Energy Big Data Center Data Standards

Article Overview

Energy standards for data centers focus on monitoring, reporting, and optimizing electricity use, with frameworks like PUE, EU delegated regulations, and U.S. DOE guidance providing standardized metrics.

Overview of Data Center Energy Use

Data centers are highly energy-intensive facilities, with U.S. data centers consuming approximately 176 TWh in 2023, about 4.4% of national electricity, and global consumption projected to reach 650–1,050 TWh by 2026 due to AI and cloud computing growth . Roughly half of this energy is used by IT equipment, while the remainder supports cooling and infrastructure systems . Cooling strategies include centralized chilled air or water systems, as well as room-scale air conditioners, all of which impact energy efficiency .

Key Energy Standards and Metrics

Power Usage Effectiveness (PUE) is the most widely used metric for evaluating data center energy efficiency. It is calculated as the ratio of total facility energy to IT equipment energy, with lower values indicating higher efficiency . Other metrics include water usage effectiveness (WUE) and carbon intensity, which are increasingly incorporated into sustainability reporting.

U.S. Standards and Guidance

The U.S. Department of Energy (DOE) provides guidance for optimizing energy use i...

Article Content

Best Practices Guide for Energy-Efficient Data Center Design

This guide concludes with a section on metrics and benchmarking values by which a data center and its systems energy efficiency

Minimum performance standards for EU data centres

The European Commission''s Directorate-General for Energy has commissioned a study to support the development of minimum

Energy and Thermal Efficiency | AI Data Center Energy Performance

This page is part of the PNNL/ASHRAE/NEMA AI Data Center Energy Performance Framework and focuses on energy and thermal

Big data energy systems: A survey of practices and associated ...

Still, even these advanced solutions can encounter bottlenecks, which can impact the efficiency of data storage,

Data Centers

Data centers are often thought of as large, complex, standalone structures run by the world''s tech giants. While this is certainly true,

Public Utility Commission of Texas finalizes new data center standards

The state''s grid operators are trying to sort through a backlog of data centers and other large energy consumers

What IT needs to know about energy-efficiency directives for data ...

There''s another good reason for building more sustainable and energy-efficient data centers: Regulations and

Top US energy regulator pushes grids to overhaul data center power ...

The top U.S. energy regulator ordered the country''s electric grid operators on Thursday to consider new protocols to

EU proposes energy standards for data centers | Reuters

Speaking of governmental involvement, the European Union said on Wednesday it is developing minimum energy

Data centres & networks

As the world becomes increasingly digitalised, data centres and data transmission networks are emerging

EU Sets Energy Standards For Data Centers Amid Concern

According to the International Energy Agency, data centres will account for 20% of the growth in electricity demand in

Data Centers and Their Energy Consumption: Frequently Asked

Currently, there are no legally binding energy standards that apply explicitly to operation of data centers in the private

Singapore IT Energy Efficiency Standard for Data Centres Launched

Singapore has launched a new standard to support data centre operators and users to deploy energy efficient IT

2025 Best Practice Guidelines for the EU Code of Conduct on Data Centre ...

This Best Practice document for the European Code of Conduct for Energy Efficiency in Data Centres is a reference

Data centre electricity use surged in 2025, even with tightening ...

However, the energy sector as a whole is not yet taking full advantage of AI''s potential, according to the report, with

EU sets energy standards for data centres amid soaring power demand

The EU''s revised Energy Efficiency Directive and minimum energy efficiency standards for data centres are in line with

Green Data Centre Standard | IMDA

Learn more about IMDA''s Green Data Centre Standard, which sets guidelines and regulations for sustainable and energy-efficient

Building Accurate Energy-Use Statistics for Data Centers

With the rapid expansion of cloud computing and large-scale artificial intelligence models, building accurate and

ASHRAE Data Center Resources | Data Centers

An essential for professionals in data center design and operations. Keep up to date with the latest in standards and guidance on

Minimum performance standards for EU data centres

The DG Energy has initiated a study to aid the creation of minimum performance standards for data centres in Europe.

Data centre electricity use surged in 2025, even with tightening ...

Data centre electricity use surged in 2025, even with tightening bottlenecks driving a scramble for solutions - News

Energy Efficiency in Data Centers | Department of Energy

Energy Efficiency in Data Centers The Federal Energy Management Program (FEMP) encourages agencies and organizations to

US data centers'' energy use amid the artificial intelligence boom | Pew ...

Data centers accounted for 4% of total U.S. electricity use in 2024. Their energy demand is expected to more than

2024 United States Data Center Energy Usage Report

The Energy Act of 2020 calls for the U.S. Department of Energy to make available to the public an update to Lawrence Berkeley

New AI Data Center Framework for Design, Development, and

The Framework outlines best practices and applicable standards for planning and siting, integrated design principles,

EU proposes energy standards for data centers | Reuters

Hello! - It''s time for another focus on data centers as United Nations researchers warned in a report that their power

Data Centers and Their Energy Consumption: Frequently Asked

What are some potential concerns about water consumption by data centers? Which, if any, federal regulations cover

Data Center Power Demand | MIT Energy Initiative

The rapid increase in data center power demand has emerged as a key challenge for hyperscale and colocated datacenters, power

EU plans energy standards for data centres amid concerns over

The European Union will develop minimum energy-efficiency standards for data centres, it said on Wednesday, as

AEMC proposes new grid standards for data centre connections

Australia''s data centre boom is accelerating. Cloud computing, artificial intelligence, and digital services are driving

Energy performance of data centres

A European database, prepared by the Commission, collects and publishes data, which is relevant for the

PNNL/ASHRAE/NEMA AI Data Center Energy Performance Framework

The AI Data Center Framework is a collaborative initiative between ASHRAE, NEMA, and Pacific Northwest National Laboratory

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