

**COMMISSION DELEGATED REGULATION (EU) 2020/2155****of 14 October 2020****supplementing Directive (EU) 2010/31/EU of the European Parliament and of the Council by establishing an optional common European Union scheme for rating the smart readiness of buildings****(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2010/31/EU of the European Parliament and the Council of 19 May 2010 on the energy performance of buildings <sup>(1)</sup>, and in particular Article 8(10) thereof,

Whereas:

- (1) Directive 2010/31/EU is the main legislation, together with Directive 2009/125/EC of the European Parliament and of the Council <sup>(2)</sup> and Regulation (EU) 2017/1369 of the European Parliament and of the Council <sup>(3)</sup>, addressing energy efficiency in buildings in the context of the 2030 energy efficiency targets. Directive 2010/31/EU has two complementary objectives, namely to accelerate the renovation of existing buildings by 2050 and to support the modernisation of all buildings by using smart technologies, such as those that make use of artificial intelligence and cloud-based services, and having a clearer link to clean mobility.
- (2) In order to support a consistent and transparent rating of the smart readiness of buildings in the Union, a common definition of the smart readiness indicator and a common methodology for calculating it should be established.
- (3) In order to ensure the acceptability, usability and consistency of the smart readiness indicator scheme, the Commission has developed, in collaboration with a wide range of stakeholders and in liaison with Member States, a methodology for rating smart readiness of buildings in accordance with Article 8(10) of Directive 2010/31/EU and its Annex IA.
- (4) That methodology for rating the smart readiness of buildings ensures a degree of consistency and comparability in rating of the smart readiness of buildings across the EU, while leaving enough flexibility to adapt the calculation to specific conditions.
- (5) Adequate control mechanisms on the implementation of the smart readiness indicator scheme should be established.
- (6) Where relevant, self-assessment of smart readiness by the owner, by the facility manager or any other stakeholder linked to the building, supported by open guidance and tools, should be possible.
- (7) In order to avoid the duplication of efforts and costs between the smart readiness indicator scheme and existing mandatory schemes, the methodology for rating the smart readiness of buildings should allow Member States, if they wish, to connect, or integrate, the smart readiness indicator scheme with national energy performance certification schemes and other schemes established under Directive 2010/31/EU.
- (8) The smart readiness indicator should be designed to reflect the smart readiness of buildings and their systems and should be used to complement – not to replace – tools that assess other aspects of buildings, for instance energy performance or sustainability.

<sup>(1)</sup> OJ L 153, 18.6.2010, p. 13.

<sup>(2)</sup> Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10).

<sup>(3)</sup> Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1).

- (9) The smart readiness indicator should not be an indicator for the energy performance of buildings. Building owners should be informed that the smart readiness as reflected in the smart readiness indicator and the energy performance of buildings as expressed by energy performance certificates are different issues, which therefore have to be addressed by different types of measures, though smart readiness should help enhance energy performance.
- (10) The benefits for consumers, building users and owners will be maximized when available instruments for rating buildings are used in combination, ensuring that the consumers, building users and owners can gain a comprehensive understanding of their buildings and of how they can improve overall performance.
- (11) The smart readiness indicator should be available for both existing buildings and new building projects. Digital models of buildings, including building information models or digital twins, should be allowed to be used to facilitate the calculation of smart readiness scores.
- (12) The smart readiness indicator calculation framework should be allowed to be used for all types of buildings and building units covered by Directive 2010/31/EU.
- (13) The smart readiness indicator should allow to highlight the additional benefits from advanced smart technologies for building owners and users, for instance in terms of energy savings and preparedness to climate change, or in terms of more inclusiveness and accessibility, comfort and well-being.
- (14) The assessment of the smart readiness of buildings and building units as part of the smart readiness indicator scheme for the purpose of issuing a smart readiness indicator certificate should be carried out by qualified or accredited experts.
- (15) Where Member States consider it appropriate, experts accredited for the energy performance certification of buildings, or for the inspection of heating, air-conditioning and combined heating or air-conditioning and ventilation systems under Directive 2010/31/EU, or for performing energy audits under Directive 2012/27/EU of the European Parliament and of the Council (\*), should be allowed to be considered competent also to assess the smart readiness of buildings or building units.
- (16) Increased digitisation and connectivity in buildings increases cybersecurity and data protection risks and makes buildings and their systems more vulnerable to cyber threats and misuse of personal data. The European Data Protection Supervisor was consulted pursuant to Article 42(1) of Regulation (EU) 2018/1725. The smart readiness indicator should help to inform building owners and users of those risks,

HAS ADOPTED THIS REGULATION:

#### *Article 1*

### **Subject matter and scope**

This Regulation establishes an optional common Union scheme for rating the smart readiness of buildings that is to say the definition of the smart readiness indicator and a common methodology by which it is to be calculated. The methodology consists of calculating smart readiness scores of buildings or building units and deriving smart readiness rating of buildings or building units.

#### *Article 2*

### **Definitions**

For the purposes of this Regulation, the following definitions apply:

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(\*) Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC (OJ L 315, 14.11.2012, p. 1).

- (1) 'smart readiness indicator' means an indicator that informs on the rating of smart readiness of a building or building unit in line with Article 8(10) of Directive 2010/31/EU;
- (2) 'smart readiness indicator scheme' means a system of certification of smart readiness of buildings;
- (3) 'economic operator' means a natural or legal person who owns a building located on the territory of a Member State, or a natural or legal person who owns or occupies a building unit located on the territory of a Member State, and who requests a smart readiness indicator certificate for that building or building unit;
- (4) 'smart readiness rating' means the rating of the building or building unit in accordance with the methodology set out in this Regulation;
- (5) 'smart readiness score' means the score obtained by a building or building unit as part of the process for rating smart readiness;
- (6) 'system' means a system that can be found in a building and that is relevant to the scope of smart readiness rating as set out in Directive 2010/31/EU, including but not limited to technical building systems as defined in Article 2 of Directive 2010/31/EU;
- (7) 'smart readiness key functionality' means one of the three key functionalities referred to in point 2 of Annex IA of Directive 2010/31/EU;
- (8) 'impact criterion' means a key impact that smart-ready services are designed to achieve, as set out in this Regulation;
- (9) 'technical domain' means a collection of smart-ready services which, together, realise an integrated and consistent part of the services expected from the building or building unit such as heating;
- (10) 'connectivity' means the ability of systems to exchange data with each other and the ability of the building or building unit to exchange data, with the grid and related entities, such as an aggregator, or other buildings;
- (11) 'interoperability' is the ability of a system to interact for a common purpose, based on commonly agreed standards, by exchanging information and data;
- (12) 'cybersecurity' means the activities necessary to protect network and information systems, as well as the users of such systems, and other individuals affected by cyber threat;
- (13) 'smart-ready technology' means a technological enabler, such as building automation, for one or more smart-ready services;
- (14) 'smart-ready service' means a function or an aggregation of functions provided by one or more technical components or systems. A smart-ready service makes use of smart-ready technologies and orchestrates them into higher-level functions;
- (15) 'smart readiness indicator certificate' means a certificate recognised by a Member State or by a legal person designated by a Member State, which indicates the smart readiness of a building or building unit, calculated according to the methodology set out in this Regulation;
- (16) 'functionality level' means the level of smart readiness of a smart-ready service;
- (17) 'weighting factor' means a parameter that is used in the calculation of the smart readiness indicator to express the importance of a given technical domain or impact criterion in that calculation;
- (18) 'ventilation' means a process by which fresh air flow rates are managed to maintain and improve indoor air quality according to applicable requirements;
- (19) 'energy balance' means an approach by which certain weighting factors may be adapted based on the climate zone of the building.

### Article 3

#### **Smart readiness indicator**

1. The smart readiness indicator shall allow for rating and communicating the smart readiness of buildings and building units to economic operators and other stakeholders, in particular planners and building operators.

2. The smart readiness indicator shall allow for the assessment of 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 in-use performance. The smart readiness indicator shall cover features for increased energy savings, benchmarking and flexibility, and enhanced functionalities and capabilities provided by more interconnected and intelligent devices.
3. The smart readiness indicator shall include the smart readiness rating of a building or building unit and a set of smart readiness scores that reflect the smart readiness of buildings, building units and systems along predefined key functionalities, impact criteria and technical domains.
4. The smart readiness indicator shall include, where possible, additional information on inclusiveness and connectivity of the building, on interoperability and cybersecurity of systems, and on data protection.

#### *Article 4*

### **Methodology for calculating the smart readiness indicator**

1. The methodology for calculating the smart readiness indicator shall be based on the assessment of smart-ready services present or planned at design stage in a building or building unit, and of smart-ready services that are considered relevant for that building or building unit.
2. The calculation of the smart readiness scores shall be based on a common Union methodological framework set out in Annexes I to VI.
3. The standard calculation methodology set out in Annexes I to VI may be adapted in accordance with Annex VII, in particular by making a link to energy performance calculations in the scope of energy performance certification.
4. The methodology for calculating the smart readiness indicator shall be used in accordance with the conditions set out in this Regulation, in particular regarding the qualification of experts.

#### *Article 5*

### **Smart readiness rating**

The smart readiness rating of a building or building unit shall be based on the smart readiness scores calculated for the building or building unit in accordance with Annex VIII.

#### *Article 6*

### **Optionality of the scheme**

1. The smart readiness indicator scheme shall be an optional common Union scheme.
2. Member States may decide if they implement the smart readiness indicator on their national territory, or parts thereof. They may also choose to implement the scheme only to certain categories of buildings.
3. Member States that implement the smart readiness indicator scheme may choose to apply it on a voluntary or mandatory basis for buildings or building units located on their territory.
4. Member States that decide to implement the smart readiness indicator scheme on their national territory, or parts thereof, shall notify the Commission prior to implementing the scheme.
5. Member States may decide to modify, adapt, or terminate the implementation of the scheme at any time without providing any justification to that end. They shall notify the Commission of any such decision.

*Article 7***Smart readiness indicator certificate**

1. The smart readiness indicator of a building or building unit shall be communicated to economic operators and other interested parties in a certificate.
2. The smart readiness indicator certificate shall include the information specified in Annex IX.

*Article 8***Smart readiness indicator experts**

1. Member States that decide to implement the smart readiness indicator shall ensure that the assessment of the smart readiness of buildings or building units with a view to issuing a smart readiness certificate is carried out by experts that are qualified or accredited. The experts may operate as self-employed or be employed by public bodies or private enterprises.
2. Member States that decide to implement the smart readiness indicator scheme shall lay down requirements on the qualification or accreditation of smart readiness indicator experts and ensure that those requirements include competence criteria, including in the ICT field.

*Article 9***Control system of the smart readiness indicator scheme**

1. Member States that decide to implement the smart readiness indicator scheme shall establish an independent control system for smart readiness indicator certificates. Where relevant, those Member States may rely on the independent control systems that are already in place, such as those for energy performance certification schemes.
2. The independent control system shall ensure the validity of the smart readiness indicator certificates issued on the Member State's territory.

*Article 10***Review**

The Commission, after consultation of the experts referred to in Article 23 of Directive 2010/31/EU, may review, as appropriate, this Regulation by 1 January 2026 and, if necessary, make proposals.

*Article 11***Entry into force**

This Regulation shall enter into force on the twentieth day following its publication in *the Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 14 October 2020.

*For the Commission*  
*The President*  
Ursula VON DER LEYEN

## ANNEX I

**Calculation of smart readiness scores**

1. The smart readiness of a building or building unit reflects the capabilities of the building or building unit to adapt its operation to the needs of the occupants and the grid, and to improve its energy efficiency and overall in-use performance.
2. The smart readiness of a building or building unit is determined on the basis of the assessment of smart-ready services present or planned in, or relevant for, the building or building unit, and their functionality level.
3. The smart readiness of a building or building unit is expressed by a rating that derives from a total smart readiness score expressed as a percentage and that represents the ratio between the smart readiness of the building or building unit compared to the maximum smart readiness that it could reach.
4. The calculation of the smart readiness scores is based on pre-defined weighting factors in line with Annexes III, V and VII, the value of which may depend on climatic conditions and other relevant aspects, such as the type of building.
5. For expressing the smart readiness of a building or building unit, the methodology also allows the use of disaggregated smart readiness scores expressed as a percentage. The disaggregated scores may express smart readiness for one or more of the following:
  - (a) three key smart readiness functionalities as highlighted in point 2 of Annex Ia, to Directive 2010/31/EU:
    - (1) energy performance and operation;
    - (2) response to the needs of the occupants; and
    - (3) energy flexibility, including the ability of the building or building unit to enable participation in demand response.
  - (b) the smart readiness impact criteria as defined in Annex II to this Regulation;
  - (c) the smart readiness technical domains as defined in Annex IV to this Regulation.
6. The calculation of the smart readiness scores of a building or building unit relies on the assessment of the smart-ready services that are present, or planned at design stage, and on their functionality level. The assessment aims to determine with sufficient reliability what services are present or planned, and if so, the functionality level for each of those services. For this purpose, where they are available, digital models of buildings, including building information models or digital twins, may be used. The smart-ready services that can be present in a building are listed in a pre-defined smart-ready service catalogue as set out in Annex VI and are organised in pre-defined technical domains as set out in Annex IV.
7. The calculation of smart readiness scores is made in accordance with the following protocol:
  - (a) in accordance with the catalogue of smart-ready services as set out in Annex VI to this Regulation, for each technical domain as set out in Annex IV to this Regulation, smart-ready services that are present are assessed and, for each one, the functionality level is determined according to the catalogue of smart-ready services.
  - (b) in accordance with the catalogue of smart-ready services, and for each smart readiness impact criterion as set out in Annex II, the score  $I(d, ic)$  of each technical domain is determined, as follows:

$$I(d, ic) = \sum_{i=1}^{N_d} I_{ic}(FL(S_{i,d}))$$

where:

- (1)  $d$  is the number of the technical domain in question,
- (2)  $ic$  is the number of the impact criterion in question,

- (3)  $N_d$  is the total number of services in technical domain  $d$ ,
- (4)  $S_{i,d}$  is service  $i$  of technical domain  $d$ ,
- (5)  $FL(S_{i,d})$  is the functionality level of service  $S_{i,d}$  as available in the building or building unit,
- (6)  $I_{ic}(FL(S_{i,d}))$  is the score of service  $S_{i,d}$  for impact criterion number  $ic$ , according to the service's functionality level,
- (c) in accordance with the catalogue of smart-ready services, the maximum score of each technical domain for each impact criterion  $I_{max}(d,ic)$  is determined, as follows:

$$I_{max}(d, ic) = \sum_{i=1}^{N_d} I_{ic}(FL_{max}(S_{i,d}))$$

where:

- (1)  $FL_{max}(S_{i,d})$  is the highest functionality level that service  $S_{i,d}$  could have according to the smart-ready service catalogue,
- (2)  $I_{ic}(FL_{max}(S_{i,d}))$  is the score of service  $S_{i,d}$  for its highest functionality level, which means the maximum score of service  $S_{i,d}$  for impact criterion number  $ic$ ,
- (d) The smart readiness score expressed as a percentage for each of the impact criterion  $SR_{ic}$  is determined using the weighting specified in Annex V, as follows:

$$SR_{ic} = \frac{\sum_{d=1}^N W_{d,ic} \times I(d,ic)}{\sum_{d=1}^N W_{d,ic} \times I_{max}(d,ic)} \times 100$$

where:

- (1)  $d$  is the number of the technical domain in question,
- (2)  $N$  is the total number of technical domains (according to Annex IV),
- (3)  $W_{d,ic}$  is the weighting factor expressed as a percentage of technical domain number  $d$  for impact criterion number  $ic$ ,
- (e) smart readiness scores along the three key functionalities highlighted in Annex Ia, point 2 of Directive 2010/31/EU,  $SR_f$ , are determined, using the weighting factors specified according to Annex III, as follows:

$$SR_f = \sum_{ic=1}^M W_f(ic) \times SR_{ic}$$

where:

- (1)  $M$  is the total number of impact criteria according to Annex II,
- (2)  $W_f(ic)$  is the weighting factor expressed in percentage of impact criterion number  $ic$  for key functionality  $f$  according to Annex III,
- (3)  $SR_{ic}$  is the smart readiness score for impact criterion number  $ic$ .
- (f) the total smart readiness score  $SR$  may be calculated, as a weighted sum of the key functionalities' smart readiness scores, as follows:

$$SR = \sum W_f \times SR_f$$

where:

- (1)  $SR_f$  is the smart readiness score for key functionality  $f$ ,
- (2)  $W_f$  is the weight of key functionality  $f$  in the calculation of the total smart readiness scores, with  $\sum W_f = 1$ .

(g) smart readiness scores of technical domains for each impact criterion  $SR_{d,ic}$  may be calculated, as follows:

$$SR_{d,ic} = \frac{I(d,ic)}{I_{max}(d,ic)} \times 100$$

where:

- (1)  $I(d,ic)$  is the score of domain number  $d$  for impact criterion  $ic$ ,
  - (2)  $I_{max}(d,ic)$  is the maximum score of domain number  $d$  for impact criterion number  $ic$ .
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*ANNEX II***Smart readiness impact criteria**

The smart readiness impact criteria considered in the calculation protocol set out in Annex I are the following:

- (a) energy efficiency,
  - (b) maintenance and fault prediction,
  - (c) comfort,
  - (d) convenience,
  - (e) health, well-being and accessibility,
  - (f) information to occupants,
  - (g) energy flexibility and storage.
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*ANNEX III***Weighting of impact criteria in key functionalities**

1. Each impact criterion set out in Annex II of this Regulation is considered for only one of the three key functionalities, as set out in points 2 to 4. For each key functionality, Member States shall define the respective weighting factors of relevant impact criteria.
  2. For the 'energy performance and operation' key functionality, the relevant impact criteria are 'energy efficiency' and 'maintenance and fault prediction'.
  3. For the 'response to user needs' key functionality, the relevant impact criteria are 'comfort', 'convenience', 'information to occupants' and 'health, well-being & accessibility'.
  4. For the 'energy flexibility' key functionality, the relevant impact criterion is 'energy flexibility & storage'.
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## ANNEX IV

**Technical domains**

The smart readiness technical domains considered in the calculation protocol set out in Annex I to this Regulation are the following:

- (a) heating,
  - (b) cooling,
  - (c) domestic hot water,
  - (d) ventilation,
  - (e) lighting,
  - (f) dynamic building envelope,
  - (g) electricity,
  - (h) electric vehicle charging,
  - (i) monitoring and control.
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## ANNEX V

**Weighting of technical domains**

1. Each technical domain is weighted for each of the impact criterion and the weighting factors characterise the influence of the technical domain on the impact criterion.
  2. Technical domains' weighting factors are expressed as a percentage, and for each impact criterion, the sum of the weighting factors of the technical domains equals to 100 %.
  3. The standard approach to allocate weighting factors to the technical domains is based on:
    - (a) The climatic zone's energy balance for the weighting factors of 'heating', 'cooling', 'domestic hot water', 'ventilation', 'lighting', and 'electricity' technical domains along the 'energy efficiency', 'maintenance and prediction' and 'energy flexibility and storage' impact criteria;
    - (b) for all other cases: weighting factors that are either fixed or equally distributed.
  4. Member States define the climatic zones that are used, where relevant, in the determination of weighting factors. For this purpose, Member States may use, where available, relevant Union guidance.
  5. The weighting factors of technical domains may differ between residential and non-residential buildings for some impact criteria.
  6. Member States define the weighting factors and, for this purpose, are encouraged to use, where available, relevant Union guidance. They may also take into account possible impacts from climate change.
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## ANNEX VI

**Smart ready service catalogue**

1. For the purpose of calculating smart readiness scores in accordance with the methodology set out in Annex I, Member States make available at least one smart-ready catalogue to be used by experts as the basis for identifying and assessing smart-ready services.
  2. A smart-ready service catalogue includes the list of smart-ready services to be considered for calculating the smart readiness score, related functionality levels, and corresponding individual scores for the impact criteria.
  3. The definition and any subsequent update of smart-ready catalogues reflect the current state of the art of smart-ready technologies.
  4. Member States are encouraged to provide guidelines to experts on the most effective way to identify and assess smart-ready services using, where available, relevant Union guidance.
  5. Member States may decide to make available several smart-ready catalogues, for instance for different building types.
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*ANNEX VII***Possible adaptation of the standard calculation process**

1. To avoid unfairly penalising a building or building unit, some smart-ready services may be omitted in the calculation of the smart readiness scores, in case those services are not relevant for that building or building unit.
  2. Member States define the conditions under which such adaptations are relevant and allowed.
  3. Weighting factors of those technical domains for which the (climatic) energy balance approach would be used under the standard calculation may be calculated on the basis of the consumptions as evaluated in the energy performance certificate of the building or building unit in question.
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*ANNEX VIII***Smart readiness rating**

1. The smart readiness rating is expressed on the basis of seven smart readiness classes, from highest smart readiness to lowest smart readiness.
  2. Each smart readiness class corresponds to a range of total smart readiness scores as follows: 90 – 100 %; 80 – 90 %; 65 – 80 %; 50 – 65 %; 35 – 50 %; 20 – 35 %; < 20 %.
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## ANNEX IX

**Content of the smart readiness indicator certificate**

The information contained in the smart readiness indicator and conveyed to the end user includes the following:

- (a) unique ID of the certificate,
  - (b) date of issue and date of expiry of the certificate,
  - (c) an informational text clarifying the scope of the smart readiness indicator, in particular with regard to energy performance certificates,
  - (d) general information on the building or building unit (type of building or building unit, surface area, year of construction and where relevant, of renovation, location),
  - (e) where available, the energy performance class of the building or building unit as specified by a valid energy performance certificate,
  - (f) smart readiness class of the building or building unit,
  - (g) optionally, total smart readiness score of the building or building unit,
  - (h) smart readiness scores along the three key functionalities highlighted in Annex I of this Regulation,
  - (i) smart readiness score per impact criterion,
  - (j) optionally, scores of each technical domain for each impact criterion,
  - (k) where possible, available information on connectivity, in particular on the existence of high-speed-ready in-building physical infrastructure, such as the voluntary 'broadband ready' label,
  - (l) where possible, available information on interoperability, cybersecurity of systems and data protection, including where relevant on conformity to commonly agreed standards, and information on related risks,
  - (m) an informational text clarifying that the certificate reflects the smart readiness at the date of issuance and that any significant modifications to the building and its systems would affect smart readiness and would therefore require an update of the information given on the certificate,
  - (n) optionally, recommendations on how to improve the smart readiness of the building or building unit taking into account, where relevant, the heritage value.
  - (o) optionally, additional information on the assumptions made in the calculation of scores such as weighting factors of impact criteria used for calculating smart readiness scores for key functionalities.
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