
**Information technology — Data
centres — Impact on data centre
resource metrics of electrical energy
storage and export**

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 39, *Sustainability for and by Information Technology*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The global economy is now reliant on information and communication technologies and the associated generation, transmission, dissemination, computation and storage of digital data. All markets have experienced exponential growth in that data, for social, educational and business sectors and, while the internet backbone carries the traffic, there are a wide variety of data centres at nodes and hubs within both private enterprise and shared/collocation facilities.

The historical data generation growth rate exceeds the capacity growth rate of the information and communications technology hardware and, with less than half (in 2014) of the world's population having access to an internet connection, that growth in data can only accelerate. In addition, with many governments having digital agendas to provide both citizens and businesses with ever-faster broadband access, the very increase in network speed and capacity will, by itself, generate ever more usage (Jevons Paradox). Data generation and the consequential increase in data manipulation and storage are directly linked to increasing power consumption.

With this background, it is clear that data centre growth, and power consumption in particular, is an inevitable consequence and that growth will demand increasing power consumption despite the most stringent energy efficiency strategies. This makes the need for key performance indicators (KPIs) that cover the effective use of resources (including but not limited to energy) and the reduction of CO₂ emissions essential.

Within the ISO/IEC 30134 series, the term resource usage effectiveness is more generally used for KPIs in preference to resource usage efficiency, which is restricted to situations where the input and output parameters used to define the KPI have the same units.

This document describes the treatment of data centre metrics in circumstances where electrical energy is stored and exported from within the data centres boundaries of other standards in the ISO/IEC 30134 series.

Additionally, this document will provide Excess Electrical Energy Factor (XEEF) as a metric to indicate the weight of this mechanism within the data centre energy balance.

This document deals with the storage and export of electrical energy, whatever form of storage is used; it could eventually serve as a model to handle a similar process of storage and export of non-electrical energy, such as chilled water thermal energy.

In order to determine the overall resource efficiency of a data centre, a holistic suite of metrics is required. This document complements the series of KPIs conforming to ISO/IEC 30134-1, which defines common requirements for a holistic suite of KPIs for data centre resource efficiency. This document does not specify limits or targets for the KPI and does not describe or imply, unless specifically stated, any form of aggregation of this KPI into a combination with other KPIs for data centre resource efficiency.

