

Environmental indicators of data centers

Orange datacenter colocation services: key sustainability indicators

CUE
=
0.0087

WUE
=
0

PUE
=
1.28

PUE



Energy Usage Effectiveness

A measure of a data center's energy efficiency. It relates the total energy consumption of the building to the energy consumption of the equipment. The closer the PUE is to 1, the more efficient the data center is. A PUE of 1 would mean that all energy goes to the equipment.

Evolution

The average PUE has dropped from 2.5 in 2007 to 1.58 in 2021.



Provider values

Most are between 1.10 and 1.30.



WUE



Water Usage Effectiveness

An indicator that highlights the amount of water used compared to the electricity consumed by the equipment. The lower the WUE, the less water the data center consumes compared to the electricity it uses.

Reference

An average US data center consumes about 1.8 liters of water per kWh.



Provider values

Most are around 0.25 l/kWh, except Microsoft at 0.49 l/kWh.



CUE



Carbon Usage Effectiveness

An indicator that measures the amount of CO2 emitted per kWh of energy powering the equipment. The lower the CUE, the less CO2 the data center emits compared to the electricity it uses.

CUE
=
Amount of CO2 emitted
Electricity consumed

WUE
=
Amount of water used
Electricity consumed

PUE
=
Total building energy
Equipment energy