

**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)**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 194(2) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee <sup>(1)</sup>,

Having regard to the opinion of the Committee of the Regions <sup>(2)</sup>,

Acting in accordance with the ordinary legislative procedure <sup>(3)</sup>,

Whereas:

- (1) The Union is committed to developing a sustainable, competitive, secure and decarbonised energy system. The Energy Union and the Energy and Climate Policy Framework for 2030 establish ambitious Union commitments to reduce greenhouse gas emissions further by at least 40 % by 2030 as compared with 1990, to increase the proportion of renewable energy consumed, to make energy savings in accordance with Union level ambitions, and to improve Europe's energy security, competitiveness and sustainability.
- (2) To reach those objectives, the 2016 review of the Union's energy efficiency legislative acts combines a reassessment of the Union's energy efficiency target for 2030 as requested by the European Council's conclusions of 2014, a review of the core provisions of Directive 2012/27/EU of the European Parliament and of the Council <sup>(4)</sup> and Directive 2010/31/EU of the European Parliament and of the Council <sup>(5)</sup>, and a reinforcement of the financing framework, including the European Structural and Investment Funds (ESIF) and the European Fund for Strategic Investments (EFSI), which will ultimately improve the financial conditions of energy efficiency investments on the market.
- (3) Directive 2010/31/EU required the Commission to carry out a review by 1 January 2017 in the light of the experience gained and progress made during the application of that Directive, and, if necessary, to make proposals.
- (4) To prepare for that review, the Commission took a series of steps to gather evidence on how Directive 2010/31/EU had been implemented in the Member States, focusing on what worked and what could be improved.
- (5) The outcome of the review and the Commission's impact assessment indicated that a series of amendments are required to strengthen the current provisions of Directive 2010/31/EU and to simplify certain aspects.
- (6) The Union is committed to developing a sustainable, competitive, secure and decarbonised energy system by 2050. To meet that goal, Member States and investors need measures that aim to reach the long-term greenhouse gas emission goal and that decarbonise the building stock, which is responsible for approximately 36 % of all CO<sub>2</sub> emissions in the Union, by 2050. Member States should seek a cost-efficient equilibrium between decarbonising energy supplies and reducing final energy consumption. To that end, Member States and investors need a clear

<sup>(1)</sup> OJ C 246, 28.7.2017, p. 48.

<sup>(2)</sup> OJ C 342, 12.10.2017, p. 119.

<sup>(3)</sup> Position of the European Parliament of 17 April 2018 (not yet published in the Official Journal) and decision of the Council of 14 May 2018.

<sup>(4)</sup> 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).

<sup>(5)</sup> Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (OJ L 153, 18.6.2010, p. 13).

vision to guide their policies and investment decisions, which includes indicative national milestones and actions for energy efficiency to achieve the short-term (2030), mid-term (2040) and long-term (2050) objectives. With those objectives in mind and considering the Union's overall energy efficiency ambitions, it is essential that Member States specify the expected output of their long-term renovation strategies and monitor developments by setting domestic progress indicators, subject to national conditions and developments.

- (7) The 2015 Paris Agreement on climate change following the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21) boosts the Union's efforts to decarbonise its building stock. Taking into account that almost 50 % of Union's final energy consumption is used for heating and cooling, of which 80 % is used in buildings, the achievement of the Union's energy and climate goals is linked to the Union's efforts to renovate its building stock by giving priority to energy efficiency, making use of the 'energy efficiency first' principle as well as considering deployment of renewables.
- (8) The provisions on long-term renovation strategies laid down in Directive 2012/27/EU should be moved to Directive 2010/31/EU, where they fit more coherently. Member States should be able to use their long-term renovation strategies to address fire safety and risks related to intense seismic activity which affect energy efficiency renovations and the lifetime of buildings.
- (9) To achieve a highly energy efficient and decarbonised building stock and to ensure that the long-term renovation strategies deliver the necessary progress towards the transformation of existing buildings into nearly zero-energy buildings, in particular by an increase in deep renovations, Member States should provide clear guidelines and outline measurable, targeted actions as well as promote equal access to financing, including for the worst performing segments of the national building stock, for energy-poor consumers, for social housing and for households subject to split-incentive dilemmas, while taking into consideration affordability. To further support the necessary improvements in their national rental stock, Member States should consider introducing or continuing to apply requirements for a certain level of energy performance for rental properties, in accordance with the energy performance certificates.
- (10) According to the Commission's impact assessment, renovation would be needed at an average rate of 3 % annually to accomplish the Union's energy efficiency ambitions in a cost-effective manner. Considering that every 1 % increase in energy savings reduces gas imports by 2,6 %, clear ambitions for renovation of the existing building stock are of great importance. Thus, efforts to increase the energy performance of buildings would contribute actively to the Union's energy independence and, furthermore, have great potential to create jobs in the Union, in particular in small and medium-sized enterprises. In that context, Member States should take into account the need for a clear link between their long-term renovation strategies and pertinent initiatives to promote skills development and education in the construction and energy efficiency sectors.
- (11) The need to alleviate energy poverty should be taken into account, in accordance with criteria defined by the Member States. While outlining national actions that contribute to the alleviation of energy poverty in their renovation strategies, the Member States have the right to establish what they consider to be relevant actions.
- (12) In their long-term renovation strategies and in planning actions and measures, Member States could make use of concepts such as trigger points, namely opportune moments in the life cycle of a building, for example from a cost-effectiveness or disruption perspective, for carrying out energy efficiency renovations.
- (13) The 2009 World Health Organisation guidelines provide that, concerning indoor air quality, better performing buildings provide higher comfort levels and wellbeing for their occupants and improve health. Thermal bridges, inadequate insulation and unplanned air pathways can result in surface temperatures below the dew point of the air and in dampness. It is therefore essential to ensure a complete and homogeneous insulation of the building including balconies, fenestrations, roofs, walls, doors and floors, and particular attention should be paid to preventing the temperature on any inner surface of the building from dropping below the dew point temperature.

- (14) Member States should support energy performance upgrades of existing buildings that contribute to achieving a healthy indoor environment, including through the removal of asbestos and other harmful substances, preventing the illegal removal of harmful substances, and facilitating compliance with existing legislative acts such as Directives 2009/148/EC <sup>(1)</sup> and (EU) 2016/2284 <sup>(2)</sup> of the European Parliament and of the Council.
- (15) It is important to ensure that measures to improve the energy performance of buildings do not focus only on the building envelope, but include all relevant elements and technical systems in a building, such as passive elements that participate in passive techniques aiming to reduce the energy needs for heating or cooling, the energy use for lighting and for ventilation and hence improve thermal and visual comfort.
- (16) Financial mechanisms, incentives and the mobilisation of financial institutions for energy efficiency renovations in buildings should have a central role in national long-term renovation strategies and be actively promoted by Member States. Such measures should include encouraging energy efficient mortgages for certified energy efficient building renovations, promoting investments for public authorities in an energy efficient building stock, for example by public-private partnerships or optional energy performance contracts, reducing the perceived risk of the investments, providing accessible and transparent advisory tools and assistance instruments such as one-stop-shops that provide integrated energy renovation services, as well as implementing other measures and initiatives such as those referred to in the Commission's Smart Finance for Smart Buildings Initiative.
- (17) Solutions based on nature, such as well-planned street vegetation, green roofs and walls providing insulation and shade to buildings, contribute to reducing energy demand by limiting the need for heating and cooling and improving a building's energy performance.
- (18) Research into, and the testing of, new solutions for improving the energy performance of historical buildings and sites should be encouraged, while also safeguarding and preserving cultural heritage.
- (19) For new buildings and buildings undergoing major renovations, Member States should encourage high-efficiency alternative systems, if technically, functionally and economically feasible, while also addressing the issues of healthy indoor climate conditions, fire safety and risks related to intense seismic activity, in accordance with domestic safety regulations.
- (20) To meet the objectives of energy efficiency policy for buildings, the transparency of energy performance certificates should be improved by ensuring that all necessary parameters for calculations, both for certification and minimum energy performance requirements, are set out and applied consistently. Member States should adopt adequate measures to ensure, for example, that the performance of installed, replaced or upgraded technical building systems, such as for space heating, air-conditioning or water heating, is documented in view of building certification and compliance checking.
- (21) The installation of self-regulating devices in existing buildings for the separate regulation of the temperature in each room or, where justified, in a designated heated zone of the building unit should be considered where economically feasible, for example where the cost is less than 10 % of the total costs of the replaced heat generators.
- (22) Innovation and new technology also make it possible for buildings to support the overall decarbonisation of the economy, including the transport sector. For example, buildings can be leveraged for the development of the infrastructure necessary for the smart charging of electric vehicles and also provide a basis for Member States, if they choose to, to use car batteries as a source of power.
- (23) Combined with an increased share of renewable electricity production, electric vehicles produce fewer carbon emissions resulting in better air quality. Electric vehicles constitute an important component of a clean energy transition based on energy efficiency measures, alternative fuels, renewable energy and innovative solutions for the management of energy flexibility. Building codes can be effectively used to introduce targeted requirements to

<sup>(1)</sup> Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work (OJ L 330, 16.12.2009, p. 28).

<sup>(2)</sup> Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (OJ L 344, 17.12.2016, p. 1).

support the deployment of recharging infrastructure in car parks of residential and non-residential buildings. Member States should provide for measures to simplify the deployment of recharging infrastructure with a view to addressing barriers such as split incentives and administrative complications which individual owners encounter when trying to install a recharging point on their parking space.

- (24) Ducting infrastructure provides the right conditions for the rapid deployment of recharging points if and where they are needed. Member States should ensure the development of electromobility in a balanced and cost-effective way. In particular, where a major renovation related to electrical infrastructure takes place, the pertinent installation of ducting infrastructure should follow. In the implementation of the requirements for electromobility in national legislation, Member States should duly consider potential diverse conditions such as ownership of buildings and the adjacent parking lots, public parking lots operated by private entities and buildings that have both a residential and a non-residential function.
- (25) Readily available infrastructure will decrease the costs of installation of recharging points for individual owners and ensure electric vehicle users have access to recharging points. Establishing requirements for electromobility at Union level concerning the pre-equipping of parking spaces and the installation of recharging points is an effective way to promote electric vehicles in the near future while enabling further development at a reduced cost in the medium to long term.
- (26) When Member States establish their requirements for the installation of a minimum number of recharging points for non-residential buildings with more than 20 parking spaces, which are to apply from 2025, they should take into account relevant national, regional and local conditions, as well as possible diversified needs and circumstances based on area, building typology, public transport coverage and other relevant criteria, in order to ensure the proportionate and appropriate deployment of recharging points.
- (27) However, some geographical areas with specific vulnerabilities may face specific difficulties in fulfilling the requirements on electromobility. This could be the case for the outermost regions within the meaning of Article 349 of the Treaty on the Functioning of the European Union (TFEU), due to their remoteness, insularity, small size, difficult topography and climate, as well as micro isolated systems, whose electricity grid might need to evolve to cope with a further electrification of local transport. In such cases, Member States should be allowed not to apply the requirements of electromobility. Notwithstanding that derogation, the electrification of transport may be a powerful tool to address air quality or security of supply problems which those regions and systems often face.
- (28) When applying the requirements for electromobility infrastructure provided for in the amendments to Directive 2010/31/EU, as set out in this Directive, Member States should consider the need for holistic and coherent urban planning as well as the promotion of alternative, safe and sustainable modes of transport and their supporting infrastructure, for example through dedicated parking infrastructure for electric bicycles and for the vehicles of people of reduced mobility.
- (29) The agendas of the Digital Single Market and the Energy Union should be aligned and should serve common goals. The digitalisation of the energy system is quickly changing the energy landscape, from the integration of renewables to smart grids and smart-ready buildings. In order to digitalise the building sector, the Union's connectivity targets and ambitions for the deployment of high-capacity communication networks are important for smart homes and well-connected communities. Targeted incentives should be provided to promote smart-ready systems and digital solutions in the built environment. This offers new opportunities for energy savings, by providing consumers with more accurate information about their consumption patterns, and by enabling the system operator to manage the grid more effectively.
- (30) The smart readiness indicator should be used to measure the capacity of buildings to use information and communication technologies and electronic systems to adapt the operation of buildings to the needs of the occupants and the grid and to improve the energy efficiency and overall performance of buildings. The smart readiness indicator should raise awareness amongst building owners and occupants of the value behind building automation and electronic monitoring of technical building systems and should give confidence to occupants about the actual savings of those new enhanced-functionalities. Use of the scheme for rating the smart readiness of buildings should be optional for Member States.

- (31) In order to adapt Directive 2010/31/EU to technical progress, the power to adopt acts in accordance with Article 290 TFEU should be delegated to the Commission to supplement that directive by establishing the definition of the smart readiness indicator and a methodology by which it is to be calculated. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level, and that those consultations be conducted in accordance with the principles laid down in the Interinstitutional Agreement of 13 April 2016 on Better Law-Making <sup>(1)</sup>. In particular, to ensure equal participation in the preparation of delegated acts, the European Parliament and the Council receive all documents at the same time as Member States' experts, and their experts systematically have access to meetings of Commission expert groups dealing with the preparation of delegated acts.
- (32) In order to ensure uniform conditions for the implementation of Directive 2010/31/EU, as amended by this Directive, implementing powers regarding the modalities for implementing an optional common Union scheme for rating the smart readiness of buildings should be conferred on the Commission. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council <sup>(2)</sup>.
- (33) To ensure that financial measures related to energy efficiency are applied in the best way in building renovation, they should be linked to the quality of the renovation works in light of the targeted or achieved energy savings. Those measures should therefore be linked to the performance of the equipment or material used for the renovation, to the level of certification or qualification of the installer, to an energy audit, or to the improvement achieved as a result of the renovation, which should be assessed by comparing energy performance certificates issued before and after the renovation, by using standard values or by another transparent and proportionate method.
- (34) The current independent control systems for energy performance certificates can be used for compliance checking and should be strengthened to ensure certificates are of good quality. Where the independent control system for energy performance certificates is complemented by an optional database going beyond the requirements of Directive 2010/31/EU as amended by this Directive, it can be used for compliance checking and for producing statistics on the regional or national building stocks. High-quality data on the building stock is needed and this could be partially generated by the databases that almost all Member States are currently developing and managing for energy performance certificates.
- (35) According to the Commission's impact assessment, provisions concerning the inspections of heating systems and air-conditioning systems were found to be inefficient because they did not sufficiently ensure the initial and continued performance of those technical systems. Even cheap energy efficiency technical solutions with very short payback periods, such as hydraulic balancing of the heating system and the installation or replacement of thermostatic control valves, are insufficiently considered today. The provisions on inspections should be amended to ensure a better result from inspections. Those amendments should place the focus of inspections on central heating systems and air-conditioning systems, including where those systems are combined with ventilation systems. Those amendments should exclude small heating systems such as electric heaters and wood stoves when they fall below the thresholds for inspection pursuant to Directive 2010/31/EU as amended by this Directive.
- (36) When carrying out inspections and in order to achieve the intended building energy performance improvements in practice, the aim should be to improve the actual energy performance of heating systems, air-conditioning systems and ventilation systems under real-life use conditions. The actual performance of such systems is governed by the energy used under dynamically varying typical or average operating conditions. Such conditions require at most times only a part of the nominal output capacity, and therefore inspections of heating systems, air-conditioning systems and ventilation systems should include an assessment of the relevant capabilities of the equipment to improve system performance under varying conditions, such as part load operating conditions.
- (37) Building automation and electronic monitoring of technical building systems have proven to be an effective replacement for inspections, in particular for large systems, and hold great potential to provide cost-effective and significant energy savings for both consumers and businesses. The installation of such equipment should be considered to be the most cost-effective alternative to inspections in large non-residential and multi-apartment buildings of a sufficient size that allow a payback of less than three years, as it enables action to be taken on the

<sup>(1)</sup> OJ L 123, 12.5.2016, p. 1.

<sup>(2)</sup> Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by the Member States of the Commission's exercise of implementing powers (OJ L 55, 28.2.2011, p. 13).

information provided, thereby securing energy savings over time. For small-scale installations, the documentation of the system performance by installers should support the verification of compliance with the minimum requirements laid down for all technical building systems.

- (38) The current possibility for Member States to opt for measures based on the provision of advice as an alternative to the inspection of heating systems, air-conditioning systems, systems for combined heating and ventilation and systems for combined air-conditioning and ventilation is to be retained, provided that the overall impact has, by means of submitting a report to the Commission, been documented as being equivalent to the effect of inspection prior to application of those measures.
- (39) The implementation of regular inspection schemes for heating and air-conditioning systems under Directive 2010/31/EU involved a significant administrative and financial investment by Member States and the private sector, including for the training and accreditation of experts, quality assurance and control, as well as the costs of inspections. Member States that have adopted the necessary measures to establish regular inspections, and that have implemented effective inspection schemes, may find it appropriate to continue to operate those schemes, including for smaller heating and air-conditioning systems. In such cases, there should be no obligation for Member States to notify those more stringent requirements to the Commission.
- (40) Without prejudice to the Member States' choice to apply the set of standards, related to energy performance of buildings, developed under Commission mandate M/480 to the European Committee for Standardisation (CEN), the recognition and promotion of those standards across the Member States would have a positive impact on the implementation of Directive 2010/31/EU as amended by this Directive.
- (41) Commission Recommendation (EU) 2016/1318 <sup>(1)</sup> on nearly zero-energy buildings described how the implementation of Directive 2010/31/EU could simultaneously ensure the transformation of the building stock and the shift to a more sustainable energy supply, which also supports the heating and cooling strategy. To make sure appropriate implementation takes place, the general framework for the calculation of the energy performance of buildings should be updated and the improved performance of the building envelope should be encouraged with the support of the work elaborated by CEN, under Commission mandate M/480. Member States are able to choose to further supplement this by providing additional numerical indicators, for example for the entire building's overall energy use or greenhouse gas emissions.
- (42) This Directive should not prevent Member States from setting more ambitious energy performance requirements for buildings and for building elements as long as such requirements are compatible with Union law. It is consistent with the objectives of Directives 2010/31/EU and 2012/27/EU that those requirements may, in certain circumstances, limit the installation or use of products subject to other applicable Union harmonisation legislation, provided that such requirements do not constitute an unjustifiable market barrier.
- (43) Since the objective of this Directive, namely to reduce the energy needed to meet the energy demand associated with the typical use of buildings, cannot be sufficiently achieved by the Member States but can rather, by reason of the guaranteed consistency of shared objectives, understanding and political drive, be better achieved at Union level, the Union may adopt measures in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality as set out in that Article, this Directive does not go beyond what is necessary to achieve that objective.
- (44) This Directive fully respects the Member States' national specificities and differences and their competences in accordance with Article 194(2) TFEU. Further, the aim of this Directive is to allow the sharing of best practices in order to facilitate the transition to a highly energy efficient building stock in the Union.
- (45) In accordance with the Joint Political Declaration of 28 September 2011 of Member States and the Commission on explanatory documents <sup>(2)</sup>, Member States have undertaken to accompany, in justified cases, the notification of their transposition measures with one or more documents explaining the relationship between the components of a directive and the corresponding parts of national transposition instruments. With regard to this Directive, the legislator considers the transmission of such documents to be justified.

<sup>(1)</sup> Commission Recommendation (EU) 2016/1318 of 29 July 2016 on guidelines for the promotion of nearly zero-energy buildings and best practices to ensure that, by 2020, all new buildings are nearly zero-energy buildings (OJ L 208, 2.8.2016, p. 46).

<sup>(2)</sup> OJ C 369, 17.12.2011, p. 14.

(46) Directives 2010/31/EU and 2012/27/EU should therefore be amended accordingly,

HAVE ADOPTED THIS DIRECTIVE:

*Article 1*

**Amendments to Directive 2010/31/EU**

Directive 2010/31/EU is amended as follows:

(1) Article 2 is amended as follows:

(a) point 3 is replaced by the following:

‘3. “technical building system” means technical equipment for space heating, space cooling, ventilation, domestic hot water, built-in lighting, building automation and control, on-site electricity generation, or a combination thereof, including those systems using energy from renewable sources, of a building or building unit;’

(b) the following point is inserted:

‘3a. “building automation and control system” means a system comprising all products, software and engineering services that can support energy efficient, economical and safe operation of technical building systems through automatic controls and by facilitating the manual management of those technical building systems;’

(c) the following points are inserted:

‘15a. “heating system” means a combination of the components required to provide a form of indoor air treatment, by which the temperature is increased;

15b. “heat generator” means the part of a heating system that generates useful heat using one or more of the following processes:

(a) the combustion of fuels in, for example, a boiler;

(b) the Joule effect, taking place in the heating elements of an electric resistance heating system;

(c) capturing heat from ambient air, ventilation exhaust air, or a water or ground heat source using a heat pump;

15c. “energy performance contracting” means energy performance contracting as defined in point (27) of Article 2 of Directive 2012/27/EU of the European Parliament and of the Council (\*);

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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).;

(d) the following point is added:

‘20. “micro isolated system” means micro isolated system as defined in point 27 of Article 2 of Directive 2009/72/EC of the European Parliament and of the Council (\*).

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(\* ) Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (OJ L 211, 14.8.2009, p. 55).’

(2) The following Article is inserted:

*Article 2a*

**Long-term renovation strategy**

1. Each Member State shall establish a long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private, into a highly energy efficient and decarbonised building stock by 2050, facilitating the cost-effective transformation of existing buildings into nearly zero-energy buildings. Each long-term renovation strategy shall be submitted in accordance with the applicable planning and reporting obligations and shall encompass:

- (a) an overview of the national building stock, based, as appropriate, on statistical sampling and expected share of renovated buildings in 2020;
- (b) the identification of cost-effective approaches to renovation relevant to the building type and climatic zone, considering potential relevant trigger points, where applicable, in the life-cycle of the building;
- (c) policies and actions to stimulate cost-effective deep renovation of buildings, including staged deep renovation, and to support targeted cost-effective measures and renovation for example by introducing an optional scheme for building renovation passports;
- (d) an overview of policies and actions to target the worst performing segments of the national building stock, split-incentive dilemmas and market failures, and an outline of relevant national actions that contribute to the alleviation of energy poverty;
- (e) policies and actions to target all public buildings;
- (f) an overview of national initiatives to promote smart technologies and well-connected buildings and communities, as well as skills and education in the construction and energy efficiency sectors; and
- (g) an evidence-based estimate of expected energy savings and wider benefits, such as those related to health, safety and air quality.

2. In its long-term renovation strategy, each Member State shall set out a roadmap with measures and domestically established measurable progress indicators, with a view to the long-term 2050 goal of reducing greenhouse gas emissions in the Union by 80-95 % compared to 1990, in order to ensure a highly energy efficient and decarbonised national building stock and in order to facilitate the cost-effective transformation of existing buildings into nearly zero-energy buildings. The roadmap shall include indicative milestones for 2030, 2040 and 2050, and specify how they contribute to achieving the Union's energy efficiency targets in accordance with Directive 2012/27/EU.

3. To support the mobilisation of investments into the renovation needed to achieve the goals referred to in paragraph 1, Member States shall facilitate access to appropriate mechanisms for:

- (a) the aggregation of projects, including by investment platforms or groups, and by consortia of small and medium-sized enterprises, to enable investor access as well as packaged solutions for potential clients;
- (b) the reduction of the perceived risk of energy efficiency operations for investors and the private sector;
- (c) the use of public funding to leverage additional private-sector investment or address specific market failures;
- (d) guiding investments into an energy efficient public building stock, in line with Eurostat guidance; and
- (e) accessible and transparent advisory tools, such as one-stop-shops for consumers and energy advisory services, on relevant energy efficiency renovations and financing instruments.

4. The Commission shall collect and disseminate, at least to public authorities, best practices on successful public and private financing schemes for energy efficiency renovation as well as information on schemes for the aggregation of small-scale energy efficiency renovation projects. The Commission shall identify and disseminate best practices on financial incentives to renovate from a consumer perspective taking into account cost-efficiency differences between Member States.

5. To support the development of its long-term renovation strategy, each Member State shall carry out a public consultation on its long-term renovation strategy prior to submitting it to the Commission. Each Member State shall annex a summary of the results of its public consultation to its long-term renovation strategy.

Each Member State shall establish the modalities for consultation in an inclusive way during the implementation of its long-term renovation strategy.

6. Each Member State shall annex the details of the implementation of its most recent long-term renovation strategy to its long-term renovation strategy, including on the planned policies and actions.

7. Each Member State may use its long-term renovation strategy to address fire safety and risks related to intense seismic activity affecting energy efficiency renovations and the lifetime of buildings.’

(3) Article 6 is replaced by the following:

‘Article 6

#### **New buildings**

1. Member States shall take the necessary measures to ensure that new buildings meet the minimum energy performance requirements laid down in accordance with Article 4.

2. Member States shall ensure that, before construction of new buildings starts, the technical, environmental and economic feasibility of high-efficiency alternative systems, if available, is taken into account.’

(4) In Article 7, the fifth paragraph is replaced by the following:

‘Member States shall encourage, in relation to buildings undergoing major renovation, high-efficiency alternative systems, in so far as this is technically, functionally and economically feasible, and shall address the issues of healthy indoor climate conditions, fire safety and risks related to intense seismic activity.’

(5) Article 8 is replaced by the following:

‘Article 8

#### **Technical building systems, electromobility and smart readiness indicator**

1. Member States shall, for the purpose of optimising the energy use of technical building systems, set system requirements in respect of the overall energy performance, the proper installation, and the appropriate dimensioning, adjustment and control of the technical building systems which are installed in existing buildings. Member States may also apply these system requirements to new buildings.

System requirements shall be set for new, replacement and upgrading of technical building systems and shall be applied in so far as they are technically, economically and functionally feasible.

Member States shall require new buildings, where technically and economically feasible, to be equipped with self-regulating devices for the separate regulation of the temperature in each room or, where justified, in a designated heated zone of the building unit. In existing buildings, the installation of such self-regulating devices shall be required when heat generators are replaced, where technically and economically feasible.

2. With regard to new non-residential buildings and non-residential buildings undergoing major renovation, with more than ten parking spaces, Member States shall ensure the installation of at least one recharging point within the meaning of Directive 2014/94/EU of the European Parliament and of the Council (\*) and ducting infrastructure, namely conduits for electric cables, for at least one in every five parking spaces to enable the installation at a later stage of recharging points for electric vehicles where:

(a) the car park is located inside the building, and, for major renovations, renovation measures include the car park or the electrical infrastructure of the building; or

(b) the car park is physically adjacent to the building, and, for major renovations, renovation measures include the car park or the electrical infrastructure of the car park.

The Commission shall report to the European Parliament and the Council by 1 January 2023 on the potential contribution of a Union building policy to the promotion of electromobility and shall, if appropriate, propose measures in that regard.

3. Member States shall lay down requirements for the installation of a minimum number of recharging points for all non-residential buildings with more than twenty parking spaces, by 1 January 2025.

4. Member States may decide not to lay down or apply the requirements referred to in paragraphs 2 and 3 to buildings owned and occupied by small and medium-sized enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC (\*\*).

5. With regard to new residential buildings and residential buildings undergoing major renovation, with more than ten parking spaces, Member States shall ensure the installation of ducting infrastructure, namely conduits for electric cables, for every parking space to enable the installation, at a later stage, of recharging points for electric vehicles, where:

- (a) the car park is located inside the building, and, for major renovations, renovation measures include the car park or the electric infrastructure of the building; or
- (b) the car park is physically adjacent to the building, and, for major renovations, renovation measures include the car park or the electrical infrastructure of the car park.

6. Member States may decide not to apply paragraphs 2, 3 and 5 to specific categories of buildings where:

- (a) with regard to paragraphs 2 and 5, building permit applications or equivalent applications have been submitted by 10 March 2021;
- (b) the ducting infrastructure required would rely on micro isolated systems or the buildings are situated in the outermost regions within the meaning of Article 349 TFEU, if this would lead to substantial problems for the operation of the local energy system and would endanger the stability of the local grid;
- (c) the cost of the recharging and ducting installations exceeds 7 % of the total cost of the major renovation of the building;
- (d) a public building is already covered by comparable requirements according to the transposition of Directive 2014/94/EU.

7. Member States shall provide for measures in order to simplify the deployment of recharging points in new and existing residential and non-residential buildings and address possible regulatory barriers, including permitting and approval procedures, without prejudice to the property and tenancy law of the Member States.

8. Member States shall consider the need for coherent policies for buildings, soft and green mobility and urban planning.

9. Member States shall ensure that, when a technical building system is installed, replaced or upgraded, the overall energy performance of the altered part, and where relevant, of the complete altered system, is assessed. The results shall be documented and passed on to the building owner, so that they remain available and can be used for the verification of compliance with the minimum requirements laid down pursuant to paragraph 1 of this Article and the issue of energy performance certificates. Without prejudice to Article 12, Member States shall decide whether to require the issuing of a new energy performance certificate.

10. The Commission shall, by 31 December 2019, adopt a delegated act in accordance with Article 23, supplementing this Directive by establishing an optional common Union scheme for rating the smart readiness of buildings. The rating shall be based on an assessment of the capabilities of a building or building unit to adapt its operation to the needs of the occupant and the grid and to improve its energy efficiency and overall performance.

In accordance with Annex Ia, the optional common Union scheme for rating the smart readiness of buildings shall:

- (a) establish the definition of the smart readiness indicator; and
- (b) establish a methodology by which it is to be calculated.

11. The Commission shall, by 31 December 2019, and after having consulted the relevant stakeholders, adopt an implementing act detailing the technical modalities for the effective implementation of the scheme referred to in paragraph 10 of this Article, including a timeline for a non-committal test-phase at national level, and clarifying the complementary relation of the scheme to the energy performance certificates referred to in Article 11.

That implementing act shall be adopted in accordance with the examination procedure referred to in Article 26(3).

(\*) Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (OJ L 307, 28.10.2014, p. 1).

(\*\*) Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (OJ L 124, 20.5.2003, p. 36).

(6) In Article 10, paragraph 6 is replaced by the following:

‘6. Member States shall link their financial measures for energy efficiency improvements in the renovation of buildings to the targeted or achieved energy savings, as determined by one or more of the following criteria:

- (a) the energy performance of the equipment or material used for the renovation; in which case, the equipment or material used for the renovation is to be installed by an installer with the relevant level of certification or qualification;
- (b) standard values for calculation of energy savings in buildings;
- (c) the improvement achieved due to such renovation by comparing energy performance certificates issued before and after renovation;
- (d) the results of an energy audit;
- (e) the results of another relevant, transparent and proportionate method that shows the improvement in energy performance.

6a. Databases for energy performance certificates shall allow data to be gathered on the measured or calculated energy consumption of the buildings covered, including at least public buildings for which an energy performance certificate, as referred to in Article 13, has been issued in accordance with Article 12.

6b. At least aggregated anonymised data compliant with Union and national data protection requirements shall be made available on request for statistical and research purposes and to the building owner.’

(7) Articles 14 and 15 are replaced by the following:

‘Article 14

### **Inspection of heating systems**

1. Member States shall lay down the necessary measures to establish regular inspections of the accessible parts of heating systems or of systems for combined space heating and ventilation, with an effective rated output of over 70 kW, such as the heat generator, control system and circulation pump(s) used for heating buildings. The inspection shall include an assessment of the efficiency and sizing of the heat generator compared with the heating requirements of the building and, where relevant, consider the capabilities of the heating system or of the system for combined space heating and ventilation to optimise its performance under typical or average operating conditions.

Where no changes have been made to the heating system or to the system for combined space heating and ventilation or to the heating requirements of the building following an inspection carried out pursuant to this paragraph, Member States may choose not to require the assessment of the heat generator sizing to be repeated.

2. Technical building systems that are explicitly covered by an agreed energy performance criterion or a contractual arrangement specifying an agreed level of energy efficiency improvement, such as energy performance contracting, or that are operated by a utility or network operator and therefore subject to performance monitoring measures on the system side, shall be exempt from the requirements laid down in paragraph 1, provided that the overall impact of such an approach is equivalent to that resulting from paragraph 1.

3. As an alternative to paragraph 1 and provided that the overall impact is equivalent to that resulting from paragraph 1, Member States may opt to take measures to ensure the provision of advice to users concerning the replacement of heat generators, other modifications to the heating system or to the system for combined space heating and ventilation and alternative solutions to assess the efficiency and appropriate size of those systems.

Before applying the alternative measures referred to in the first subparagraph of this paragraph, each Member State shall, by means of submitting a report to the Commission, document the equivalence of the impact of those measures to the impact of the measures referred to in paragraph 1.

Such a report shall be submitted in accordance with the applicable planning and reporting obligations.

4. Member States shall lay down requirements to ensure that, where technically and economically feasible, non-residential buildings with an effective rated output for heating systems or systems for combined space heating and ventilation of over 290 kW are equipped with building automation and control systems by 2025.

The building automation and control systems shall be capable of:

- (a) continuously monitoring, logging, analysing and allowing for adjusting energy use;
- (b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; and
- (c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers.

5. Member States may lay down requirements to ensure that residential buildings are equipped with:

- (a) the functionality of continuous electronic monitoring that measures systems' efficiency and informs building owners or managers when it has fallen significantly and when system servicing is necessary; and
- (b) effective control functionalities to ensure optimum generation, distribution, storage and use of energy.

6. Buildings that comply with paragraph 4 or 5 shall be exempt from the requirements laid down in paragraph 1.

#### *Article 15*

#### **Inspection of air-conditioning systems**

1. Member States shall lay down the necessary measures to establish regular inspections of the accessible parts of air-conditioning systems or of systems for combined air-conditioning and ventilation, with an effective rated output of over 70 kW. The inspection shall include an assessment of the efficiency and sizing of the air-conditioning system compared with the cooling requirements of the building and, where relevant, consider the capabilities of the air-conditioning system or of the system for combined air-conditioning and ventilation to optimise its performance under typical or average operating conditions.

Where no changes have been made to the air-conditioning system or to the system for combined air-conditioning and ventilation or to the cooling requirements of the building following an inspection carried out pursuant to this paragraph, Member States may choose not to require the assessment of the sizing of the air-conditioning system to be repeated.

Member States that maintain more stringent requirements pursuant to Article 1(3) shall be exempt from the obligation to notify them to the Commission.

2. Technical building systems that are explicitly covered by an agreed energy performance criterion or a contractual arrangement specifying an agreed level of energy efficiency improvement, such as energy performance contracting, or that are operated by a utility or network operator and therefore subject to performance monitoring measures on the system side, shall be exempt from the requirements laid down in paragraph 1, provided that the overall impact of such an approach is equivalent to that resulting from paragraph 1.

3. As an alternative to paragraph 1 and provided that the overall impact is equivalent to that resulting from paragraph 1, Member States may opt to take measures to ensure the provision of advice to users concerning the replacement of air-conditioning systems or systems for combined air-conditioning and ventilation, other modifications to the air-conditioning system or system for combined air-conditioning and ventilation and alternative solutions to assess the efficiency and appropriate size of those systems.

Before applying the alternative measures referred to in the first subparagraph of this paragraph, each Member State shall, by means of submitting a report to the Commission, document the equivalence of the impact of those measures to the impact of the measures referred to in paragraph 1.

Such a report shall be submitted in accordance with the applicable planning and reporting obligations.

4. Member States shall lay down requirements to ensure that, where technically and economically feasible, non-residential buildings with an effective rated output for systems for air-conditioning or systems for combined air-conditioning and ventilation of over 290 kW are equipped with building automation and control systems by 2025.

The building automation and control systems shall be capable of:

- (a) continuously monitoring, logging, analysing and allowing for adjusting energy use;
- (b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; and
- (c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers.

5. Member States may lay down requirements to ensure that residential buildings are equipped with:

- (a) the functionality of continuous electronic monitoring that measures systems' efficiency and informs building owners or managers when it has fallen significantly and when system servicing is necessary, and
- (b) effective control functionalities to ensure optimum generation, distribution, storage and use of energy.

6. Buildings that comply with paragraph 4 or 5 shall be exempt from the requirements laid down in paragraph 1.'

(8) Article 19 is replaced by the following:

*'Article 19*

#### **Review**

The Commission, assisted by the Committee established by Article 26, shall review this Directive by 1 January 2026 at the latest, in the light of the experience gained and progress made during its application, and, if necessary, make proposals.

As part of that review, the Commission shall examine in what manner Member States could apply integrated district or neighbourhood approaches in Union building and energy efficiency policy, while ensuring that each building meets the minimum energy performance requirements, for example by means of overall renovation schemes applying to a number of buildings in a spatial context instead of a single building.

The Commission shall, in particular, assess the need for further improvement of energy performance certificates in accordance with Article 11.'

(9) The following Article is inserted:

*'Article 19a*

#### **Feasibility study**

The Commission shall, before 2020, conclude a feasibility study, clarifying the possibilities and timeline to introduce the inspection of stand-alone ventilation systems and an optional building renovation passport that is complementary to the energy performance certificates, in order to provide a long-term, step-by-step renovation roadmap for a specific building based on quality criteria, following an energy audit, and outlining relevant measures and renovations that could improve the energy performance.'

(10) In Article 20(2), the first subparagraph is replaced by the following:

'2. Member States shall in particular provide information to the owners or tenants of buildings on energy performance certificates, including their purpose and objectives, on cost-effective measures and, where appropriate, financial instruments, to improve the energy performance of the building, and on replacing fossil fuel boilers with more sustainable alternatives. Member States shall provide the information through accessible and transparent advisory tools such as renovation advice and one-stop-shops.'

(11) Article 23 is replaced by the following:

'Article 23

#### **Exercise of the delegation**

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.

2. The power to adopt delegated acts referred to in Articles 5, 8 and 22 shall be conferred on the Commission for a period of five years from 9 July 2018. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five-year period. The delegation of power shall be tacitly extended for periods of an identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each period.

3. The delegation of power referred to in Articles 5, 8 and 22 may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.

4. Before adopting a delegated act, the Commission shall consult experts designated by each Member State in accordance with the principles laid down in the Interinstitutional Agreement of 13 April 2016 on Better Law-Making.

5. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

6. A delegated act adopted pursuant to Article 5, 8 or 22 shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.'

(12) Articles 24 and 25 are deleted.

(13) Article 26 is replaced by the following:

'Article 26

#### **Committee procedure**

1. The Commission shall be assisted by a committee. That committee shall be a committee within the meaning of Regulation (EU) No 182/2011.

2. Where reference is made to this paragraph, Article 4 of Regulation (EU) No 182/2011 shall apply.

3. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply.'

(14) The Annexes are amended in accordance with the Annex to this Directive.

*Article 2*

#### **Amendment to Directive 2012/27/EU**

Article 4 of Directive 2012/27/EU is replaced by the following:

'Article 4

#### **Building renovation**

A first version of the Member States' long-term strategies for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private, shall be published by 30 April 2014 and updated every three years thereafter and submitted to the Commission as part of the National Energy Efficiency Action Plans.'

*Article 3***Transposition**

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 10 March 2020. They shall immediately communicate the text of those measures to the Commission.

When Member States adopt those measures, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. They shall also include a statement to the effect that references in existing laws, regulations and administrative provisions transposing Directive 2010/31/EU or Directive 2012/27/EU shall be construed as references to those Directives as amended by this Directive. Member States shall determine how such reference is to be made and how that statement is to be formulated.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

*Article 4***Entry into force**

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

*Article 5***Addressees**

This Directive is addressed to the Member States.

Done at Strasbourg, 30 May 2018.

*For the European Parliament*

*The President*

A. TAJANI

*For the Council*

*The President*

L. PAVLOVA

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## ANNEX

The annexes to Directive 2010/31/EU are amended as follows:

(1) Annex I is amended as follows:

(a) point 1 is replaced by the following:

- ‘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/(m<sup>2</sup>.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.’;

(b) point 2 is replaced by the following:

- ‘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.’;

(c) the following point is inserted:

- ‘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 kgCO<sub>2</sub>eq/(m<sup>2</sup>.y).’;

(d) in point 4, the introductory wording is replaced by the following:

- ‘4. The positive influence of the following aspects shall be taken into account.’.

(2) The following Annex is inserted:

‘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
  - (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. 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.

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(\*) 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).;

(3) Annex II is amended as follows:

- (a) in point 1, the first paragraph is replaced by the following:

'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.'

- (b) the following point is added:

'3. 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.'

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