



BSI Standards Publication

Energy performance of buildings — Overarching EPB assessment

Part 1: General framework and procedures

National foreword

This British Standard is the UK implementation of EN ISO 52000-1:2017. It is identical to ISO 52000-1:2017. It supersedes BS EN 15603:2008, PD ISO/TR 16344:2012 and BS ISO 16346:2013, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/540, Energy performance of materials components and buildings.

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

At the time of publication of this standard, the UK committee advises users that it is preparing a National Annex for inclusion in a subsequent revision of this document.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO 52000-1:2017) has been prepared by Technical Committee CEN/TC 371 "Energy Performance of Buildings project group", the secretariat of which is held by NEN, in collaboration with Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment".

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of an identical text or by endorsement, at the latest by January 2018 and conflicting national standards shall be withdrawn at the latest by January 2018.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 supersedes EN 15603:2008.

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

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 52000-1:2017 has been approved by CEN as EN ISO 52000-1:2017 without any modification.

Contents

	Page
Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Building.....	2
3.2 Indoor and outdoor conditions.....	4
3.3 Technical building systems.....	5
3.4 Energy.....	7
3.5 Energy performance.....	10
3.6 Energy calculation.....	13
4 Symbols, subscripts and abbreviations	14
4.1 Symbols.....	15
4.2 Subscripts.....	16
4.3 Abbreviations.....	17
5 Description of the overarching framework and procedures	18
5.1 Output of the method.....	18
5.2 General description of the procedures and routing.....	18
5.3 Selection criteria between the methods.....	20
6 Overarching preparation steps	20
6.1 General.....	20
6.2 List of types and categories.....	20
6.2.1 Type of object.....	20
6.2.2 Building category and space categories.....	21
6.2.3 Type of application.....	21
6.2.4 Types of assessment.....	21
6.2.5 Building services.....	22
6.3 Identification of types and categories for a specific case.....	22
6.3.1 General.....	22
6.3.2 Output data.....	23
7 Calculated energy performance of buildings	23
7.1 Output data.....	23
7.2 Calculation intervals and calculation period.....	24
7.2.1 Calculation interval.....	24
7.2.2 Calculation period.....	24
7.3 Input data.....	25
7.3.1 Product data.....	25
7.3.2 System design data.....	25
7.3.3 Operating conditions data.....	25
7.3.4 Constants and physical data.....	28
7.3.5 Other data.....	28
7.4 Description of the calculation procedure.....	28
8 Measured overall energy performance and comparison with calculations	29
8.1 General.....	29
8.2 Output of the method.....	29
8.3 Measurement intervals and measurement period.....	29
8.4 Input data.....	30
8.4.1 Product data.....	30
8.4.2 System design data.....	30
8.4.3 Operating conditions data.....	30
8.4.4 Constants and physical data.....	31

8.4.5	Other data.....	31
8.5	Measurement procedures.....	31
8.6	Calculation of the energy performance based on measured energy.....	31
8.7	Comparison between calculated energy performance and measured energy performance.....	32
8.8	Measured energy performance reporting.....	32
9	Overall assessment of the energy performance of buildings.....	32
9.1	Categorization of building and/or spaces.....	32
9.2	Combination of building services included in EPB in each space.....	33
9.3	Useful floor area and air volume.....	34
9.4	Normalization to building size.....	34
9.4.1	Reference size.....	34
9.4.2	Normalization.....	35
9.4.3	Reference floor area.....	35
9.5	Assessment boundary and perimeters.....	35
9.5.1	General principles.....	35
9.5.2	Assessment boundary for multiple buildings.....	37
9.6	Overall energy performance.....	37
9.6.1	Weighted overall energy balance.....	37
9.6.2	Primary energy factors.....	38
9.6.3	Greenhouse gas emission factors.....	39
9.6.4	Additional weighting factors.....	40
9.6.5	Costs factors.....	40
9.6.6	Weighting factors for exported energy.....	40
9.6.7	Energy flows.....	43
9.7	Share of renewable energy.....	43
9.8	Energy performance indicators for technical building systems.....	44
9.9	Calculation methods for energy performance indicators per part of a building and/or service.....	44
10	Zoning.....	45
10.1	General.....	45
10.2	Thermal zones and service areas.....	46
10.3	Spaces.....	47
10.4	Zoning rules.....	49
10.4.1	Principle.....	49
10.4.2	Specific zoning criteria.....	49
10.5	Assignment rules.....	50
10.5.1	Subdivision.....	50
10.5.2	Recombination.....	53
10.6	Zoning procedure.....	53
11	Calculation of the energy performance, routing and energy balance.....	53
11.1	General.....	53
11.2	Overall calculation procedure (steps).....	54
11.3	Calculation principles of the recovered gains and losses.....	54
11.3.1	General.....	54
11.3.2	Detailed approach.....	55
11.3.3	Simplified approach.....	56
11.4	Effect of building automation and control (BAC) and technical building management (TBM).....	56
11.5	Climatic and external environment data.....	57
11.6	Overall energy performance.....	57
11.6.1	General.....	57
11.6.2	Electricity and other energy carriers with exportation.....	57
11.6.3	Energy carriers without exportation.....	62
11.6.4	Exported heat produced on-site and not included in thermal use of the building.....	63

12	Common overarching output	64
12.1	General.....	64
12.2	Tabulated overview of the amounts of energy per energy carrier and energy service	65
Annex A	(normative) Input and method selection data sheet — Template	72
Annex B	(informative) Input and method selection data sheet — Default choices	83
Annex C	(normative) Common subscripts	101
Annex D	(informative) Calculation of measured energy performance	110
Annex E	(normative) Calculation methods for energy performance indicators per part of a building and/or service	112
Annex F	(informative) Alphabetical index of terms	119
Annex G	(informative) Electrical grid related indicators	122
Annex H	(informative) Proposal of indicators for the assessment of nearly Zero-Energy Buildings (NZEB)	123
Bibliography	126

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 52000-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 371, *Energy Performance of Buildings project group*, in collaboration with ISO Technical Committees TC 163, *Thermal performance and energy use in the built environment*, and TC 205, *Building Environment Design*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 52000 series can be found on the ISO website.

This document cancels and replaces ISO/TR 16344:2012^[3] and ISO 16346:2013^[2].

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 accompanying this document ISO/TR 52000-2[6].

The framework for overall EPB includes:

- a) common terms, definitions and symbols;
- b) building and assessment boundaries;
- c) building partitioning into space categories;

- d) methodology for calculating the EPB (formulae on energy used, delivered, produced and/or exported at the building site and nearby);
- e) a set of overall formulae and input-output relations, linking the various elements relevant for the assessment of the overall EPB;
- f) general requirements for EPB dealing with partial calculations;
- g) rules for the combination of different spaces into zones;
- h) performance indicators;
- i) methodology for measured energy performance assessment.

[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^[6] 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 [Tables A.1](#) and [B.1](#).

Table 1 — Position of this document (in casu M1-1 - M1-3, M1-5, M1-7 - M1-10), within the modular structure of the set of EPB standards

Sub module	Overarching		Building (as such)		Technical Building Systems										
	Descriptions		Descriptions		Descriptions	Heat- ing	Cool- ing	Ven- tila- tion	Hu- midifi- cation	Dehu- midifi- cation	Do- mestic hot water	Light ing	Build ing auto mation and control	PV, wind, ..	
sub1		M1		M2		M3	M4	M5	M6	M7	M8	M9	M10	M11	
1	General	ISO 52000-1	General		General										
2	Common terms and definitions; symbols, units and subscripts	ISO 52000-1	Building energy needs		Needs								a		
3	Applications	ISO 52000-1	(Free) Indoor conditions without systems		Maximum load and power										
4	Ways to express energy performance		Ways to express energy performance		Ways to express energy performance										
5	Building categories and building boundaries	ISO 52000-1	Heat transfer by transmission		Emission and control										
6	Building occupancy and operating conditions		Heat transfer by infiltration and ventilation		Distribution and control										
7	Aggregation of energy services and energy carriers	ISO 52000-1	Internal heat gains		Storage and control										
8	Building zoning	ISO 52000-1	Solar heat gains		Generation and control										

NOTE The shaded modules are not applicable.

Table 1 (continued)

Overarching		Building (as such)		Technical Building Systems										
Sub module	Descriptions		Descriptions		Descriptions	Heat- ing	Cool- ing	Ven- tila- tion	Hu- midifi- cation	Dehu- midifi- cation	Do- mestic hot water	Light ing	Build ing auto- mation and control	PV, wind, ..
sub1		M1		M2		M3	M4	M5	M6	M7	M8	M9	M10	M11
9	Calculated energy performance	ISO 52000-1	Building dynamics (thermal mass)		Load dis- patching and operating conditions									
10	Measured energy performance	ISO 52000-1	Measured energy performance		Measured energy performance									
11	Inspection		Inspection		Inspection									
12	Ways to express indoor comfort				BMS									
13	External environment conditions													
14	Economic calculation													

NOTE The shaded modules are not applicable.

Energy performance of buildings — Overarching EPB assessment —

Part 1: General framework and procedures

1 Scope

This document establishes a systematic, comprehensive and modular structure for assessing the energy performance of new and existing buildings (EPB) in a holistic way.

It is applicable to the assessment of overall energy use of a building, by measurement or calculation, and the calculation of energy performance in terms of primary energy or other energy-related metrics. It takes into account the specific possibilities and limitations for the different applications, such as building design, new buildings ‘as built’, and existing buildings in the use phase as well as renovation.

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 this document.

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.

ISO 7345:1987, *Thermal insulation — Physical quantities and definitions*

NOTE 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 in [Table A.1](#)) and [Annex B](#) (informative default choice in [Table B.1](#)).

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 documents covering M5-5).

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345:1987 and the following apply.

[Clause 3](#) includes terms that are not used in this document, but that are needed for overall consistency in the EPB standards.

NOTE 1 An alphabetic list of all terms defined in this document is given in [Annex F](#).

NOTE 2 See ISO/TR 52000-2[6] for explanation on the overarching terms and definitions and how possible conflicts with national or regional (e.g., legal) specifications is avoided.

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>