

ANNEX I

**Common general framework for the calculation of energy performance of buildings
(referred to in Article 3)**

[^{F1}1. The energy performance of a building shall be determined on the basis of calculated or actual energy use and shall reflect typical energy use for space heating, space cooling, domestic hot water, ventilation, built-in lighting and other technical building systems.

The energy performance of a building shall be expressed by a numeric indicator of primary energy use in kWh/(m².y) for the purpose of both energy performance certification and compliance with minimum energy performance requirements. The methodology applied for the determination of the energy performance of a building shall be transparent and open to innovation.

Member States shall describe their national calculation methodology following the national annexes of the overarching standards, namely ISO 52000-1, 52003-1, 52010-1, 52016-1, and 52018-1, developed under mandate M/480 given to the European Committee for Standardisation (CEN). This provision shall not constitute a legal codification of those standards.]

Textual Amendments

F1 Substituted by [Directive \(EU\) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency \(Text with EEA relevance\)](#).

[^{F1}2. The energy needs for space heating, space cooling, domestic hot water, ventilation, lighting and other technical building systems shall be calculated in order to optimise health, indoor air quality and comfort levels defined by Member States at national or regional level.

The calculation of primary energy shall be based on primary energy factors or weighting factors per energy carrier, which may be based on national, regional or local annual, and possibly also seasonal or monthly, weighted averages or on more specific information made available for individual district system.

Primary energy factors or weighting factors shall be defined by Member States. In the application of those factors to the calculation of energy performance, Member States shall ensure that the optimal energy performance of the building envelope is pursued.

In the calculation of the primary energy factors for the purpose of calculating the energy performance of buildings, Member States may take into account renewable energy sources supplied through the energy carrier and renewable energy sources that are generated and used on-site, provided that it applies on a non-discriminatory basis.]

[^{F2}2a. For the purpose of expressing the energy performance of a building, Member States may define additional numeric indicators of total, non-renewable and renewable primary energy use, and of greenhouse gas emission produced in kgCO₂eq/(m².y).]

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Textual Amendments

F2 Inserted by Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency (Text with EEA relevance).

3. The methodology shall be laid down taking into consideration at least the following aspects:
 - (a) the following actual thermal characteristics of the building including its internal partitions:
 - (i) thermal capacity;
 - (ii) insulation;
 - (iii) passive heating;
 - (iv) cooling elements; and
 - (v) thermal bridges;
 - (b) heating installation and hot water supply, including their insulation characteristics;
 - (c) air-conditioning installations;
 - (d) natural and mechanical ventilation which may include air-tightness;
 - (e) built-in lighting installation (mainly in the non-residential sector);
 - (f) the design, positioning and orientation of the building, including outdoor climate;
 - (g) passive solar systems and solar protection;
 - (h) indoor climatic conditions, including the designed indoor climate;
 - (i) internal loads.
- [^{F14} The positive influence of the following aspects shall be taken into account:]
 - (a) local solar exposure conditions, active solar systems and other heating and electricity systems based on energy from renewable sources;
 - (b) electricity produced by cogeneration;
 - (c) district or block heating and cooling systems;
 - (d) natural lighting.
5. For the purpose of the calculation buildings should be adequately classified into the following categories:
 - (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) other types of energy-consuming buildings.

[^{F2}ANNEX IA

COMMON GENERAL FRAMEWORK FOR RATING THE SMART READINESS OF BUILDINGS

1. The Commission shall establish the definition of the smart readiness indicator and a methodology by which it is to be calculated, in order to assess the capabilities of a building or building unit to adapt its operation to the needs of the occupant and of the grid and to improve its energy efficiency and overall performance.

The smart readiness indicator shall cover features for enhanced energy savings, benchmarking and flexibility, enhanced functionalities and capabilities resulting from more interconnected and intelligent devices.

The methodology shall take into account features such as smart meters, building automation and control systems, self-regulating devices for the regulation of indoor air temperature, built-in home appliances, recharging points for electric vehicles, energy storage and detailed functionalities and the interoperability of those features, as well as benefits for the indoor climate condition, energy efficiency, performance levels and enabled flexibility.

2. The methodology shall rely on three key functionalities relating to the building and its technical building systems:
 - (a) the ability to maintain energy performance and operation of the building through the adaptation of energy consumption for example through use of energy from renewable sources;
 - (b) the ability to adapt its operation mode in response to the needs of the occupant while paying due attention to the availability of user-friendliness, maintaining healthy indoor climate conditions and the ability to report on energy use; and
 - (c) the flexibility of a building's overall electricity demand, including its ability to enable participation in active and passive as well as implicit and explicit demand response, in relation to the grid, for example through flexibility and load shifting capacities.
3. The methodology may further take into account:
 - (a) the interoperability between systems (smart meters, building automation and control systems, built-in home appliances, self-regulating devices for the regulation of indoor air temperature within the building and indoor air quality sensors and ventilations); and

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- (b) the positive influence of existing communication networks, in particular the existence of high-speed-ready in-building physical infrastructure, such as the voluntary ‘broadband ready’ label, and the existence of an access point for multi-dwelling buildings, in accordance with Article 8 of Directive 2014/61/EU of the European Parliament and of the Council⁽⁴⁾.
- 4. The methodology shall not negatively affect existing national energy performance certification schemes and shall build on related initiatives at national level, while taking into account the principle of occupant ownership, data protection, privacy and security, in compliance with relevant Union data protection and privacy law as well as best available techniques for cyber security.
- 5. The methodology shall set out the most appropriate format of the smart readiness indicator parameter and shall be simple, transparent, and easily understandable for consumers, owners, investors and demand-response market participants.]

ANNEX II

Independent control systems for energy performance certificates and inspection reports

- 1. [^{F1}The competent authorities or bodies to which the competent authorities have delegated the responsibility for implementing the independent control system shall make a random selection of all the energy performance certificates issued annually and subject them to verification. The sample shall be of a sufficient size to ensure statistically significant compliance results.]

The verification shall be based on the options indicated below or on equivalent measures:

- (a) validity check of the input data of the building used to issue the energy performance certificate and the results stated in the certificate;
 - (b) check of the input data and verification of the results of the energy performance certificate, including the recommendations made;
 - (c) full check of the input data of the building used to issue the energy performance certificate, full verification of the results stated in the certificate, including the recommendations made, and on-site visit of the building, if possible, to check correspondence between specifications given in the energy performance certificate and the building certified.
- 2. The competent authorities or bodies to which the competent authorities have delegated the responsibility for implementing the independent control system shall make a random selection of at least a statistically significant percentage of all the inspection reports issued annually and subject those reports to verification.

- [^{F23} Where information is added to a database it shall be possible for national authorities to identify the originator of the addition, for monitoring and verification purposes.]

ANNEX III

Comparative methodology framework to identify cost-optimal levels of energy performance requirements for buildings and building elements

The comparative methodology framework shall enable Member States to determine the energy performance of buildings and building elements and the economic aspects of measures relating to the energy performance, and to link them with a view to identifying the cost-optimal level.

The comparative methodology framework shall be accompanied by guidelines outlining how to apply this framework in the calculation of cost-optimal performance levels.

The comparative methodology framework shall allow for taking into account use patterns, outdoor climate conditions, investment costs, building category, maintenance and operating costs (including energy costs and savings), earnings from energy produced, where applicable, and disposal costs, where applicable. It should be based on relevant European standards relating to this Directive.

The Commission shall also provide:

- guidelines to accompany the comparative methodology framework; these guidelines will serve to enable the Member States to undertake the steps listed below,
- information on estimated long-term energy price developments.

For the application of the comparative methodology framework by Member States, general conditions, expressed by parameters, shall be laid down at Member State level.

The comparative methodology framework shall require Member States to:

- define reference buildings that are characterised by and representative of their functionality and geographic location, including indoor and outdoor climate conditions. The reference buildings shall cover residential and non-residential buildings, both new and existing ones,
- define energy efficiency measures to be assessed for the reference buildings. These may be measures for individual buildings as a whole, for individual building elements, or for a combination of building elements,
- assess the final and primary energy need of the reference buildings and the reference buildings with the defined energy efficiency measures applied,
- calculate the costs (i.e. the net present value) of the energy efficiency measures (as referred to in the second indent) during the expected economic lifecycle applied to the reference buildings (as referred to in the first indent) by applying the comparative methodology framework principles.

By calculating the costs of the energy efficiency measures during the expected economic lifecycle, the cost-effectiveness of different levels of minimum energy performance requirements is assessed by the Member States. This will allow the determination of cost-optimal levels of energy performance requirements.

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ANNEX IV

PART A

REPEALED DIRECTIVE WITH ITS SUCCESSIVE AMENDMENT

(referred to in Article 29)

Directive 2002/91/EC of the European Parliament and of the Council (OJ L 1, 4.1.2003, p. 65)	
Regulation (EC) No 1137/2008 of the European Parliament and of the Council (OJ L 311, 21.11.2008, p. 1)	only point 9.9 of the Annex

PART B

TIME LIMITS FOR TRANSPOSITION INTO NATIONAL LAW AND APPLICATION

(referred to in Article 29)

Directive	Time limit for transposition	Date of application
2002/91/EC	4 January 2006	4 January 2009 as regards Articles 7, 8 and 9 only

ANNEX V

CORRELATION TABLE

Directive 2002/91/EC	This Directive
Article 1	Article 1
Article 2, point (1)	Article 2, point (1)
—	Article 2, points (2) and (3)
Article 2, point (2)	Article 2, point (4) and Annex I
—	Article 2, points (5), (6), (7), (8), (9), (10) and (11)
Article 2, point (3)	Article 2, point (12)
Article 2, point (4)	Article 2, point (13)
—	Article 2, point (14)
Article 2, point (5)	Article 2, point (15)
Article 2, point (6)	Article 2, point (16)
Article 2, point (7)	Article 2, point (17)

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Article 2, point (8)	Article 2, point (18)
—	Article 2, point (19)
Article 3	Article 3 and Annex I
Article 4(1)	Article 4(1)
Article 4(2)	—
Article 4(3)	Article 4(2)
—	Article 5
Article 5	Article 6(1)
—	Article 6(2) and (3)
Article 6	Article 7
—	Articles 8, 9 and 10
Article 7(1) first subparagraph	Article 11(8) and Article 12(2)
Article 7(1) second subparagraph	Article 11(6)
Article 7(1) third subparagraph	Article 12(6)
Article 7(2)	Article 11(1) and (2)
—	Article 11(3), (4), (5), (7) and (9)
—	Article 12(1), (3), (4), (5) and (7)
Article 7(3)	Article 13(1) and (3)
—	Article 13(2)
Article 8, point (a)	Article 14(1) and (3)
—	Article 14(2)
Article 8, point (b)	Article 14(4)
—	Article 14(5)
Article 9	Article 15(1)
—	Article 15(2), (3), (4) and (5)
—	Article 16
Article 10	Article 17
—	Article 18
Article 11, introductory wording	Article 19
Article 11, points (a) and (b)	—
Article 12	Article 20(1) and Article 20(2) second subparagraph
—	Article 20(2) first subparagraph and Article 20(3) and (4)
—	Article 21

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Article 13	Article 22
—	Articles 23, 24 and 25
Article 14(1)	Article 26(1)
Article 14(2) and (3)	—
—	Article 26(2)
—	Article 27
Article 15(1)	Article 28
Article 15(2)	—
—	Article 29
Article 16	Article 30
Article 17	Article 31
Annex	Annex I
—	Annexes II to V

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- (1) [^{F2}Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks (OJ L 155, 23.5.2014, p. 1).]

Textual Amendments

- F2** Inserted by Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency (Text with EEA relevance).