencies** to replicate successes and spread best practices throughout the Federal Government.



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DOE Data Center Team

- **Industrial Technologies Program**
- **Building Technologies Program**
- **Hydrogen, Fuel Cells, & Infrastructure Technologies**
- **Federal Energy Management Program (FEMP)**
- **DOE National Laboratories**

