

### CONTENTS

#### Background

- Introduction
- Existing situation
- Parliament's starting position

#### Proposal

- Preparation of the proposal
- The changes the proposal would bring

#### Views

- Advisory committees
- National parliaments
- Stakeholders' views

#### Legislative process

#### References

- EP supporting analysis
- Other sources

# Improving energy performance of buildings

On 30 November 2016, the European Commission adopted a 'Clean energy for all Europeans' package, consisting of eight legislative proposals and other actions to help the EU meet its 2030 energy and climate goals. It includes a targeted revision of the 2010 Directive on the energy performance of buildings (EPBD). The Commission proposal would leave intact the main features of the existing EPBD yet modernise and streamline some requirements, introduce binding obligations on electro-mobility requirements in buildings, introduce a 'smartness indicator' that assesses the technological capability of buildings in energy self-production and consumption, and set clearer requirements for national databases on energy performance certificates.

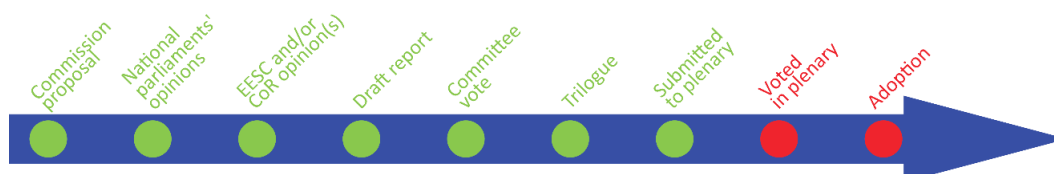
Whereas the Council adopted a general approach in June 2017, in Parliament the ITRE committee adopted its report in October 2017. After three rounds of trilogue negotiations, a provisional agreement was reached on 19 December 2017. The text of this agreement needs now to be formally adopted by Council and Parliament, with a vote expected in Parliament's plenary in spring 2018.

### Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings

COM(2016) 765, 30.11.2016, 2016/0381 (COD), Ordinary legislative procedure (COD) (Parliament and Council on equal footing – formerly 'co-decision')

Committee responsible:	Industry, Research and Energy (ITRE)
Rapporteur:	Bendt Bendtsen (EPP, Denmark)
Shadow rapporteurs:	Miapetra Kumpula-Natri (S&D, Finland); Edward Czesak (ECR, Poland); Morten Helveg Petersen (ALDE, Denmark); Neoklis Sylikiotis (GUE/NGL, Cyprus); Florent Marcellesi (Greens/EFA, Spain); Dario Tamburrano (EFDD, Italy); Barbara Kappel (EFN, Austria)
Next steps expected:	First-reading vote in plenary

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Introduction

Existing situation

Parliament's starting position

## Introduction

On 30 November 2016, the European Commission adopted a [package](#) entitled 'Clean energy for all Europeans', consisting of eight legislative proposals and some non-legislative actions. The legislative proposals cover energy efficiency, promotion of renewables, design of electricity markets, and governance of energy union. They include a major [revision](#) of the 2012 Directive on Energy Efficiency, where the Commission has proposed a binding EU target of at least 30 % energy efficiency improvements by 2030. This is more ambitious than [the 2030 climate and energy framework](#) agreed by the [European Council in October 2014](#), which set an indicative target of at least 27 % energy efficiency improvements by 2030. The Parliament for its part has called for a far more ambitious and binding target of at least 40 % energy efficiency improvements by 2030 (see below, 'Parliament's starting position').

The clean energy package includes a targeted [revision of the 2010 Directive on the energy performance of buildings](#), involving a limited set of changes to improve its functioning but without altering its main objectives, which include the obligation that all new buildings are nearly zero-energy buildings by 2021. Although the Buildings Directive was partly designed to meet the 20 % indicative target for energy efficiency improvements under the [2020 climate and energy package](#), it will continue to apply in the following decade and should therefore contribute towards delivering on 2030 goals.

## Existing situation

[Directive 2010/31/EU on the energy performance of buildings](#) (EPBD) contains several provisions to improve the energy efficiency of both new and existing buildings. Key provisions of the EPBD include the requirement for Member States to develop energy performance certificates to be included in all advertisements for the sale or rental of buildings; establish inspection schemes for heating and air-conditioning systems (or put in place measures with equivalent effect); set minimum energy performance requirements for new buildings, for the major renovation of buildings and for the replacement or retrofit of building elements; and draw up lists of national financial measures to improve the energy efficiency of buildings. Perhaps the most demanding requirement of the EPBD is that all new buildings must be nearly zero-energy buildings ('nZEB') from 2021, and for this requirement to apply to all public buildings from 2019. Weaknesses in Member States' implementation of the EPBD, including the lack of a common definition of nZEB, are analysed in a 2016 [EPRS briefing](#).

[Directive 2012/27/EU on energy efficiency](#) (EED) also contains some requirements for energy efficiency in buildings. In particular, the EED requires Member States to make energy efficient renovations to at least 3 % of buildings owned or leased by the central government every year; only purchase buildings that are highly energy efficient; and develop long-term building renovation strategies.

## Parliament's starting position

The resolution of 15 December 2015, [Towards an Energy Union](#), reaffirms the position of the Parliament that the 2030 climate and energy goals should include a binding 40 % improvement in energy efficiency, to be achieved by means of individual national targets. In practice, this goal may well require greater energy savings from buildings than the Commission expects to achieve with the revised EPBD. The resolution



Introduction

Existing situation

Parliament's starting position

therefore 'stresses that it is necessary to increase both the depth and the rate of building renovation; ... recommends the continuation of increasing energy efficiency standards for buildings, taking account of – and encouraging – technical innovation ... [and] further recommends continued support for the construction of near zero-energy buildings'. According to the resolution, in order to achieve these goals, the EPBD and the EED would both need to be revised, and proper implementation by Member States assured.

The Parliament resolution of 13 September 2016 on an [EU strategy on heating and cooling](#) calls for Member States to fully implement the EPBD and EED, including the 'nearly zero-energy buildings' (nZEB) requirements and long-term renovation strategies. The Parliament also 'calls on the Commission to provide adequate co-financing for initiatives aimed at renovating public housing and apartment blocks with low levels of energy efficiency' and to present an EU-wide vision of an nZEB stock by 2050. The Parliament argues that energy demand in buildings 'could be reduced by up to three quarters if the renovation of buildings is speeded up', and that deep renovation is particularly important because '75 % of the existing European building stock is energy inefficient, and estimates show that 90 % of these buildings will still be in use by 2050'.



## Proposal

### Preparation of the proposal

The Commission proposal was accompanied by an [evaluation](#) of the EPBD (with [executive summary](#)) and an [impact assessment](#) on options for revising it (with [executive summary](#)).

The evaluation concludes that the existing EPBD is effective and delivering on its general and specific objectives, while implementation shows good performance. The evaluation considers that 48.9 million tonnes of oil equivalent (Mtoe) of additional final energy savings in 2014 in buildings (compared to the 2007 baseline of the EPBD) can be attributed in significant part to the EPBD, which is on course to deliver the 60-80 Mtoe of annual final energy savings by 2020 that were predicted in its [2008 impact assessment](#). However, the evaluation does identify some areas for improvement. National energy performance certification schemes and independent control systems could be enhanced in several Member States. Opportunities also exist for simplifying, streamlining and modernising certain provisions of the EPBD that are either outdated or have proven unnecessary. These largely concern technical measures, and inspections of heating and air conditioning systems. The evaluation process included a [public consultation](#) in 2015. On this occasion, many stakeholders were rather critical about several aspects of the EPBD as well as its uneven implementation across Member States (see below, 'Stakeholders' views').

The impact assessment (IA) considers three potential scenarios: enhanced implementation and further guidance with no legislative changes (Option I); enhanced implementation and targeted legislative amendments that strengthen current provisions (Option II); or enhanced implementation and fundamental legislative revision of the EPBD, with a view to further harmonisation and higher ambition (Option III). The IA concludes that Option II is preferable because it is best aligned with the findings of the evaluation; meets EU climate and energy goals for 2030; respects the principles of subsidiarity and proportionality; is cost-effective and leaves significant flexibility to Member States, while preserving the overall architecture of the EPBD. Option III would require mandatory renovation of thousands of buildings, so has been largely excluded on the grounds of cost, subsidiarity and proportionality. However, the IA did identify much stronger positive impacts from Option III. According to the IA, Option III would lead to two and half times the energy savings of Option II by 2030 (72 Mtoe as opposed to 28 Mtoe), more than double the additional construction activity, roughly double the economic growth and jobs created, and almost treble the number of households no longer in energy poverty (at least 0.5 million under Option II, at least 1.5 million under Option III). EPRS published an [initial appraisal](#) of the impact assessment in February 2017.

On 7 June 2016, the regulatory scrutiny board (RSB) delivered a [first negative opinion](#) on the Commission's IA. The RSB felt a stronger case had to be made for further policy action, given the relatively recent entry into force of the EPBD and the lack of any clear regulatory failure. It also noted the constraint posed by lack of financing in delivering the expected improvements. On 26 July 2016, the RSB delivered a [positive second opinion](#) on a revised IA, which noted that the financing issue was addressed in rather general terms through the 'Smart finance for smart buildings' initiative accompanying the legislative proposal.

The European Commission (Directorate-General Energy) financed a [compliance study of the EPBD](#), carried out by ICF Consulting in 2015. As part of its international collaboration, DG Energy leads the Energy



Preparation of the proposal

The changes the proposal would bring

Efficiency Financial Institutions Group (EEFIG). EEFIG published a 2015 [study](#) on how to drive new energy efficiency investments in buildings.

The Buildings Performance Institute Europe (BPIE) has published a wide range of studies and papers addressing different aspects of the EPBD and its implementation. Recent BPIE studies have compared [national approaches to energy performance certificates](#); as well as strategies for achieving a [market transition to nZEB standards across Europe](#). BPIE also published a briefing outlining [nine ways to make the EPBD more effective](#).

The 2016 European Parliament study on [boosting building renovation in Europe](#) was carried out for the ITRE Committee and produced by Trinomics. It finds that the current rate of renovation of buildings is low (1-2 % of building stock renovated each year) and 'the vast majority of these renovations do not utilise the full potential energy savings that could be achieved'. Various policy options are addressed as part of this study.

## The changes the proposal would bring

The Commission [proposal](#) would introduce targeted amendments to the EPBD, leaving intact many provisions as well as their implementation deadlines, for instance requirement for all new buildings to be nZEB from 2021 onwards (from 2019 for the public sector).

The proposal would incorporate the existing provisions on long-term renovation strategies (which are currently part of the EED) into the revised EPBD. These strategies should now introduce specific milestones for 2030, aim to deliver the long-term goal of a decarbonised building stock by 2050, specify measures to alleviate energy poverty, and guide investment decisions by aggregating projects, de-risking energy efficiency investments and using public funding to leverage private-sector investment.

The proposal would require Member States to satisfy the general obligation that all new buildings meet minimum energy performance requirements. More cumbersome and less crucial obligations under the existing EPBD would be removed.

The revised directive would introduce an obligation to provide documentation on the overall energy performance after any technical building systems are installed, replaced or upgraded. This documentation would be available for verification of compliance, passed on to the building owner, and included in national databases of energy performance certificates (EPCs), where such databases exist. EPCs should be regularly updated to track actual energy consumption data of any buildings covered. They would be obliged to cover all public buildings with a useable floor area of over 250 m<sup>2</sup>. Aggregated and anonymised data would be made available for statistics and research.

The proposal would streamline and simplify existing EPBD provisions on inspections of heating and air-conditioning systems. The revised EPBD would seek to enhance the use of building automation, to ensure continuous performance and monitoring of energy efficiency, thereby limiting the necessity and frequency of physical inspections.



Preparation of the proposal

The changes the proposal would bring

The proposal would promote e-mobility through a new requirement to introduce recharging points for electric vehicles in the parking spaces of new buildings. New non-residential buildings (or those undergoing major renovation) with more than ten parking spaces would have to equip one parking space per ten for electro-mobility. From 2025, this rule would apply to all non-residential buildings with more than ten parking spaces, including existing buildings. Meanwhile, all new residential buildings (or those undergoing major renovation) with more than ten parking spaces would be required to put in place the pre-cabling for electric recharging points.

The proposal would introduce a smartness indicator that assesses the technological ability of the building to interact with its occupants and with the grid. The smartness indicator would be further defined by the Commission through a specific delegated act.

The legislative proposal was accompanied by a 'Smart finance for smart buildings initiative', outlined in the annex of the Commission's [communication on the clean energy package](#). The smart buildings initiative seeks to make more focused use of existing EU funds, primarily the regional development and cohesion funds, European Investment Bank loans and the European Fund for Strategic Investments, in order to improve the energy performance of buildings, increase the use of renewables in self-generation and self-consumption, and facilitate demand response through the adoption of advanced ICT. EU funds would be channelled and combined into projects capable of delivering major improvements. The Commission would also assist with project development, and by finding ways to de-risk private energy efficiency investments.

[Advisory committees](#)[National parliaments](#)[Stakeholders' views](#)

## Views

### Advisory committees

The European Economic and Social Committee (EESC) and the Committee of the Regions (CoR) were consulted on the proposal and both bodies issued an opinion.

[EESC Opinion TEN/620](#) on 'Revision of the Energy Performance of Buildings Directive' (rapporteurs: Baiba Miltoviča, Various interests – Group III, Latvia; Isabel Caña Aguilar, Workers – Group II, Spain) was adopted on 26 April 2017. The EESC makes numerous recommendations to improve the Commission proposal, including 'more specific proposals to tackle the challenge of energy poverty'; reinforcing national building renovation strategies 'through a requirement to propose specific sectoral targets and a reference methodology for measuring improvements' (since there is no common standard for defining a 'renovation' under current EU legislation); comprehensively addressing the issue of financing and incentives for building renovations; and ensuring comparability of calculation methods for Energy Performance Certificates. On the question of electro-mobility, the EESC supports this in principle but 'questions the need for such a great level of detail and the impact of such measures on housing and business affordability and on public authorities' freedom of choice in achieving electro-mobility'.

[CoR Opinion ENVE-VI/019](#) on 'Energy efficiency and buildings' (rapporteur: Michiel Rijsberman, ALDE, The Netherlands) was adopted on 12 July 2017. The CoR is very supportive of the Commission proposal and endorses its compulsory electro-mobility requirements. However, the CoR 'regrets that the exemplary role of local and regional public authority buildings is not included in the EPBD' and is 'opposed to the introduction of the smartness indicator by means of a delegated act, since the debate on the smartness indicator is still in its early stages'. The CoR proposes to add a provision to the EPBD requiring Member States to introduce mechanisms for professional training and SME cooperation, in order to boost rates of renovation. The CoR agrees that national building renovation strategies should be moved from the EED to the EPBD (as proposed by the Commission), but regrets that the EED provisions on renovating central government buildings (Article 5) were not also moved to the EPBD.

### National parliaments

National parliaments were [consulted](#) on the Commission proposal. The Netherlands issued two reasoned opinions that were identically worded (one from the Senate, the other from the House of Representatives), arguing that CO<sub>2</sub> reduction is a shared competence of the EU and its Member States, and 'therefore, the manner in which the objectives are met should be left to the discretion of the Member States'. The reasoned opinions give the example of electro-mobility requirements for parking spaces as 'a rigid measure that leaves no room for national interpretation'. The revised directive would put the Dutch government's National Energy Agreement at risk, because of its highly detailed and overly prescriptive provisions (e.g. electronic charging, smartness indicator).

Three chambers entered into political dialogue with the Commission (Austrian Federal Council, Italian Chamber of Deputies, Portuguese Assembly). The Austrian Federal Council criticised the additional burdens created by the Commission proposal, in particular the 'smartness indicator' and the introduction of more

[Advisory committees](#)[National parliaments](#)[Stakeholders' views](#)

stringent criteria for national energy performance certificates. The Italian Chamber of Deputies raised the question of adequate resources and incentives for energy efficiency renovation, emphasised the importance of professional training for those working in the sector, and argued in favour of a 'harmonised and Europe-wide system of energy performance certificates'. It was critical of the electro-mobility requirements, where it felt key decisions should be left to the Member States, and expressed doubts about whether a regularly updated database of energy performance certificates could be maintained without high additional costs.

## Stakeholders' views<sup>1</sup>

The Commission's clean energy package prompted a wide range of responses from an array of stakeholders. Many focus on the overall energy efficiency objectives of the package; relatively few highlight the specific provisions to revise the EPBD. The European Insulation Manufacturers Association ([EURIMA](#)) is sceptical that the Commission proposal will do enough to promote the deep renovation of existing buildings, and therefore further measures could be necessary. EURIMA suggests that 'building owners should benefit from individual renovation roadmaps or building renovation passports.' [Plastics Europe](#) (Association of Plastic Manufacturers) likewise states that 'more focus and priority should be placed on minimising energy consumption of existing buildings'. [CeramieUnie](#), the European Ceramic Industry Association, recommends some changes to the proposed revised EPBD in order to promote buildings renovation and affordability, better recognise the contribution of thermal mass to energy performance and adopt a more holistic approach of measuring it. European Buildings Performance Institute ([BPIE](#)) meanwhile issued a short briefing outlining what it regards as the missing elements of the clean energy package, including long-term targets for the renovation of existing buildings under the EPBD.

In September 2016, a group of 42 businesses and six business associations [wrote](#) to the President of the European Commission and called for 'an ambitious revision of the EPBD' that would reflect a political commitment to renovation of the existing building stock, in order to ensure that all buildings meet nZEB requirements by 2050.

The collective attitude of stakeholders towards the existing EPBD can be broadly understood from the 2015 public consultation [final synthesis report](#), drafted by ECOFYS on behalf of the European Commission (DG Energy). There were 308 stakeholders who replied from all EU Member States: 58 % of respondents were organisations (e.g. business associations), 20 % were individual companies, and the remainder consisted of public authorities, individuals or other groups. Whereas stakeholders generally considered that the EPBD had set a good framework for improving energy performance in buildings and raising awareness on their energy consumption, a third of respondents felt the EPBD had not been successful (while less than half thought it had been successful). Several respondents felt it was too early to assess the achievements of the EPBD because of delayed implementation in Member States; slow uptake, poor compliance and enforcement of measures; and low rates of building renovation. However, most respondents noted that compliance was inadequate and could be improved through stronger procedures and sanctions. Energy performance certificates had only had a very limited impact on the rate and depth of renovation. Other issues raised included an insufficient take-up of available financing (partly due to its complexity), insufficient

<sup>1</sup> This section aims to provide a flavour of the debate and is not intended to be an exhaustive account of all different views on the proposal. Additional information can be found in related publications listed under 'EP supporting analysis'.





Advisory committees

National parliaments

Stakeholders' views

awareness of benefits (caused by a lack of information and advertising), split incentives between landlord and tenants, lack of consumer demand (linked to absence of long-term goals on renovation) and a lack of trust about the financial benefits.



## Legislative process

On 27 February 2017, energy ministers in the Council [debated](#) the Clean Energy package. Some aspects of the revised EPBD were criticised. Member States felt the obligations on long-term renovation strategies were too demanding and unclear, particularly regarding decarbonisation of the building stock by 2050. They argued in favour of flexibility on financial incentives and the need to account for the specific circumstances of Member States. The Council stressed that provisions aimed at alleviating energy poverty should be handled under social policy (and therefore fall outside the scope of the EPBD).

On 26 June 2017, energy ministers in the Council [debated](#) the EPBD and reached agreement on a [general approach](#) (no Member States objected). The general approach proposes a complete exemption from electrocharging requirements for geographical areas with specific vulnerabilities. It would exclude small heating systems (e.g. electric heaters, wood stoves) from the inspections regime, reintroduce alternatives to inspection that exist in the current EPBD, and reduce some reporting requirements. The general approach would refine some provisions on long-term renovation strategies. It would reduce the electrocharging requirements for non-residential buildings (only one space in any non-residential building would need to be for electrocharging, while only one in three parking spaces would need to have pre-cabing). The proposed 'smartness indicator' would become a voluntary scheme whose key features (general framework) are outlined in the annex. The general approach removes binding obligations on Member States in addressing energy poverty through building renovations.

In the European Parliament, the [file](#) was referred to the Industry, Research and Energy (ITRE) Committee of the European Parliament. Bendt Bendtsen (EPP, Denmark) was appointed as rapporteur and delivered a [draft report](#) on 24 April 2017. More than 570 amendments were tabled, and 53 compromise amendments were subsequently proposed by the rapporteur. The final report was adopted by the ITRE committee on 11 October 2017, as well as the mandate to start inter-institutional negotiations. The latter was confirmed by the full Parliament during the subsequent plenary session. The first two rounds of trilogue meetings are scheduled for November and December 2017.

The ITRE [report](#) provides more requirements relating to the long-term renovation strategies, linking these explicitly to EU energy efficiency goals for 2030 and 2050, and introducing precise obligations in terms of public consultation. The burden of electro-mobility requirements would be reduced (in line with the Council approach): only one recharging point would be required in non-residential buildings, while one in ten parking spaces would need to have adequate pre-cabing. Residential buildings would simply need to have adequate pre-cabing. Yet on most other aspects the ITRE report imposes more obligations on Member States than the Commission proposal: new buildings would need to be equipped with self-regulating devices to regulate the room temperature in each room; more residential buildings would be required to undergo the inspections regime for air-conditioning and ventilation systems;<sup>2</sup> more residential buildings would be subject to the inspections regime for their heating system;<sup>3</sup> and building automation

2 In the ITRE report, the inspections regime in residential buildings would become mandatory for air conditioning and ventilation systems with a cumulated effective rated output of over 12 kW. The Council general approach sets the threshold much higher at 70 kW and allows further grounds for exemption. In the Commission proposal, the mandatory inspections regime for air conditioning and ventilation only applies to those centralised building systems with a cumulated effective rated output of over 100 kW.

3 In the ITRE report, the inspections regime would become mandatory for space and water heating systems in residential buildings



and control systems would become a requirement by 2023 in all non-residential buildings with an annual energy consumption of over 250 MWh.

The ITRE report proposes that the Commission assess the potential for harmonising national energy performance certificates, and conduct a feasibility study on introducing building renovation passports. The ITRE report proposes to keep the smartness indicator as an obligatory measure (in contrast to the Council, which would make it voluntary) and outlines its key features (general framework) in the annex.

Three rounds of ‘trilogue’ negotiations were held in November and December 2017. A provisional agreement was eventually reached on 19 December 2017. The agreed text was finalised after technical meetings and legal checks in January 2018. For its adoption, the agreed text will be the subject of a vote by both Parliament and Council in the coming months.

The [provisional agreement](#) expands the provisions on **long-term renovation strategies** in the revised EPBD. Long-term renovation strategies will need to be accompanied by a roadmap for a highly efficient and decarbonised national building stock by 2050 (consistent with 80-95 % reductions in GHG emissions), complete with indicative milestones for 2030, 2040, and 2050. Proposed obligations to address energy poverty through renovation of buildings have been removed from the text. The provisional agreement requires that all new buildings (as well as existing buildings where heat generators are replaced) must have **self-regulating devices that can regulate temperature levels**, usually at the level of individual rooms. The provisional agreement makes the proposed **electromobility requirements** for new non-residential buildings (as well as those undergoing major renovation) less onerous. Buildings with more than ten parking spaces should have at least one recharging point (rather than one in ten parking spaces having a recharging point, as proposed by the Commission), while pre-cabing should apply to at least one in five parking spaces (rather than every parking space, as proposed by the Commission). The provisional agreement also lists grounds for an **exemption** from electromobility provisions, which can include geographical isolation or excessive costs. However, the Commission will now be required to publish a report on the promotion of electromobility in buildings by 1 January 2023, which could lead to new measures being introduced.

The provisional agreement requires the Commission to adopt a delegated act by 31 December 2019 on an **optional EU scheme for rating the ‘smart readiness’ of buildings**. This delegated act should define the indicator and establish a methodology to calculate it. The key features of this EU scheme are outlined in the annex of the text, providing a framework for the Commission’s actions. The agreed text sets various thresholds (and some exemptions) for determining which buildings will require **regular inspection of heating and ventilation systems**. In general, this will be set at over 70 kW of effective rated output for space heating (or combined heat and ventilation), while building automation and control systems will be required in non-residential buildings with an output of over 290 kW. The Commission will be required to conclude a feasibility study before 2020 on a timeline to introduce the inspection of stand-alone ventilation systems and an **optional building renovation passport**, which would be complementary to the existing energy performance certificates.

with a cumulated effective rated output of over 70 kW. The Council general approach sets the threshold at 70 kW for space heating alone (i.e. excluding water heating from the calculation) and allows further grounds for exemption. In the Commission proposal, the mandatory inspections regime for space and water heating only applies to those centralised building systems with a cumulated effective rated output of over 100 kW.



The Commission should review the revised directive by 1 January 2026, with the possibility of proposing further changes (the Commission had proposed a review by 1 January 2028). Member States will be given 20 months to transpose the revised directive once it enters into force (as opposed to 12 months under the Commission proposal).



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