

Data Center Energy Efficiency

As of the most recent study done in 2014, data centers in the United States consumed an estimated 70 billion kWh—1.8% of total U.S. electricity consumption.¹ Private and public sector efforts are underway to reduce energy use in data centers. The Office of Management and Budget’s Data Center Optimization Initiative (OMB memorandum M-16-19) outlines the energy efficiency requirements and strategies for federal data centers. The Federal Energy Management Program (FEMP) helps federal agencies meet these requirements.

Center of Expertise

FEMP sponsors the Center of Expertise for Energy Efficiency in Data Centers (CoE). CoE helps federal agencies and other organizations implement data center energy efficiency projects by supplying technical support, tools, best practices, analyses, and the introduction of technologies.

CoE Featured Resources

- Data Center Metering and Resource Guide
- Master List of Energy Efficiency Actions
- Example and Template Data Center Energy Efficiency Assessment Report
- The Air Management Tool



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

The CoE, located at the Lawrence Berkeley National Laboratory, partners with key public and private stakeholders to further efficiency efforts. Visit datacenters.lbl.gov.

Guidance for Small Data Centers

Small data centers (<5000 ft² of computer floor) are especially important because, while they house half of all servers,² they tend to have only poor-to-fair energy management. They are also commonplace in federal facilities. A number of resources are available to help improve energy efficiency in small data centers. Visit datacenters.lbl.gov/small-data-centers.

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. Visit datacenters.lbl.gov/dcpro.

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. Visit datacenters.lbl.gov/dcep.

Other Training

FEMP and the CoE host live webinars and in-person training events covering various best practices and resources for data centers. Additionally, the FEMP Data Center Efficiency Series offers on-demand, web-based courses that narrow in on specific data center processes and systems. CEUs are available for FEMP courses. Visit datacenters.lbl.gov/training.

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^{1,2} Shehabi et al. 2016. United States Data Center Energy Usage Report. Berkeley, CA: Lawrence Berkeley National Laboratory.