Data Center Energy Efficiency

In 2014, data centers in the U.S. consumed an estimated 70 billion kWh, 1.8% of total U.S. electricity consumption.[1] Thus, it is no surprise that both private and public sector efforts are underway to reduce energy use in data centers. Executive Order (E.O.) 13693 "Planning for Federal Sustainability in the Next Decade" outlines the energy efficiency requirements and strategies for federal data centers. The Federal Energy Management Program (FEMP) encourages data center energy efficiency and helps federal agencies meet the requirements.

This server room in a data center displays server racks, power supply, and air handling systems. *Photo credit iStock Photo/1759899.*

Center of Expertise for Energy Efficiency in Data Centers

The Center of Expertise (CoE) assists federal agencies and other organizations implement data center energy efficiency projects by supplying technical support, tools, best practices, analyses, and the introduction of technologies. The CoE, located at the Lawrence Berkeley National Lab, partners with key public and private stakeholders to further efficiency efforts. The CoE website provides information and resources on the latest data center best practices as well as news and events. *datacenters.lbl.gov*

CoE Featured Resources

Data Center Metering and Resource Guide

Master List of Energy Efficiency Actions

Example Data Center Energy Efficiency Assessment Report

On-demand training webinars and presentation slides

Data Center Profiler Tools

The Data Center Profiler (DC Pro) Tools are "early stage" assessment tools that help data center operators estimate Power Usage Effectiveness (PUE), the industry standard for understanding and improving the energy efficiency of data center infrastructure systems. Current DC Pro Tools include DC Pro, which estimates PUE and provides tailored recommendations for improvement, and the simplified PUE Estimator. *datacenters.lbl.gov/dcpro*

Better Buildings Data Center Accelerator

The U.S. Department of Energy (DOE)'s Better Buildings Challenge has expanded to include data centers. Data Center Accelerator Partners commit to reducing the infrastructure energy use of at least one data center (IT load $\geq$ 100 kW) by at least 25% within 5 years and to sharing the results of their efforts.

Partner benefits provided by DOE include:

- Technical expertise, communications support, and a dedicated account manager;
- Networking opportunities to share best practices and innovative solutions; and
- Recognition for progress, success, and leadership.

eere.energy.gov/buildings/betterbuildings/accelerators/datacenter.html

Data Center Energy Practitioner Program

The data center industry and DOE partnered to develop the Data Center Energy Practitioner (DCEP) Program. The DCEP training program certifies energy practitioners qualified to evaluate the energy status and efficiency opportunities in data centers. *datacenters.lbl.gov/dcep*

FEMP Data Center Program Contact

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1   Shehabi et al. 2016. United States Data Center Energy Usage Report. Berkeley, CA: Lawrence Berkeley National Laboratory.