Fact Sheet on National Data Center Energy Efficiency Information Program

U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (EPA)
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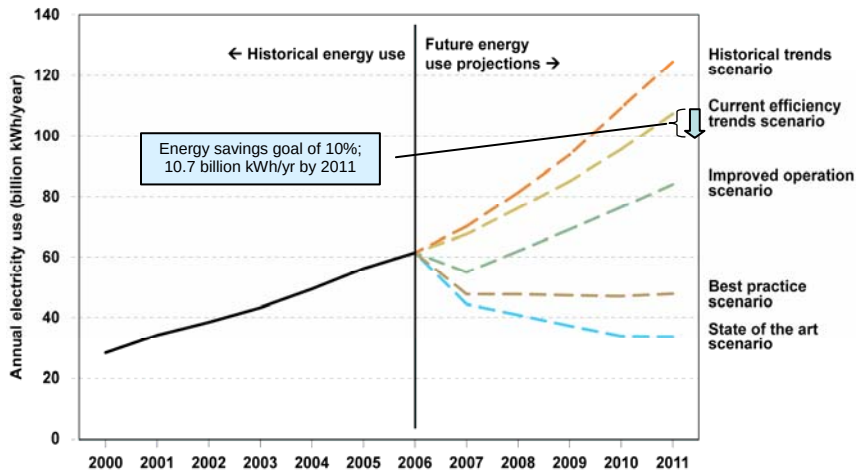
Summary: The voluntary **National Data Center Energy Efficiency Information Program** has been initiated. The Program coordinates a wide variety of activities from the DOE Industrial Technologies Program Save Energy Now initiative, the DOE Federal Energy Management Program (FEMP), and the EPA ENERGY STAR program. The program is engaging numerous industry stakeholders who are developing and deploying a variety of tools and informational resources to assist data center operators in their efforts to reduce energy consumption in their facilities. These groups include, for example: 7 x 24 Exchange, AFCOM, American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), Critical Facilities Roundtable, Information Technology Industry Council (ITIC), Silicon Valley Leadership Group, The Green Grid Association, and The Uptime Institute.

Background: U.S. data centers consume a growing portion of the U.S. energy/electricity supply due to growing demand for the services they provide. Data centers used 61 billion kWh of electricity in 2006, representing 1.5% of all U.S. electricity consumption and double the amount consumed in 2000. Based on current trends, energy consumed by data centers will continue to grow by 12% per year.

Opportunity: The existence of best energy management practices and best available technology to process digital information (i.e., energy efficient computer servers and virtualization server software), to deliver and condition electrical power to supply power to computers, and to remove the heat rejected from data center information technology (IT) equipment in an energy efficient manner provides an opportunity to significantly improve a data center's energy efficiency.

The EPA report to Congress[1] estimated that if state-of-the-art technology were adopted then energy efficiency could be improved by as much as 70 percent (see Figure 1). However, even saving a modest 10 percent of total energy use would amount to energy savings of 10.7 billion kilowatt-hours per year -- an amount equivalent to the electricity consumed by one million US households and valued at about $740 million.[2]

Figure 1: Comparison of Projected Electricity Use, 2007 - 2011[1]



[1] Report to Congress on Server and Data Center Energy Efficiency, Public Law 109-431, U.S. Environmental Protection Agency, ENERGY STAR Program, August 2, 2007.
[2] U.S. Department of Energy (DOE). 2007. Annual Energy Outlook 2007. Energy Information Administration. Report DOE/EIA-0383(2007).

Overview: The **National Data Center Energy Efficiency Information Program** integrates and coordinates existing activities from the DOE Save Energy Now initiative, DOE FEMP, and the EPA ENERGY STAR program. The elements of the Program include:

1. **Consensus energy efficiency metrics and benchmarking:** DOE and EPA are working with industry to develop consistent measurement protocols and metrics to define energy performance in a data center facility.

2. **Energy saving tools and training:** DOE Save Energy Now and EPA ENERGY STAR are developing tools to assist data center operators in characterizing their energy use and identifying opportunities for improvement. Two tools form the cornerstone of these efforts – the DOE Save Energy Now DC Pro tool suite and the EPA ENERGY STAR Portfolio Manager tool (which will house EPA's energy performance rating for data center infrastructure). The DC Pro and Portfolio Manager tools will be linked to facilitate the transfer of data for users. All parties will conduct awareness training for data center operators.

3. **Certification of data center energy efficiency experts:** DOE Save Energy Now is developing a certification program for data center energy efficiency experts. Save Energy Now Qualified Specialists will be able to assist data center operators in identifying and implementing energy saving projects.

4. **Equipment performance specification and labeling:** EPA is developing an ENERGY STAR specification for enterprise servers which will allow this equipment to earn the ENERGY STAR, indicating that it is among the most energy efficient products on the market. In the future, EPA will consider opportunities to develop ENERGY STAR specifications for additional IT equipment, possibly to include data storage and networking equipment.

5. **Recognition of Best-in-Class data centers:** DOE Save Energy Now will recognize those data centers which have demonstrated a defined level of energy savings using the DC Pro tool to validate energy saved similar to the recognition already offered to manufacturing plants. EPA ENERGY STAR will provide the ENERGY STAR label for those data centers that achieve a high level of energy performance. DOE Save Energy Now and FEMP will develop Best-in-Class guidelines with industry partners to initially guide the specification and design of newly constructed Federal data centers. DOE Save Energy Now will also explore with industry the development of a voluntary third-party certification process to validate energy intensity improvement and Best-in-Class performance for newly constructed or existing data centers.

Designation of a Data Center Energy Efficiency Organization: To address the unique energy management needs of data centers, DOE and EPA have consulted with a wide variety of industry groups and individual companies during the development of existing program elements. Section 453 of the Energy Independence and Security Act of 2007 requires DOE and EPA to jointly designate an organization to consult with and to coordinate a voluntary national information program for energy efficiency in data centers. DOE and EPA are in the process of determining the role of this organization as well as the criteria for selection. Once the role is established and criteria identified, DOE and EPA will issue a Federal Register notice announcing the plan to select an organization.

More Information: Further information about the National Data Center Energy Efficiency Information Program can be found at DOE or EPA websites below:

DOE Save Energy Now data center webpage
www.eere.energy.gov/datacenters

EPA ENERGY STAR data center webpage
www.energystar.gov/datacenters