



FEMP's Energy Efficiency Resources for Data Centers

10/5/2016

Dale Sartor, P.E.
Lawrence Berkeley National Laboratory

Agenda

- Center of Expertise for Energy Efficiency in Data Centers
- Other Resources
 - Energy- and Water-Efficient Products
 - Federal Electronics Stewardship Working Group (FESWG)
 - Project Financing
 - Institutional Change

Center of Expertise for Energy Efficiency in Data Centers



**CENTER OF
EXPERTISE**
FOR ENERGY EFFICIENCY IN DATA CENTERS



U.S. DEPARTMENT OF
ENERGY

FEMP
Federal Energy Management Program



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FEATURED RESOURCES:

[U.S. Data Center Energy Usage Report](#)
[Data Center Metering & Resource Guide](#)
[DC Pro Tools](#)
[Master List of Efficiency Actions](#)



Featured
Resources

The Department of Energy-led Center of Expertise for Energy Efficiency in Data Centers (CoE) demonstrates national leadership in decreasing the energy use of data centers. Through the supply of technical support, tools, best practices, analyses, and the introduction of technologies, CoE assists federal agencies and other organizations implement data center energy efficiency projects. The CoE, located at the Lawrence Berkeley National Lab, partners with key public and private stakeholders to further efficiency efforts.

Better Buildings Data Center Partners

There are over 34 data center partners reducing energy use through the Better Buildings Challenge or Data Center Accelerator. Partners increase data center energy efficiency and share the results. DOE provides support and recognition.

Data Center Energy Practitioner (DCEP) Training

The data center industry and DOE partnered to develop the DCEP training program that certifies energy practitioners qualified to evaluate the energy status and efficiency opportunities in data centers. Course content was updated June 2016.

Featured
Activities

datacenters.lbl.gov

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Technologies

Reducing energy consumption in data centers relies on the use of energy-efficient technologies and systems. Click the technologies listed below for tips on improving performance and purchasing new.

Cooling Air / Air Management

In most cases, air distribution in data centers involves mixing of cooled air with air that has been heated by the IT equipment making it difficult to supply the cool air to where it is needed and resulting in inefficient heat transfer to the cooling system.

IT Equipment

Computations per watt is improving, but computation demand is increasing even faster, so overall energy use is increasing. The lifetime electrical cost will soon exceed cost of IT equipment. However, IT equipment load can be controlled.

Power

UPS, Front-end AC-DC power supplies, and DC-DC converters are three important conversion processes for powering of servers and other IT loads. Improving the efficiency of these processes can significantly improve the overall energy efficiency of a data center. Storage is a parallel area of importance.

Cooling Plant

Many opportunities exist to reduce energy consumption of cooling equipment including raising the chilled water temperature; air, water, or refrigerant-based economizers, and all-variable-speed plants.

Monitoring and Controls

Monitoring and controls are essential to effective energy management. Data center infrastructure management (DCIM) is a comprehensive approach that has received increasing attention in the last few years.

Liquid Cooling

Liquid cooling is valuable in reducing energy consumption because the heat capacity of liquids is orders of magnitude larger than that of air and once heat has been transferred to a liquid, it can be removed from the datacenter efficiently.

Environmental Conditions

Most data centers are overcooled and have humidity control issues, which is a valid concern as room temperature and humidity are two of the main HVAC energy drivers.

Lighting

Lighting controls, efficient lighting, and use of task lighting are all widely deployed in commercial buildings and can easily result in savings for the data center.

Technologies

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Technologies, example

Cooling Air / Air Management

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Poor air management leads to more air being circulated than required, which leads to air mixing and short circuiting. It also results in recirculated hot air, which is the cause of most hot spots.

HIGH-LEVEL BEST PRACTICES

- Install the Racks in Rows
- Implement Hot and Cold Aisles
- Preserve Any Hot-Aisle/Cold-Aisle Arrangements
- Rearrange Perforated Floor Tiles, Locating Them Only in Cold Aisles and Matching the Tile Flow Rate with the IT Equipment Airflow Rate
- Cover Openings Within and Between Racks
- Evaluate the Air Path (Under the raised floor or in the ceiling space) and Rearrange the Cables, Wires, and Pipes to Address Possible Congestion in the Cooling Air Path
- Seal the Remainder of the Cable Penetrations
- Separate Cold Air and Hot Air
- Shut Off Extra CRAC/CRAH/AHU
- Reset Each CRAC/CRAH/AHU Chilled Water Valve Setpoint with the Highest Air Intake Temperature at the Racks in that Zone
- Convert the Data Center CRAC/CRAH/AHU Air Temperature Control to the Rack Inlet Air Temperature Control
- Use Modeling Tools such as CFD or Thermal Imaging Install Variable Frequency Drives (VFDs) on CRAC/CRAH/AHU Fans with Advanced Control

FEATURED RESOURCES

- [Data Center Master List of Efficiency Actions](#) provides more information on the high-level best practices outlined above as well as a more detailed list of best practices related to cooling air and air management.
- The excel-based [Data Center Air Management Tool](#) provides air management recommendations (actions) and the potential for reducing the supply airflow rate and increasing the supply air temperature without affecting the thermal equipment environment. The Tool also estimates % energy reduction, kWh reduction, and associated \$ savings for fans and chillers. It is based on user input. An accompanying [Data Collection Guide](#) is also available.

Links:

[Data Center Master List of Efficiency Actions](#)
[Data Center Air Management Tool](#)
[Datacenter Air Management Tool Data Collection Guide](#)
[All Air Cooling / Air Management Resources](#)

Activities

CoE facilitates activities that range from training sessions and webinars, to the creation of tools, to specialized programs.

Data Center Energy Practitioner (DCEP) Training

The DCEP training program certifies energy practitioners qualified to evaluate the energy status and efficiency opportunities in data centers. A list of DCEP Program Developers, Instructors, and Practitioners is also maintained and available here.

Better Buildings Data Center Partners (Challenge or Accelerator)

DOE is working with public and private building owners to reduce energy use in data centers. There are over 34 partners committed to date through the Better Buildings Challenge and Data Center Accelerator programs.

Tools

Toolkits and calculators are available to support the implementation of best practices. Tools cover areas such "early stage" data center profiling to establish a baseline and efficiency potential, and more detailed sub-system assessments to identify opportunities.

India

The energy intensity of data centers, the growth of data center infrastructure in India, and the existing power deficit in the country calls for increased energy efficiency in Indian data centers. A public-private partnership is working to increase the energy efficiency of data centers in India.

Data Center Optimization Initiative (DCOI)

The Data Center Optimization Initiative (DCOI) requires federal agencies to develop and report on data center strategies to consolidate inefficient infrastructure, optimize existing facilities, improve security posture, achieve cost savings, and transition to more efficient infrastructure, such as cloud services and inter-agency shared services.

News & Events

List of upcoming events and news via our Twitter feed. Content is focused on information and opportunities to facilitate energy efficiency projects in data centers with special attention paid to federal agencies.


High Performance Computing

Demand for High Performance Computing (HPC) is growing in both the public and private sectors. It is also highly energy-intensive. LBNL has organized a HPC Working Group to address the energy-efficiency issues related to these technologies and provides guidance and resources tailored to HPC.

China

Unprecedented demand and policies are driving rampant growth in data centers throughout China. DOE and LBNL are working with China's Ministry of Industry and Information Technology (MIIT) and industry to promote open standards, test procedures, specifications, and evaluation metrics for U.S. and Chinese data centers.

Data Center Energy Practitioner (DCEP) Training



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Activities, example

Data Center Energy Practitioner (DCEP) Training

Program Description

Data centers are energy-intensive and opportunities exist to reduce energy use, but significant knowledge, training, and skills are required to perform accurate data center energy assessments. In order to accelerate energy savings, 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.

The entire DCEP course curriculum was updated in 2016 in collaboration with the industry to reinforce proven best practices as well as introduce new tools and techniques in key areas such as IT equipment, air management, cooling systems, and electrical systems.

DCEPs will:

- Be qualified to identify and evaluate energy efficiency opportunities in data centers;
- Demonstrate proficiency in the use of the [Data Center Profiler \(DC Pro\)](#) and [select Assessment Tools](#)
- Address energy opportunities in electrical systems, air management, HVAC, and IT equipment;
- Meet academic/work experience requirements (pre-qualifications);
- Receive training on conducting data center assessments;
- Be required to pass one or two exams.

DCEP - Federal Requirements

The Data Center Optimization Initiative (DCOI) established in OMB Memorandum M-16-19 supersedes the Federal Data Center Consolidation Initiative (FDCCI) and fulfills the data center requirements of the Federal Information Technology Acquisition Reform Act (FITARA).

The Memorandum states: Implementing Instructions [for Executive Order 13693] also advise that **“all existing and new data centers shall have at least one certified Data Center Energy Practitioner (DCEP) assigned to manage its performance.”**

[whitehouse.gov/sites/default/files/omb/memoranda/2016/m_16_19_1.pdf](https://www.whitehouse.gov/sites/default/files/omb/memoranda/2016/m_16_19_1.pdf)

[whitehouse.gov/sites/default/files/docs/
eo_13693_implementing_instructions_june_10_2015.pdf](https://www.whitehouse.gov/sites/default/files/docs/eo_13693_implementing_instructions_june_10_2015.pdf)

DCEP – Resources

Training Calendar and Pricing

Training Level	Date	Location	Cost	Contact
Generalist	September 21, 2016	San Francisco	\$1,175	mherrlin@ancis.us
Specialist	September 22-23, 2016	San Francisco	\$2,175	mherrlin@ancis.us
Generalist + Specialist	September 21-23, 2016	San Francisco	\$2,500	mherrlin@ancis.us
Generalist	December 7, 2016	San Francisco	\$1,175	mherrlin@ancis.us
Specialist	December 8-9, 2016	San Francisco	\$2,175	mherrlin@ancis.us
Generalist + Specialist	December 7-9, 2016	San Francisco	\$2,500	mherrlin@ancis.us

Links:

[Data Center Profiler \(DC Pro\) and Assessment Tools](#)
[DCEP Program Description](#)
[DCEP Typical Training Agenda](#)
[DCEP Process Manual](#)
[DCEP Program Developers, Instructors, and Practitioners](#)

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Tools

Tools presented here can be used sequentially to move from a basic understanding of how energy is used in your data center to identifying opportunities and implementing best practices.

1. Data Center Profiler (DC Pro) Tools (Featured)

DC Pro tools are "early stage" profiling tools designed for data center owners and operators to diagnose how energy is being used by their data centers and determine ways to save energy and money.

3. Energy Assessment Worksheets

Excel-based worksheet to document metrics, actions, and measurements from data center assessments. It is recommended that users first use the DC Pro tool before using this worksheet.

5. Data Center Air Management Tool (Featured)

Excel-based tool that provides air management recommendations including reducing the supply airflow rate and increasing the supply air temperature without affecting the thermal equipment environment. It also estimates % energy reduction, kWh reduction, and associated \$ savings for fans and chillers.

7. Energy Efficiency Assessment Report Template (Featured)

Microsoft Word template for qualified assessors to report data center energy efficiency assessment findings. The document can easily be filled in with site data. An example assessment report using the template is also available here.

Third-Party Tools

Data Center Maturity Model (DCMM) tool, ENERGY STAR Portfolio Manager, and the Free Cooling Calculator are additional tools available to help reduce data center energy use.

2. Energy Assessment Process Manual

Manual that provides administrative step by step instructions for conducting an energy assessment (before, during, and after the assessment).

4. Energy Assessment Kit Guide and Specification

Guide that covers how a portable and temporary wireless mesh assessment kit can be used to speed up the energy assessment process, reduce the costs, and overcome the issues with respect to shutdowns.

6. Data Center Electrical Power Chain Tool

Excel-based tool designed to help datacenter owners assess the potential savings from efficiency actions in the electrical power chain of a data center (transformers, generators, UPSs, PDUs, power supplies).

8. Data Center Master List of Efficiency Actions (Featured)

Comprehensive list of both high-level and detailed best practices. It is recommended to utilize this list of best practices within an energy assessment report.

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Air Management Tool

Tools, example 1

Data Center Profiler (DC Pro) Tools

[\[Log In \]](#)

The Data Center Profiler (DC Pro) and the PUE Estimator are “early stage” scoping tools designed for data center owners and operators to diagnose how energy use is distributed in their data center and determine ways to save energy and money. Both DC Pro and the PUE Estimator estimate Power Usage Effectiveness (PUE), the industry standard for understanding and improving the energy efficiency of data center infrastructure systems. Results from the tools can be exported as stand-alone reports or included in other reporting material.

DC Pro also recommends specific tasks to help users start an improvement process. Detailed assessments of sub-systems are beyond the scope of these profiling tools, but dedicated assessment tools (e.g., Air Management and IT Electrical Power Chain) are available in the Tools section of this website.



DC PRO

A comprehensive “early stage” data center profiling tool

- Estimates PUE as well as a breakdown of the current and potential energy use distribution
- Provides a tailored list of best practice recommendations
- Exports results to PDF or Excel



PUE ESTIMATOR

A quick calculator that generates Power Usage Effectiveness (PUE)

- Only asks questions required to estimate PUE
- Uses same algorithm as DC Pro
- Exports results to PDF or Excel

Power Usage Effectiveness (PUE)

1.7

Energy Use Distribution



IT Equipment Lights Power Chain Fans Cooling

GET STARTED



[Log in or Register to begin using DC Pro](#)



[Access the PUE Estimator \(no login required\)](#)

RESOURCES

- [Calculation Reference Manual](#)
- [Data Center Master List of Efficiency Actions](#)
- [DC Pro Full List of Questions](#)
- [DC Pro User's Manual \(Also includes Full List of Questions\)](#)
- [PUE Estimator Full List of Questions](#)
- [PUE Estimator User's Manual \(Also includes Full List of Questions\)](#)

To access the archived DC Pro V3, click [here](#). Please note that data entered into V3 has already been migrated into the current version of DC Pro.

datacenters.lbl.gov/dcpro

Tools, example 2

Datcenter Air Management Tool (v.1.18)

11/11/2014

Technologies:

Cooling Air / Air Management

File:



Air Management Tool v1.18 (11-11-14) Distribution.xls

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News and Training

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News & Training

Training (webinars, on-demand courses, and in-person events)

Webinars

- 10/6/2016 "For Utilities: Designing and Implementing Successful Data Center Efficiency Programs" via ENERGY STAR - [registration](#)
- 10/13/2016 "Data Center Energy Efficiency Opportunities: What Managers Should Know" via ENERGY STAR - [registration](#)
- 12/2016 webinar on the U.S. Data Center Energy Usage Report - date and time TBD
- FY 2017 webinars on guidance for small data centers, the DCEP program, resources for utilities, and more - dates and times TBD

On-demand, web-based courses

- "Data Center Energy Efficiency Best Practices" - [registration](#)
- "FEMP16 Advanced HVAC in High-Tech Buildings: Data Centers" - [registration](#)
- "FEMP Training Certificate Series: Data Center Energy Efficiency" - Available November 2016

In-person training events

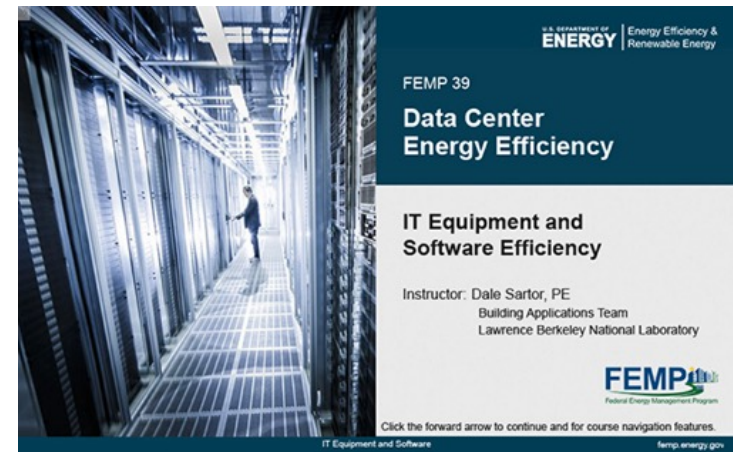
- 12/2016 "Data Center Energy Practitioner (DCEP) training" scheduled in San Francisco, California - see our dedicated DCEP [page](#) for more information

News via CoE Twitter Feed

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DATA CENTER ENERGY EFFICIENCY Series (November 2016)

- Data Center Energy Efficiency Best Practices
 - 0.2 CEUs
- IT Equipment and Software Efficiency
 - 0.1 CEUs
- Environmental Conditions
 - 0.1 CEUs
- Air Management
 - 0.2 CEUs
- Cooling Systems
 - 0.2 CEUs
- Electrical Systems
 - 0.1 CEUs



eere.energy.gov/femp/training/

Resources

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Resources

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Technologies

- ☐ Environmental Conditions
- ☐ Power
- ☐ Small Data Centers
- ☐ Liquid Cooling
- ☐ Monitoring and Controls
- ☐ General
- ☐ HPC
- ☐ IT Equipment
- ☐ Cooling Air / Air Management

Type

- ☐ Documents (Guides, Reports, Case Studies, & Demos)
- ☐ Case Studies & Demonstrations
- ☐ Tools
- ☐ Presentations
- ☐ Related Organizations
- ☐ Links

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Date	Title	Files and Links
08/16/2016	DCEP Program Developers, Instructors, and Practitioners Featured List of developers, instructors, and generalists for the DCEP program.	 DCEP_LIST_Updated 08162016.pdf
07/27/2016	Data Center Metering and Resource Guide Featured Guide is intended to help data center owners and operators gather the necessary data to participate in the Better Buildings Challenge (BBC). The BBC process includes supplying data that is at least partially metered.	 DataCenterMeteringandResourceGuide_07272016.pdf
06/01/2016	United States Data Center Energy Usage Report Featured This report estimates historical data center electricity consumption back to 2000, relying on previous studies and historical shipment data, and forecasts consumption out to 2020 based on new trends and the most recent data available.	 DataCenterEnergyReport2016.pdf

Resources, example 1

Data Center Metering and Resource Guide


07/27/2016

Guide intends to help data center owners and operators implement a metering system that allows their organizations to gather the necessary data for effective decision-making and energy-efficiency improvements. Focus is on the necessary data to calculate the power usage effectiveness (PUE) metric. Author(s): Mahdavi, R. and S. Greenberg

Technologies:

Power
Monitoring and Controls
General

File:

 [DataCenterMeteringandResourceGuide_07272016.pdf](#)



Data Center Metering and Resource Guide

JULY 2016

U.S. DEPARTMENT OF
ENERGY

Resources, example 2

Data Center Master List of Energy Efficiency Actions

02/11/2016

Comprehensive list of recommended efficiency actions for data centers. The Master list also feeds into our Data Center Profiler (DC Pro) tool to provide tailored recommendations for improvement.

Technologies:

Cooling Air / Air Management
Monitoring and Controls
General
IT Equipment
Power
Environmental Conditions

File:

 [DCProMasterList02112016.pdf](#)

Data Center Master List of Energy Efficiency Actions February 11, 2016

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Master List of Energy Efficiency Actions

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- **Other Resources**
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 - Federal Electronics Stewardship Working Group (FESWG)
 - Project Financing
 - Institutional Change

Energy- and Water-Efficient Products

Products & Technologies



ENERGY.GOV
Office of Energy Efficiency & Renewable Energy

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ENERGY- AND WATER-EFFICIENT PRODUCTS

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The Federal Energy Management Program (FEMP) provides resources and tools to help agencies purchase energy- and water-efficient products.

Five **legal authorities** require agencies to use energy-efficient products: the Energy Independence and Security Act of 2007, the Energy Policy Act of 2005, Federal Acquisition Regulations, Executive Order (E.O.) 13083, and E.O. 13221. Browse [energy-efficient product purchasing requirements](#), or read the [history of federal efficient product procurement](#).


By procuring and properly installing efficient products, agencies can meet their requirements, lower energy and water consumption, reduce greenhouse gas emissions, and save money.

GET STARTED

Start identifying and procuring energy- and water-efficient products by following these steps.


1. Read about [how to buy efficient products](#) for the federal government.
2. [Find products](#) covered by energy and water efficiency programs.
3. Learn about [low standby power products](#).
4. [Calculate energy and cost savings](#) of efficient products.
5. Get [contract language](#) for product purchases.

FEDERAL BUYERS AND SPECIFIERS



- [Buy efficient products](#) for the federal government.
- Learn about [product efficiency programs](#).
- Get [contract language](#) for product purchases
- Find [UNSPSC](#) and [ENAC](#) product codes useful in tracking sustainable acquisitions
- Search for computers that meet [low standby power](#) requirements.

MANUFACTURERS AND VENDORS



- Read about [how to sell products](#) to the federal government.
- Learn how [FEMP designates efficiency levels](#) for covered product categories.
- [Suggest](#) a new product category.
- Find out how products are [measured for low standby power](#).

FEMP CONTACTS

[Saralyn Bunch](#)
U.S. Department of Energy
202-586-3267

[Christopher Payne](#)
Lawrence Berkeley National Laboratory
510-495-2577

TRAINING

[Energy-Efficient Product Procurement](#)


energy.gov/eere/femp/energy-and-water-efficient-products

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U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
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How to Buy Efficient Products

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Home » How To Buy Energy- and Water-Efficient Products for the Federal Government

HOW TO BUY ENERGY- AND WATER-EFFICIENT PRODUCTS FOR THE FEDERAL GOVERNMENT

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The requirement to buy energy- and water-efficient products applies to federal purchases made through any procurement pathway (e.g., purchase cards, e-retailers, and solicitations) and to a wide variety of federal projects. The Federal Energy Management Program's (FEMP's) Buy Energy-Efficient Products buyer overview fact sheet and Contracting for Efficiency best practices guide for product procurement are designed to support federal buyers in the purchase of energy- and water-efficient products.


FEMP BUY ENERGY-EFFICIENT PRODUCTS FACT SHEET

FEMP's Buy Energy-Efficient Products buyer overview fact sheet is a quick, two-page reference document that includes information about meeting purchasing requirements, writing compliant contracts, and determining if a product is compliant with requirements.

FEMP CONTRACTING FOR EFFICIENCY BEST PRACTICES GUIDE

FEMP's Contracting for Efficiency best practices guide is an in-depth, step-by-step guide for incorporating efficiency requirements into solicitations. It covers a wide range of service and product solicitation types including information technology (IT) and electronics, appliances, lighting replacements, building renovation, design/build, operations and maintenance, food services, and laundry services. Each project type includes information on relevant covered product categories, a checklist for writing effective solicitations, and model contract language.

 [Download FEMP's Buy Energy-Efficient Products fact sheet. \(358.17 KB\)](#)

 [Download FEMP's Contracting for Efficiency: A Best Practices Guide for Energy-Efficient Product Procurement. \(749.26 KB\)](#)

MORE DOCUMENTS & PUBLICATIONS

[Minimum Efficiency Requirements Tables for Heating and Cooling Product Categories](#)

[Sell Energy-Efficient Products: A Guide for Selling to the U.S. Government](#)

[ISSUANCE 2015-06-09: Energy Conservation Program: Energy Conservation Standards for Room Air Conditioners; Request for Information](#)

Finding Efficient Products

Click a column heading to sort the table, or use the search box to find a product by keyword.

[Download the full list of covered product categories.](#)

Show entries

Search:

PRODUCT CATEGORY	PRODUCT TYPE	★	△	○	◆	×
Audio/Video Equipment	Electronics and Information Technology	★				
Computers: Desktops, Workstations, and Thin Clients	Electronics and Information Technology	★		○	◆	
Computers: Notebooks and Integrated Computers	Electronics and Information Technology	★		○		
Computers: Small-Scale Servers	Electronics and Information Technology	★				
Data Center Storage	Electronics and Information Technology	★				
Displays	Electronics and Information Technology	★		○		
Enterprise Servers	Electronics and Information Technology	★				
Imaging Equipment	Electronics and Information Technology	★		○		
Set-Top and Cable Boxes	Electronics and Information Technology	★				
Small Network Equipment	Electronics and Information Technology	★				

Showing 1 to 10 of 13 entries (filtered from 72 total entries)


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LEGEND

★	ENERGY STAR
△	FEMP Designated
○	EPEAT
◆	Low Standby Power
×	WaterSense

energy.gov/eere/femp/find-product-categories-covered-efficiency-programs

Acquisition Guides

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COVERED PRODUCT CATEGORY: ENTERPRISE SERVERS

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Tools

The Federal Energy Management Program (FEMP) provides acquisition guidance for enterprise servers, a product category covered by the ENERGY STAR program. Federal laws and requirements mandate that agencies buy ENERGY STAR-qualified products in all product categories covered by this program and any acquisition actions that are not specifically exempted by law.

MEETING EFFICIENCY REQUIREMENTS FOR FEDERAL PURCHASES

The U.S. Environmental Protection Agency (EPA) sets the efficiency criteria for this product category in its ENERGY STAR program requirements. Manufacturers meeting these requirements are allowed to display the ENERGY STAR label on complying models. Visit the ENERGY STAR website for the most up-to-date [enterprise server efficiency levels and product specification information](#), and a [list of qualified products](#).

DEFINING THE PRODUCT CATEGORY

This acquisition guidance and associated ENERGY STAR program requirements apply to blade, multi-node, rack-mounted, and pedestal form factor enterprise servers with no more than four processor sockets. Fully fault tolerant servers, server appliances, high performance computing systems, large servers, storage products (including blade storage), network equipment, and products covered under other ENERGY STAR product specifications are excluded.

The federal supply sources for enterprise servers are the General Services Administration (GSA) and Defense Logistics Agency (DLA). GSA sells servers through its [Multiple Awards Schedules](#) program and online shopping network, [GSA Advantage!](#) DLA sells them through

FEMP CONTACTS

[Saralyn Bunch](#)
U.S. Department of Energy
202-586-3267

[Christopher Payne](#)
Lawrence Berkeley National Laboratory
510-495-2577

EXPLORE FEMP'S ENERGY-EFFICIENT PRODUCTS PAGES

[Find Product Categories Covered by Efficiency Programs](#)

[Energy- and Water-Efficient Product Efficiency Programs](#)

[Low Standby Power Products](#)

[Energy and Cost Savings Calculators for Energy-Efficient Products](#)

[Contract Language for Energy-Consuming Product Purchases](#)

Federal Electronics Stewardship Working Group

Federal Electronics Stewardship Working Group
The Federal Electronics Stewardship Working Group (FESWG) is a private interagency working group dedicated to furthering progress on federal electronics stewardship sustainability goals among Executive Agencies.

Announcements

Jun. 24, 2016
GSA Blog on CFL!
Read all about the success of CFL in GSA's Southeast Sunbelt Region

Submit Announcement

File Library

- Agency Documents (0)
- Meetings (agendas, materials, minutes) (0)
- Requirements and Guidance (1)
- Work Plan (3)

Submit Item
(Please be sure to select the correct folder to categorize your file under when submitting.)

Membership Roster (click arrows to open/close)

Event Calendar

September 2016 Go

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14 FESWG Monthly Meeting	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Submit Event

Items Recently Posted

- Sep 6, 2016
DCOI Memorandum (PDF 12.95 MB)
- Draft of FESWG FY17 Work Plan (DOCX 28.95 KB)
- Evaluation of FESWG FY16 Work Plan (DOCX 30.79 KB)
- FESWG September 2016 Meeting Agenda (DOCX 29.59 KB)
- Jul 27, 2016
FESWG July 2016 Meeting Notes (DOCX 32.88 KB)
- FESWG Monthly Meeting (09/14/2016)
- Jul 15, 2016
FESWG July 2016 Meeting Agenda (DOCX 29.64 KB)
- Presentation - Integrating Sustainability into Category Management and AG (PPTX 1.47 MB)

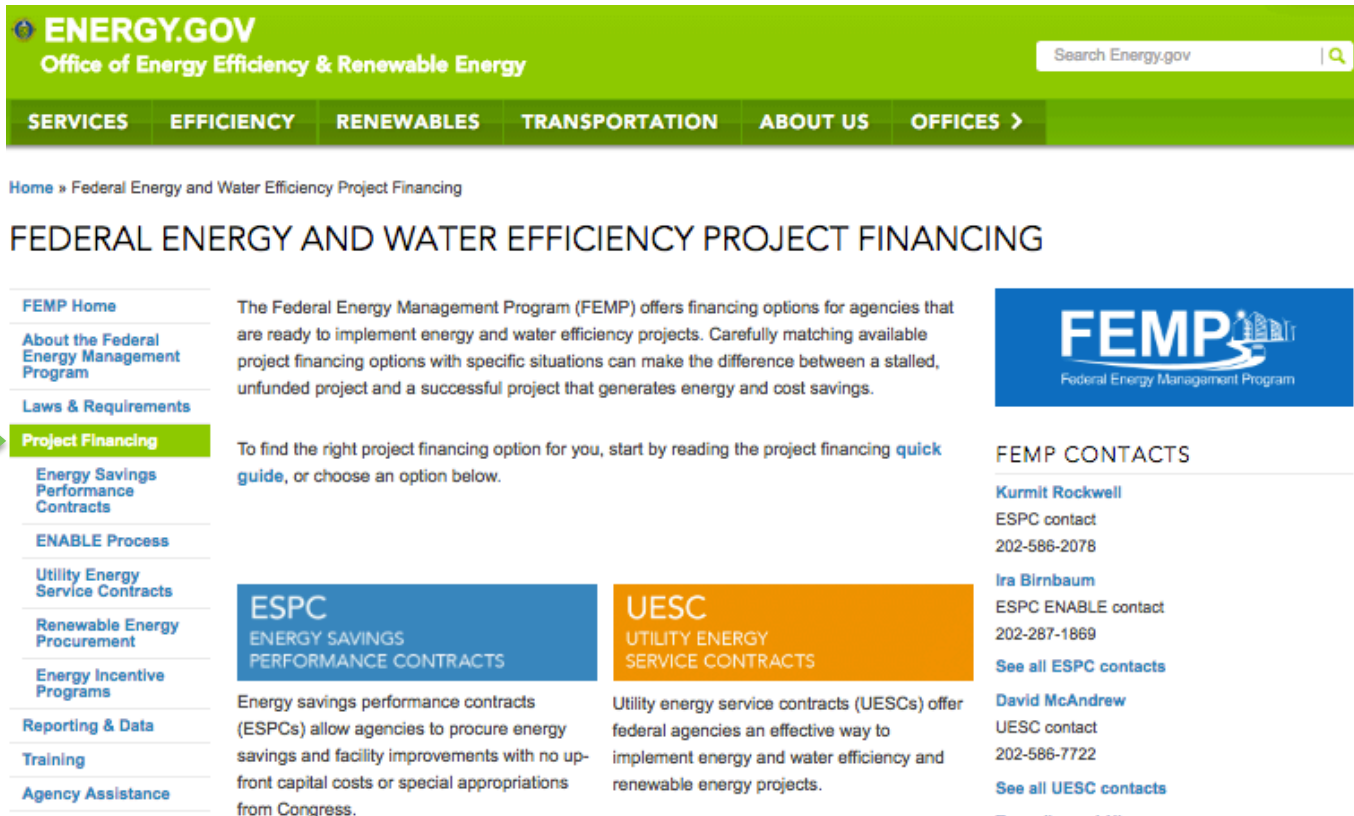
More Items...

fedcenter.gov/members/workgroups/feswg/
(Requires FedCenter account and approved access)

Request to join the FESWG listserve by sending a blank message to
join-feswg@fedcenter.gov

Project Financing

Energy savings performance contracts (ESPCs) and utility energy service contracts (UESCs) allow agencies to do energy projects with minimal up-front capital cost and no special appropriations from Congress.



The screenshot shows the ENERGY.GOV website, specifically the "FEDERAL ENERGY AND WATER EFFICIENCY PROJECT FINANCING" page. The header is green with the ENERGY.GOV logo and a search bar. A navigation bar below the header lists: SERVICES, EFFICIENCY, RENEWABLES, TRANSPORTATION, ABOUT US, and OFFICES >. The main content area has a breadcrumb trail: Home » Federal Energy and Water Efficiency Project Financing. The title "FEDERAL ENERGY AND WATER EFFICIENCY PROJECT FINANCING" is prominently displayed. On the left is a sidebar with a "Project Financing" link highlighted in green. The main content area includes a description of the FEMP, a "quick guide" link, and two colored boxes for "ESPC" (Energy Savings Performance Contracts) and "UESC" (Utility Energy Service Contracts). On the right, there is a "FEMP CONTACTS" section listing Kurmit Rockwell, Ira Birnbaum, and David McAndrew with their respective contact information.

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Agency Assistance

The Federal Energy Management Program (FEMP) offers financing options for agencies that are ready to implement energy and water efficiency projects. Carefully matching available project financing options with specific situations can make the difference between a stalled, unfunded project and a successful project that generates energy and cost savings.

To find the right project financing option for you, start by reading the project financing [quick guide](#), or choose an option below.

ESPC
ENERGY SAVINGS PERFORMANCE CONTRACTS

Energy savings performance contracts (ESPCs) allow agencies to procure energy savings and facility improvements with no up-front capital costs or special appropriations from Congress.

UESC
UTILITY ENERGY SERVICE CONTRACTS

Utility energy service contracts (UESCs) offer federal agencies an effective way to implement energy and water efficiency and renewable energy projects.

FEMP CONTACTS

[Kurmit Rockwell](#)
ESPC contact
202-586-2078

[Ira Birnbaum](#)
ESPC ENABLE contact
202-287-1869

[See all ESPC contacts](#)

[David McAndrew](#)
UESC contact
202-586-7722

[See all UESC contacts](#)

energy.gov/eere/femp/federal-energy-and-water-efficiency-project-financing

Institutional Change

Institutional change integrates behavior with technologies and policies, recognizing that all three need to align to make a significant and lasting difference.

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INSTITUTIONAL CHANGE FOR SUSTAINABILITY

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Continuous Improvement Process

Institutional change is anchored in five steps that are repeated for continuous improvement.

[READ MORE](#)

The Federal Energy Management Program (FEMP) aims to help agencies and organizations make sustainability a natural part of how they operate—while continuing to meet their mission goals. Through its Institutional Change activities, FEMP provides guidance and reference materials to help agencies and the myriad organizations within agencies shift their behavior in an effort to save energy and resources now and in the long-term. Institutional change integrates behavior with technologies and policies, recognizing that all three need to align to make a significant and lasting difference.

The evidence-based guidance about institutional change in this section draws from social-science literature and real-world experience. Although it focuses on meeting the requirements of Executive Order 13693, agencies and organizations can use the institutional change process for continuous change to meet any sustainability or energy-efficiency goals.

Learn more about the [basics](#) of institutional change and the associated institutional change [principles](#).

FEMP
Federal Energy Management Program

FEMP CONTACTS

Nicolas Baker
U.S. Department of Energy
202-586-8215

Amy Wolfe
Oak Ridge National Laboratory
865-574-5944

Christopher Payne
Lawrence Berkeley National Laboratory
510-495-2577

TRAINING

[Sustainable Institutional Change for Federal Facility Managers](#)

energy.gov/eere/femp/institutional-change-sustainability

Contact Information

Dale Sartor, P.E.

dasartor@lbl.gov

(510) 486-5988



Lawrence Berkeley National Laboratory

MS 90-3111

University of California

Berkeley, CA 94720

datacenters.lbl.gov

