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Challenges for data center operators

The federal government's draft bill for an energy efficiency act

End of October 2022, the German Federal Ministry of Economics and Climate Protection (BMWK) presented a draft bill for a law to increase energy efficiency and amend the Energy Services Act (EnEfG) (Link to our Insight), which envisaged considerable efficiency requirements for data centers and has since been the subject of controversial debate in the industry and in politics.

On April 3, 2023, the German government published the eagerly awaited revision of the draft bill. Despite some relief for data center operators, the new draft also contains a significant tightening compared to the current situation and legal framework. This applies in particular to data centers that start operations from January 01, 2025.

Requirements for data centers

Below you will find a synopsis to illustrate the main changes of the Federal government's draft bill (RefE) compared to the initial BMWK's draft of October 2022.

Power consumption

RefE1 §23 (6) RefE-EnEfG of October 18, 2022	RefE2 § 11 (8) RefE-EnEfG of April 3, 2023
Data centers are to replace their electricity consumption ▪ from **January 1, 2024, 50 percent** with unsubsidized electricity from renewable sources and ▪ from January **1, 2025, 100** percent by unsubsidized electricity from renewable sources.	On balance, data center operators are to cover their energy consumption ▪ from **January 1, 2024, with 50 percent** of unsubsidized electricity from renewable sources and ▪ from January **1, 2027, with 100** percent of unsubsidized electricity from renewable sources.

PUE-Ratio

RefE1 §23 (1) RefE-EnEfG	RefE2 § 11 (1) and (2) RefE-EnEfG
Data centers that begin operations **on or after January 1, 2025**, must maintain a planned power consumption effectiveness of **≤ 1.3** for the first two years of operations.	Data centers that commence operations **before July 1, 2026**, shall be constructed and operated in such a way that they ▪ achieve an energy consumption effectiveness of **≤ 1.5 as of July 1, 2027**, and ▪ achieve an energy use effectiveness **≤ 1.3** as of **July 1, 2030.** Data centers commencing operations **on or after July 1, 2026** shall be constructed and operated to achieve an energy use effectiveness of **≤ 1.3.**

Energy Reuse Factor

RefE1 §23 (1) RefE-EnEfG	RefE2 § 11 (2) RefE-EnEfG
▪ Data centers that begin operations **on or after January 1, 2025,** must achieve a planned share of reused energy of at least **30 percent** for the first two years of operation; ▪ Data centers that begin operations **on or after January 1, 2027**, must achieve a planned share of reused energy of at least **40 percent.**	▪ Data centers that begin operations **on or after July 1, 2026**, must be constructed and operated in such a way that they have a minimum of **10 percent** reused energy; ▪ Data centers that begin operations **on or after July 1, 2027,** must have a planned share of reused energy of at least **15 percent;** ▪ Data centers that begin operations **on or after July 1, 2028**, must have a planned share of reused energy of at least **20 percent.**

Cooling Systems

RefE1 §23 (3) and (4) RefE-EnEfG	RefE2 § 11 (2) RefE-EnEfG

▪ For data centers that begin operation **on or after January 1, 2024**, the minimum inlet temperature for air cooling of information technology is **27 degrees Celsius.**
▪ For data centers that begin operation **before January 1, 2024**, the following applies to the air cooling of information technology
  ○ minimum inlet temperature of **24 degrees Celsius** and
  ○ from January 1, 2028, a minimum inlet temperature of **27 degrees Celsius**;
▪ a lower inlet temperature is only permissible if it can be achieved without the use of a refrigeration system.
	▪ Data centers that begin operations **before January 1, 2024**, shall be constructed and operated in such a way that the air cooling of information technology
	  ○ complies with the minimum inlet temperature of **24 degrees Celsius**, and
	  ○ from **January 1, 2028**, complies with the minimum inlet temperature of **27 degrees Celsius**.
	▪ A lower inlet temperature is only permitted if it is achieved without the use of a refrigeration system.
	▪ Data centers that begin operations **on or after January 1, 2024,** shall be constructed and operated so that air cooling of information technology does not fall below the minimum inlet temperature of **27 degrees Celsius**. A lower inlet temperature is only permissible if this is achieved without the use of a refrigeration system.

Energy or environmental management system

RefE1 §24 (1) and (3) RefE-EnEfG	RefE2 § 12 (1) and (3) RefE-EnEfG
▪ Data center operators shall operate an energy or environmental management system. Data centers for which no energy or environmental management system is operated shall establish one by **January 1, 2025.** ▪ For data centers with a **nominal connected load** of **1 megawatt** or more and for data centers owned by or operated for public bodies with a nominal connected load of **100 kilowatts** or more, there is an obligation to validate or certify the energy or environmental management system from **January 1, 2025.**	▪ Data center operators must establish an energy or environmental management system by **July 1, 2025.** ▪ For data centers with a **nominal connected load** of **1 megawatt** or more and for data centers owned by or operated for public bodies with a nominal connected load of **200 kilowatts** or more, there is an obligation to validate or certify the energy or environmental management system from **January 1, 2025.**

Assessment

Compared to the first RefE, the requirements for the energy efficiency of data centers have been reduced in several places. This relates in particular to the Energy Reuse Factor (ERF). For example, according to the current version of the RefE, data centers must have a planned share of reused energy of at least 20 percent when they commence operations on or after July 1, 2028. According to the initial RefE of October 2022, this value was to be at least 40 percent for start of operations from January 1, 2027. The requirements were also reduced with regard to the use of renewable energies and the PUE ratio.

However, the German government's draft bill still sets high requirements for the operation of data centers, which will require considerable investment by operators. In the highly internationalized data center market, this can have a significant impact on operators' location decisions.

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