EPA Technical Workshop on Energy Efficient Servers and Datacenters

Welcome and Introduction

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Introduction
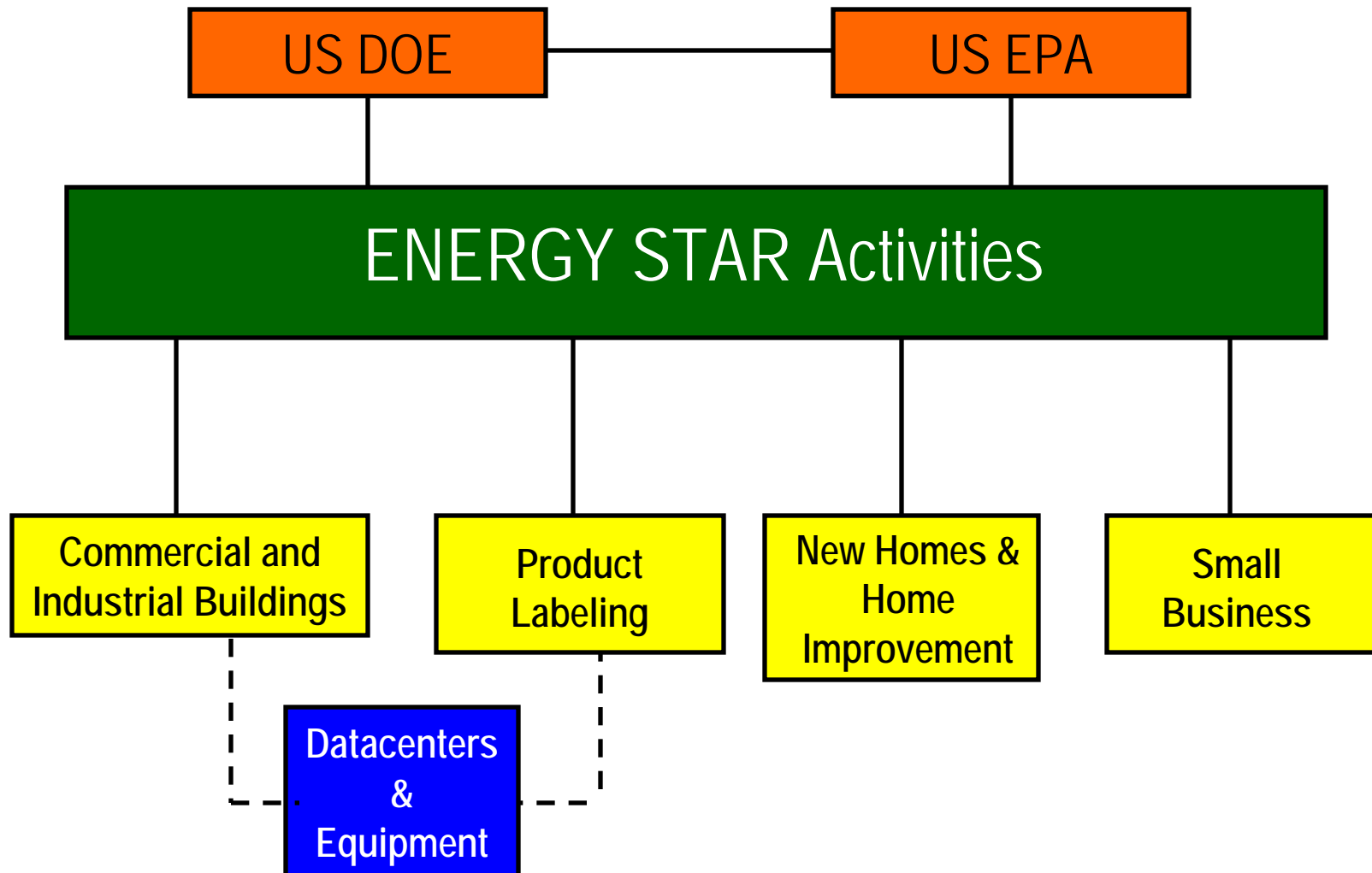
- Agenda
- Workshop Goals
- Thanks to Our Sponsors

What is ENERGY STAR?

- National, US government-backed symbol for energy efficiency

- Voluntary program -- over 2,700 partners to date

- ENERGY STAR helps consumers and businesses identify high-quality, energy-efficient buildings, homes, and products

- ENERGY STAR distinguishes what is efficient and better for the environment without sacrificing features or performance

- Buildings, homes, and products that earn the ENERGY STAR meet strict energy performance criteria set by EPA or DOE

The ENERGY STAR Program

US DOE — US EPA

ENERGY STAR Activities

- Commercial and Industrial Buildings
- Product Labeling
- New Homes & Home Improvement
- Small Business

Datacenters & Equipment

EPA's Interest in Datacenters

- Datacenters are critical national infrastructure
  - 10 million servers and 10k datacenters est..
  - Typical facility may consume 1MW but can be 20 >

- Economic growth, scientific advances, & quality of life increasingly depend on our ability to harness growing computing power & manage data

- Datacenters could be a significant regional source of peak load for utilities
  - Areas of potential electrical grid vulnerability
  - Efficiency investments by utilities could be very cost effective of acquiring new resources

EPA's Interest in Datacenters

- Environmental and climate change mitigation benefits

- Leverage IT industry's reputation as a first mover in technological innovation
  - Energy Efficiency = High Tech

- Drive demand for more efficient equipment, new building design, and building management strategies
  - Create a "spillover effect" into other sectors

Road Map: Past to Present

- **2005:** C&I initiates development of datacenter benchmark
- **January 2006:** EPA conference to discuss opportunities for datacenter energy efficiency
  - Stakeholders agreed on need for server measurement protocol
  - March 2006 workshop to form experts group
  - "Final" protocol released in November 2006
- EPA continues engagement with stakeholders
- December 2006: HR 5646 passed, EPA compiles team and begins research efforts to prepare report
- **December 2006:** EPA announces ENERGY STAR specification development process for servers

Overview of HR 5646

- Requires EPA to prepare a study to assess energy impacts <u>on</u> and <u>from</u> datacenters, identify energy efficiency opportunities, and recommend strategies to drive the market for efficiency
- Key areas of research:
  - Growth and deployment trends of energy efficient technologies
  - Energy and cost savings to public and private sectors
  - Impacts of energy efficiency on product performance
  - Financial and other impacts on the energy supply chain
  - Policy recommendations for incentives
- Engage stakeholders in the process
- EPA has 180 days to prepare report (est. June 07)

HR5646: Why EPA?

EPA is well positioned to lead study:

- Study builds on existing EPA program expertise:
  - ENERGY STAR Product Labeling
  - ENERGY STAR Commercial & Industrial (C&I)
  - Combined Heat and Power Partnerships (CHP)
  - Green Power Partnerships
  - Climate Leaders

- EPA has long standing relationships in IT and building communities (+15 years)

- Leverage LBNL's End Use Forecasting, Building Technology, Industrial Energy Analysis teams

EPA Study Team and Strategy

- EPA Study Team
  - Andrew Fanara: Task Leader in coordination with ESTAR C&I team
  - LBNL: technical research/chapter leads
  - ICF: support to EPA/management of process
- EPA leading research efforts with input from other agencies (i.e., DOE, Commerce)
- Stakeholder input critical to ensure relevance and appropriate level of comprehensiveness
  - Additional opportunities for collaboration

Study Goals and Expectations

- Inform Congress & other policy makers of important market trends, forecasts and opportunities
  - Understand the impact energy consumption is having on datacenters and its implications for national energy consumption

- Identify and recommend potential short and long term efficiency opportunities and match them with the right policies

- Identify areas for additional strategic research *outside the scope* of the report

- Stress voluntary initiatives not regulatory standards

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Study Goals and Expectations

The study is NOT intended to be:

- "Solutions Guide" for datacenter managers
  - BUT we want to rally datacenter operators to demand that more attention be paid to efficiency by reinforcing that its <u>cheap, clean and quick</u>

- An endorsement of specific technologies, services, or companies

- And, due to limited timeframe and scope -- EPA will not address everything!

Road Map: What's Next?

Following the completion of the study, EPA will:

- Continue to engage stakeholders and use information to support other datacenter initiatives
  - ENERGY STAR server specification development
  - ENERGY STAR building benchmark enhancement

- Share information with UK,EU and China to determine opportunities for international cooperation and harmonization of equipment specifications

How to Stay in Touch

- ENERGY STAR Datacenter Web site:
  www.energystar.gov/datacenters

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