BS EN ISO 52018-1:2017

BSI Standards Publication

# Energy performance of buildings — Indicators for partial EPB requirements related to thermal energy balance and fabric features

Part 1: Overview of options

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# National foreword

This British Standard is the UK implementation of EN ISO 52018-1:2017.

The UK participation in its preparation was entrusted to Technical Committee B/540/2, Building performance - Moisture.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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**Compliance with a British Standard cannot confer immunity from legal obligations.**

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# EN ISO 52018-1

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# Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options (ISO 52018-1:2017)

Performance énergétique des bâtiments - Indicateurs pour des exigences PEB partielles liées aux caractéristiques du bilan énergétique thermique et du bâti - Partie 1: Aperçu des options (ISO 52018-1:2017)

Energieeffizienz von Gebäuden - Indikatoren für EPB-Teilanforderungen im Hinblick auf die Wärmeenergiebilanz und Funktionen der Bausubstanz - Teil 1: Überblick über die Möglichkeiten (ISO 52018-1:2017)

This European Standard was approved by CEN on 27 February 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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## European foreword

This document (EN ISO 52018-1:2017) has been prepared by Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment" in collaboration with Technical Committee CEN/TC 89 “Thermal performance of buildings and building components” the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2018, and conflicting national standards shall be withdrawn at the latest by January 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document is part of the set of standards on the energy performance of buildings (the set of EPB standards) and has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association (Mandate M/480, see reference [EF1] below), and supports essential requirements of EU Directive 2010/31/EC on the energy performance of buildings (EPBD, [EF2]).

In case this standard is used in the context of national or regional legal requirements, mandatory choices may be given at national or regional level for such specific applications, in particular for the application within the context of EU Directives transposed into national legal requirements.

Further target groups are users of the voluntary common European Union certification scheme for the energy performance of non-residential buildings (EPBD art.11.9) and any other regional (e.g. Pan European) parties wanting to motivate their assumptions by classifying the building energy performance for a dedicated building stock.

**References:**

[EF1] Mandate M/480, Mandate to CEN, CENELEC and ETSI for the elaboration and adoption of standards for a methodology calculating the integrated energy performance of buildings and promoting the energy efficiency of buildings, in accordance with the terms set in the recast of the Directive on the energy performance of buildings (2010/31/EU) of 14th December 2010

[EF2] EPBD, Recast of the Directive on the energy performance of buildings (2010/31/EU) of 14th December 2010

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### Endorsement notice

The text of ISO 52018-1:2017 has been approved by CEN as EN ISO 52018-1:2017 without any modification.



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# Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO 52018-1 was prepared by ISO Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 89, *Thermal performance of buildings and building components,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 52018 series can be found on the ISO website.


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# Introduction

This document is part of a series aimed at the international harmonization of the methodology for assessing the energy performance of buildings. Throughout, this series is referred to as a "set of EPB standards".

All EPB standards follow specific rules to ensure overall consistency, unambiguity and transparency.

All EPB standards provide a certain flexibility with regard to the methods, the required input data and references to other EPB standards, by the introduction of a normative template in Annex A and Annex B with informative default choices.

For the correct use of this document, a normative template is given in Annex A to specify these choices. Informative default choices are provided in Annex B.

The main target groups for this document are architects, engineers and regulators.

Use by or for regulators: In case the document is used in the context of national or regional legal requirements, mandatory choices may be given at national or regional level for such specific applications. These choices (either the informative default choices from Annex B or choices adapted to national/regional needs, but in any case following the template of Annex A) can be made available as national annex or as separate (e.g. legal) document (national data sheet).

NOTE 1 So in this case:

— the regulators will **specify** the choices;

— the individual user will apply the document to assess the energy performance of a building, and thereby **use** the choices made by the regulators.

Topics addressed in this document can be subject to public regulation. Public regulation on the same topics can override the default values in Annex B. Public regulation on the same topics can even, for certain applications, override the use of this document. Legal requirements and choices are in general not published in standards but in legal documents. In order to avoid double publications and difficult updating of double documents, a national annex may refer to the legal texts where national choices have been made by public authorities. Different national annexes or national data sheets are possible, for different applications.

It is expected, if the default values, choices and references to other EPB standards in Annex B are not followed due to national regulations, policy or traditions, that:

— national or regional authorities prepare data sheets containing the choices and national or regional values, according to the model in Annex A. In this case a national annex (e.g. NA) is recommended, containing a reference to these data sheets;

— or, by default, the national standards body will consider the possibility to add or include a national annex in agreement with the template of Annex A, in accordance to the legal documents that give national or regional values and choices.

Further target groups are parties wanting to motivate their assumptions by classifying the building energy performance for a dedicated building stock.

More information is provided in the technical report (ISO/TR 52018-2)[7] accompanying this document.

The subset of EPB standards prepared under the responsibility of ISO/TC 163/SC 2 cover *inter alia*:

— calculation procedures on the overall energy use and energy performance of buildings;

— calculation procedures on the indoor temperature in buildings (e.g. in case of no space heating or cooling);

— indicators for partial EPB requirements related to thermal energy balance and fabric features;

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— calculation methods covering the performance and thermal, hygrothermal, solar and visual characteristics of specific parts of the building and specific building elements and components, such as opaque envelope elements, ground floor, windows and facades.

ISO/TC 163/SC 2 cooperates with other technical committees for the details on, for example, appliances, technical building systems and indoor environment.

The overall and partial EPB indicators, i.e. the quantitative output of EPB assessments, can be used for different purposes.

a) Requirements: To set public or private requirements regarding the energy performance of buildings.

b) Decisions: To facilitate decisions or actions in the private or public domain.

c) Information and communication: For building designers, owners, operators, users, policymakers and citizens (as sellers or renters, as prospective buyers or tenants).

ISO 52003-1 and ISO 52003-2 discuss in a general manner the post-processing of the outputs of the EPB standards. They describe the concepts of EPB features and EPB indicators and deal with the principles of requirements, ratings and certificates. They also briefly deal in a more practical manner with the overall EPB requirements.

This document deals on a practical level with the requirements related to the fabric and related to the thermal balance of the building. Thermal balance aspects concern both the heating and cooling needs and the free floating temperatures, especially with respect to overheating or too cold indoor temperatures.

Most of the EPB features falling within this scope are succinctly enumerated and for each of them, many possible indicators are listed. Annex A provides standardized tables to report the choices that are made by regulators. Annex B gives motivated default choices.

As ISO 52003-1, this document does not provide any EPB assessment method (calculation, measurement of inspection). Instead, they refer to other EPB and non-EPB standards for the determination of EPB indicators.

ISO/TR 52018-2 is the technical report corresponding to this document. It provides extensive background information to help with making well-considered choices. For best understanding, the reader is advised to read this document and ISO/TR 52018-2 in parallel, clause by clause.

EPB indicators that can possibly be used for setting requirements to technical building systems are in principle covered in the corresponding EPB documents (which are until now mostly CEN standards).

Table 1 shows the relative position of this document within the set of EPB standards in the context of the modular structure as set out in ISO 52000-1.

NOTE 2 In ISO/TR 52000-2, the same table can be found, with, for each module, the numbers of the relevant EPB standards and accompanying technical reports that are published or in preparation.

NOTE 3 The modules represent EPB standards, although one EPB standard could cover more than one module and one module could be covered by more than one EPB standard, for instance, a simplified and a detailed method, respectively. See also Clause 2 and Tables A.1 and B.1.


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**Table 1 — Position of this document (*in casu* M2–4) within the modular structure of the set of EPB standards**

| | Overarching | | Building (as such) | | Technical Building Systems | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sub-module** | **Descrip-tions** | | **Descrip-tions** | | **Descrip-tions** | **Heat-ing** | **Cool-ing** | **Ven-tila-tion** | **Humid-ification** | **Dehu-midifi-cation** | **Domestic hot water** | **Lighting** | **Building automa-tion and control** | **PV, wind, ..** |
| **sub1** | | **M1** | | **M2** | | **M3** | **M4** | **M5** | **M6** | **M7** | **M8** | **M9** | **M10** | **M11** |
| 1 | General | | General | | General | | | | | | | | | |
| 2 | Common terms and definitions; symbols, units and subscripts | | Building en-ergy needs | | Needs | | | | | | | | [a] | |
| 3 | Applications | | (Free) indoor conditions without systems | | Maximum load and power | | | | | | | | | |
| 4 | Ways to ex-press energy performance | | Ways to express energy per-formance | ISO 52018-1 | Ways to express energy perfor-mance | | | | | | | | | |
| 5 | Building categories and building boundaries | | Heat transfer by transmis-sion | | Emission and con-trol | | | | | | | | | |
| 6 | Building oc-cupancy and operating conditions | | Heat trans-fer by infil-tration and ventilation | | Distribu-tion and control | | | | | | | | | |
| 7 | Aggregation of energy services and energy carriers | | Internal heat gains | | Storage and con-trol | | | | | | | | | |
| 8 | Building zoning | | Solar heat gains | | Genera-tion and control | | | | | | | | | |
| 9 | Calculated energy per-formance | | Building dynamics (thermal mass) | | Load dispatch-ing and operating conditions | | | | | | | | | |
| 10 | Measured energy per-formance | | Measured energy per-formance | | Measured energy perfor-mance | | | | | | | | | |
| 11 | Inspection | | Inspection | | Inspection | | | | | | | | | |
| 12 | Ways to ex-press indoor comfort | | | | BMS | | | | | | | | | |
| 13 | External environment conditions | | | | | | | | | | | | | |
| 14 | Economic calculation | | | | | | | | | | | | | |

[a] The shaded modules are not applicable.

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# Energy performance of buildings — Indicators for partial EPB requirements related to thermal energy balance and fabric features —

## Part 1: Overview of options

## 1 Scope

The set of EPB assessment standards produces a great number of overall and partial EPB indicators as outputs, which can be used for different purposes. This document deals with the use as requirement of partial EPB indicators related to the fabric and related to the thermal balance of the building. Thermal balance aspects concern both the heating and cooling needs and the free floating temperatures, especially with respect to overheating or too cold indoor temperatures. This document can support both private parties and public regulators (and all stakeholders involved in the regulatory process) with the "post-processing" of these outputs.

This document provides standardized tables for reporting, in a structured and transparent manner, the choices that are to be made with respect to the partial EPB requirements covered by this document. The tables are non-restrictive, thus allowing for full regulatory flexibility.

NOTE Table 1 in the Introduction shows the relative position of this document within the set of EPB standards in the context of the modular structure as set out in ISO 52000-1.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 In addition, Annex C contains specific parallel routes in referencing standards, in order to take into account existing national and/or regional regulations and/or legal environments while maintaining global relevance.

NOTE 2 Default references to EPB standards other than ISO 52000-1 are identified by the EPB module code number and given in Annex A (normative template) and Annex B (informative default choice).

EXAMPLE EPB module code number: M5–5, or M5–5.1 (if module M5–5 is subdivided), or M5–5/1 (if reference to a specific clause of the standard covering M5–5).

ISO 7345, *Thermal insulation — Physical quantities and definitions*

ISO 9050, *Glass in building — Determination of light transmittance, solar direct transmittance, total solar energy transmittance, ultraviolet transmittance and related glazing factors*

ISO 9972:2015, *Thermal performance of buildings — Determination of air permeability of buildings — Fan pressurization method*

ISO 10291, *Glass in building — Determination of steady-state U values (thermal transmittance) of multiple glazing — Guarded hot plate method*

ISO 10292, *Glass in building — Calculation of steady-state U values (thermal transmittance) of multiple glazing*

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ISO 10293, *Glass in building — Determination of steady-state U values (thermal transmittance) of multiple glazing — Heat flow meter method*

ISO 13788, *Hygrothermal performance of building components and building elements — Internal surface temperature to avoid critical surface humidity and interstitial condensation — Calculation methods*

ISO 15099, *Thermal performance of windows, doors and shading devices — Detailed calculations*

ISO 18292, *Energy performance of fenestration systems for residential buildings — Calculation procedure*

ISO 52000-1:2017, *Energy performance of buildings — Overarching EPB assessment — Part 1: General framework and procedures*

EN 410, *Glass in building — Determination of luminous and solar characteristics of glazing*

EN 673, *Glass in building — Determination of thermal transmittance (U value) — Calculation method*

EN 674, *Glass in building — Determination of thermal transmittance (U value) — Guarded hot plate method*

EN 675, *Glass in building — Determination of thermal transmittance (U value) — Heat flow meter method*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345 and ISO 52000-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

### 3.1 Building

**3.1.1**
**assessed object**
building, part of a building or portfolio of buildings that is the object of the energy performance assessment

Note 1 to entry: The assessed object comprises all spaces and technical systems which may contribute to or influence the energy performance assessment.

Note 2 to entry: The assessed object may include one or several building units, if these are not individually object of the energy performance assessment.

Note 3 to entry: A distinction may be made between, for example, a designed building, new building after construction, existing building in the use phase and existing building after major renovation.

[SOURCE: ISO 52000-1:2017, 3.1.1]

**3.1.2**
**building**
construction as a whole, including its envelope and all technical building systems, where energy may be used to condition the indoor environment, to provide domestic hot water and illumination and other services related to the use of the building

Note 1 to entry: The term refers to the physical building as a whole or to all parts thereof that at least include the spaces and technical building systems that are relevant for the energy performance assessment.

Note 2 to entry: Parts of a building can be physically detached, but are on the same building site. For example, a canteen or a guard house or one or more classrooms of a school in a detached part of a building or an essential space in a dwelling (e.g. bedroom).


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[SOURCE: ISO 52000-1:2017, 3.1.2]

**3.1.3**
**building category**
**unit category**
classification of buildings and/or building units related to their main use or their special status, for the purpose of enabling differentiation of the energy performance assessment procedures and/or energy performance requirements

EXAMPLE Buildings officially protected as part of a designated environment or because of their special architectural or historical merit, buildings used as places of worship and for religious activities, residential buildings, (a) single-family houses of different types;(b) apartment blocks;(c) offices;(d) educational buildings;(e) hospitals;(f) hotels and restaurants;(g) sports facilities;(h) wholesale and retail trade services buildings;(i) data centres; (j) other types of energy-consuming buildings.

Note 1 to entry: Building regulations often make a distinction between building categories.

Note 2 to entry: The building category, for instance, may determine if energy performance assessment is mandatory (e.g., not for religious or historic buildings) and which are the minimum energy performance requirements (e.g., for new buildings); in some countries measured energy performance of a building is prescribed for specific categories of buildings (e.g., apartment buildings, large public buildings), etc. Another type of categorization is the distinction between new and existing and renovated buildings.

Note 3 to entry: Many buildings or building units of a given (use) category contain spaces of different (use) categories; for instance an office building may contain a restaurant; see 3.1.12 definition of space category.

Note 4 to entry: The allocation of a building category may also have a strong impact on other parts of the building regulations, for instance on safety (e.g., emergency exits, strength of floor) or indoor environmental quality (e.g., minimum ventilation rates).

[SOURCE: ISO 52000-1:2017, 3.1.3]

**3.1.4**
**building element**
integral component of the technical building systems or of the fabric of a building

[SOURCE: ISO 52000-1:2017, 3.1.4]

**3.1.5**
**building fabric**
all physical elements of a building, excluding technical building systems

EXAMPLE Roofs, walls, floors, doors, gates and internal partitions.

Note 1 to entry: It includes elements both in the inside and outside of the thermal envelope, including the thermal envelope itself.

Note 2 to entry: The fabric determines the thermal transmission, the thermal envelope airtightness and (nearly all of) the thermal mass of the building (apart from the thermal mass of furniture and technical building systems). The fabric also makes the building wind and water tight. The building fabric is sometimes described as the building as such, i.e. the building without any technical building system.

[SOURCE: ISO 52000-1:2017, 3.1.5]

**3.1.6**
**building portfolio**
set of buildings and common technical building systems whose energy performance is determined taking into account their mutual interactions

Note 1 to entry: An example of common equipment is an energy generation system (PV panels, wind turbine, cogen unit, boiler etc.) serving the building portfolio.

[SOURCE: ISO 52000-1:2017, 3.1.6]

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**3.1.7**
**building thermal zone**
**thermal zone**
internal environment with assumed sufficiently uniform thermal conditions to enable a thermal balance calculation according to the procedures in the standard under EPB module M2-2

Note 1 to entry: The EPB standard under module M2–2 is ISO 52016-1[4].

[SOURCE: ISO 52000-1:2017, 3.1.7]

**3.1.8**
**building unit**
section, floor or apartment within a building which is designed or altered to be used separately from the rest of the building

EXAMPLE A shop in a shopping mall, an apartment in an apartment building or a rentable office space in an office building.

Note 1 to entry: The building unit can be the assessed object.

[SOURCE: ISO 52000-1:2017, 3.1.8]

**3.1.9**
**conditioned space**
room or enclosure that is covered by one or more of the EPB services

**3.1.10**
**reference floor area**
floor area used as a reference size

Note 1 to entry: See definition of reference size.

[SOURCE: ISO 52000-1:2017, 3.1.12]

**3.1.11**
**reference size**
relevant metric to normalize the overall or partial energy performance and energy performance requirements to the size of the building or part of a building and for the comparison against benchmarks

[SOURCE: ISO 52000-1:2017, 3.1.13]

**3.1.12**
**space category**
classification of building spaces related to a specific set of use conditions

EXAMPLE Office space, restaurant space, entrance hall, toilet, living space, assembly hall, shop, residential bed room, indoor car park, heated indoor stair case, unheated indoor stair case, etc.

Note 1 to entry: The space category is relevant for the calculation of the energy performance assessment and for defining the reference size.

[SOURCE: ISO 52000-1:2017, 3.1.14]

**3.1.13**
**thermally conditioned space**
heated and/or cooled space

[SOURCE: ISO 52000-1:2017, 3.1.16]


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**3.1.14**
**thermal envelope area**
total area of all elements of a building that enclose thermally conditioned spaces through which thermal energy is transferred, directly or indirectly, to or from the external environment

Note 1 to entry: The thermal envelope area depends on whether internal, overall internal or external dimensions are being used.

Note 2 to entry: The thermal envelope area does not include the area to adjacent buildings; see ISO 13789.

Note 3 to entry: The thermal envelope area may play a role in the ways to express the overall and partial energy performance and energy performance requirements and comparison against benchmarks.

[SOURCE: ISO 13789:2017, 3.9, modified — Notes 2 and 3 to entry have been added.]

**3.1.15**
**thermally unconditioned space**
room or enclosure that is not part of a thermally conditioned space

[SOURCE: ISO 52000-1:2017, 3.1.17]

**3.1.16**
**useful floor area**
<for EPB assessment> area of the floor of a building needed as parameter to quantify specific conditions of use that are expressed per unit of floor area and for the application of the simplifications and the zoning and (re-)allocation rules

[SOURCE: ISO 52000-1:2017, 3.1.18]

## 3.2 Indoor and outdoor conditions

**3.2.1**
**condition of use**
requirement and/or restriction for the use of a building space category, related to the services for the energy performance assessment and/or the boundary conditions

EXAMPLE Heating set point, cooling set point, minimum amount of ventilation related to air quality, net domestic hot water needs (e.g. per $m^2$ floor area or per person), lighting levels, internal heat gains, etc., including the distribution over time (operation). Where relevant, the numbers are based on the number of occupants per $m^2$ per type of building space.

[SOURCE: ISO 52000-1:2017, 3.2.1]

**3.2.9**
**solar irradiance**
power density of radiation incident on a surface, i.e. the quotient of the radiant flux incident on the surface and the area of that surface, or the rate at which radiant energy is incident on a surface, per unit area of that surface

[SOURCE: ISO 52000-1: 2017, 3.2.6]

**3.2.10**
**solar irradiation**
incident solar heat per area over a given period

Note 1 to entry: Incident energy per unit area of a surface, found by integration of solar irradiance over a specified time interval, often an hour or a day (see ISO 9488).

[SOURCE: ISO 52000-1:2017, 3.2.7]

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## 3.3 Technical building systems

**3.3.1**
**building service**
service provided by the technical building systems and by appliances to provide the indoor environment conditions, domestic hot water, illumination levels and other services related to the use of the building

[SOURCE: ISO 52000-1:2017, 3.3.3]

**3.3.2**
**building service area**
**service area**
part of a building consisting of one or more elementary spaces served by a specific technical building system or sub-system

EXAMPLE Building service area for a specific heating system circuit, for a specific cooling system circuit, for a specific domestic hot water distribution system, for a specific ventilation system, for a specific air conditioning system, for a specific lighting (artificial light or daylight) configuration.

[SOURCE: ISO 52000-1:2017, 3.3.4]

**3.3.3**
**other building service**
service supplied by energy-consuming appliances

[SOURCE: ISO 52000-1:2017, 3.2.5]

**3.3.4**
**recoverable system thermal loss**
part of a system thermal loss which can be recovered to lower either the energy need for heating or cooling or the energy use of the heating or cooling system

Note 1 to entry: This depends on the calculation approach chosen to calculate the recovered gains and losses (detailed or simplified approach; see ISO 52000-1:2017, 11.3).

Note 2 to entry: In this document, if not directly taken into account as a reduction to the system losses, the recoverable system thermal losses are calculated as part of the internal heat gains. It may be decided at national level to report the recoverable system thermal losses separately from the other internal heat gains.

[SOURCE: ISO 52000-1:2017, 3.3.9, modified — Note 2 to entry has been added.]

**3.3.5**
**recovered system thermal loss**
part of a recoverable system thermal loss which has been recovered to lower either the energy need for heating or cooling or the energy use of the heating or cooling system

Note 1 to entry: This depends on the calculation approach chosen to calculate the recovered gains and losses (detailed or simplified approach; see ISO 52000-1:2017, 11.3).

[SOURCE: ISO 52000-1:2017, 3.3.10]

**3.3.6**
**system thermal loss**
thermal loss from a technical building system for heating, cooling, domestic hot water, humidification, dehumidification or ventilation that does not contribute to the useful output of the system

Note 1 to entry: A system loss can become an internal heat gain for the building if it is recoverable.

Note 2 to entry: Thermal energy recovered directly in the sub-system is not considered as a system thermal loss but as heat recovery and directly treated in the related system standard under EPB module M3 to M8.

Note 3 to entry: Heat dissipated by the lighting system or by other services (e.g. appliances of computer equipment) is not part of the system thermal losses, but part of the internal heat gains.


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[SOURCE: ISO 52000-1:2017, 3.3.11]

**3.3.7**
**technical building system**
technical equipment for heating, cooling, ventilation, humidification, dehumidification, domestic hot water, lighting, building automation and control and electricity production

Note 1 to entry: A technical building system can refer to one or to several building services (e.g. heating, heating and domestic hot water).

Note 2 to entry: A technical building system is composed of different sub-systems.

Note 3 to entry: Electricity production can include cogeneration, wind power and photovoltaic systems.

[SOURCE: ISO 52000-1:2017, 3.3.13]

## 3.4 Energy

**3.4.1**
**energy need for heating or cooling**
<sensible>heat to be delivered to or extracted from a thermally conditioned space to maintain the intended space temperature conditions during a given period of time

[SOURCE: ISO 52000-1:2017, 3.4.13, modified — the domain 'sensible' has been added.]

**3.4.2**
**energy need for humidification or dehumidification**
latent heat in the water vapour to be delivered to or extracted from a thermally conditioned space by a technical building system to maintain a specified minimum or maximum humidity within the space

[SOURCE: ISO 52000-1:2017, 3.4.14]

## 3.5 Energy performance

**3.5.1**
**energy performance**
**overall energy performance**
<of an assessed object> calculated or measured amount of (weighted) energy needed to meet the energy demand associated with a typical use of the assessed object, which includes energy used for specific services (EPB services)

Note 1 to entry: See definition of EPB services and definition of assessed object.

Note 2 to entry: Also called overall energy performance, to distinct from partial energy performance.

[SOURCE: ISO 52000-1:2017, 3.5.7]

**3.5.2**
**energy performance indicator**
**EPB indicator**
calculated or measured numerical quantity that characterizes an energy feature of an assessed object

Note 1 to entry: EPB indicators are used for the energy performance rating, the energy performance requirements and/or for the certificate. An EPB indicator can for example be expressed in energy performance per unit of floor area or energy performance divided by the energy performance of a specific benchmark or another reference value.

Note 2 to entry: This covers both overall energy performance and partial energy performance.

[SOURCE: ISO 52000-1:2017, 3.5.10]

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