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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

The present document is part 2, sub-part 1 of a multi-part deliverable covering operational energy management and sustainability of broadband deployment, as identified below:

Part 1: "General requirements ";

Part 2: "Specific requirements":

Sub-part 1: "Data centres";

Sub-part 2: "Fixed (excluding cable) access networks";

Sub-part 3: "Mobile access networks";

Sub-part 4: "Cable Access Networks";

Part 3: "Monitoring of sustainability".

NOTE 1: Additional documents are in development by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM) which include:

- 205 200-1-1: Energy management: Global KPIs: Operational infrastructures: Guidance (see NWIP DES/ATTM-02025)
- 205 200-2-2: Fixed (other than cable) access networks (see NWIP DES/ATTM-02026)
- 205 200-3: Monitoring of other environmental viability aspects of sustainability (see NWIP DES/ATTM-02027)

NOTE 2: A further document is under consideration ETSI Technical Committee CABLE to address "cable access networks".

Introduction

Energy costs continue to rise, a trend that will continue in the future, while broadband penetration is introducing new active equipment to the network architecture. In this context, and to reflect other environmental aspects of sustainability, it is vital that the main telecommunication actors implement effective general engineering of fixed and mobile broadband networks and sites provisioning, managing or using those networks (i.e. operator sites, operator data centres and customer data centres) in order to respond to critical issues of energy consumption while proposing essential solutions to true broadband deployment.

These issues are of particular importance in data centres - both of operators **and** customers. To guide this process, it is essential that metrics are defined, termed Global Key Performance Indicators (KPI_{EM}) that enable energy usage to be managed more efficiently.

This multi-part deliverable comprises:

- ES 205 200-1 [2]: a generic requirements document addressing Global KPIs for operational infrastructures;

NOTE: Global KPIs do not address design/operation of components or subsystems of broadband deployment networks.

- a sub-series ES 205 200-2 [i.10] that defines the Global KPIs, and drives energy management targets, for specific operational networks and sites and which describes how the Global KPIs are to be applied (which may be used to support future regulatory objectives);
  - ES 205 200-2-1: Data centres;
  - ES 205 200-2-3: Mobile access networks.

These documents do not define KPI limits or targets (which is outside the scope of this multi-part deliverable).

These documents will accelerate:

- availability of operational infrastructure architectures and network implementations that use energy more efficiently;
- the definition and attainment of sustainability objectives for operational broadband networks.

Within the present document:

- clause 4 explains the definition of a data centre in terms of the systems it comprises and the boundaries that apply and shows that the present document is equally applicable to operator data centres, operator sites and customers data centres;
- clause 5 describes how the Objective KPIs of the present document meet the requirements of ES 205 200-1 [2];
- clause 6 describes the specific requirements of the Global KPI and the supporting Objective KPIs for data centres;
- annex A discusses the roles of different types of Key Performance Indicators i.e. Technical, Objective and Global in relation to the overall energy management concepts of the present document.

The comparative costs and environmental impacts of different energy sources are not addressed in the present document.

1 Scope

The present document specifies Global Key Performance Indicators (KPI_{EE}) in relation to energy management for operator data centres (ODC), operator sites (OS) and customer data centres (CDC) and addresses the following objectives:

- energy consumption;
- task efficiency;
- energy re-use;
- renewable energy.

The definition of the Globals KPIs (clause 6) are in accordance with requirements of ES 205 200-1 [2] (as described in clause 5) in relation to:

- infrastructure scalability;
- infrastructure evolution;
- formulae and definitions of terms;
- measurement points and procedures.

The present document also provides information on system definition and boundaries (clause 4).

The comparative costs and environmental impacts of different energy sources are outside the scope of the present document.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] CENELEC EN 50600-2-2: "Information technology - Data centre facilities and infrastructures - Part 2-2: Power distribution".

[2] ETSI ES 205 200-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Energy management; Global KPIs; Operational infrastructures; Part 1: General requirements".

[3] CEN EN 1434 series: "Heat Meters".