Proposal for amendments to the Energy Performance of Buildings Directive revision

smartEn Position Paper

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The present document outlines smartEn's proposal for Amendments in view of the inter-institutional negotiations on the Energy Performance of Buildings Directive revision.

It builds on our comprehensive assessment of this file presented by the European Commission in December 2021, as well as on our proposed amendments regarding other key files from the 'Fit for 55' package.

THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE

	Amendment to the Energy Performance of Buildings Directive (2021/0426)	smartEn Amendments (in blue, bold and italic)	smartEn justification
Recital 13	(13) Member States should set minimum requirements for the energy performance of buildings and building elements with a view to achieving the cost-optimal balance between the investments involved and the energy costs saved throughout the lifecycle of the building, without prejudice to the right of Member States to set minimum requirements which are more energy efficient than cost-optimal energy efficiency levels. Provision should be made for the possibility for Member States to review regularly their minimum energy performance requirements for buildings in the light of technical progress.	(13) Member States should set minimum requirements for the energy performance of buildings and building elements ***as well as technical building systems whenever they are installed, replaced or upgraded*** with a view to achieving the cost-optimal balance between the investments involved and the energy costs saved throughout the lifecycle of the building, without prejudice to the right of Member States to set minimum requirements which are more energy efficient than cost-optimal energy efficiency levels. Provision should be made for the possibility for Member States to review regularly their minimum energy performance requirements for buildings in the light of technical progress.	The application of minimum requirements for the energy performance of buildings should not be limited to the building envelope and be expanded to cover technical building system (TBS) whenever they are installed, replaced or upgraded. TBS represent an important share of the energy consumption of a building that the minimum requirements should seek to improve.

Recital 20	(20) Different options are available to cover the energy needs of an efficient building by energy from renewable sources: on-site renewables such as solar thermal, solar photovoltaics, heat pumps and biomass, renewable energy provided by renewable energy communities or citizen energy communities, and district heating and cooling based on renewables or waste heat	(20) Different options are available to cover the energy needs of an efficient building by energy from renewable sources: on-site renewables such as solar thermal, solar photovoltaics, heat pumps and biomass, renewable energy provided by renewable energy communities, citizen energy communities, ***renewable electricity consumed directly from the grid or stored through energy storage facilities including an electric vehicle and certified by real-time Guarantees of Origins,*** and district heating and cooling based on renewables or waste heat.	Buildings are part of the energy system and should not be treated in isolation. Zero-emission building should therefore cover renewable electricity coming from the grid provided that it can be certified by real-time guarantees of origins (24/7 GOs). As stressed in the EU Solar Strategy, storage devices, including electric vehicles (EVs) can contribute to solar electricity self-consumption, if parked within the premises of the owner or user. Storage devices, including electric vehicles can also contribute to the integration of on-site renewable energy in the energy system and provide flexibility services to the energy system. This should be extended to renewable electricity coming from the grid and stored through an EV.
Article 2 - Definition	2. 'zero-emission building' means a building with a very high energy performance, as determined in accordance with Annex I, where the very low amount of energy still required is fully covered by energy from renewable sources generated on-site, from a renewable energy community within the meaning of Directive (EU) 2018/2001 [amended RED] or from a district heating and cooling system, in accordance with the requirements set out in Annex III;	2. 'zero-emission building' means a building **,** with a very high energy performance, as determined in accordance with Annex I, where the very low amount of energy still required is fully covered **in a flexible and time-dependent way** by energy from renewable sources generated on-site, from a renewable energy community within the meaning of Directive (EU) 2018/2001 [amended RED] **or from the distribution grid, including through *decentralised sources capable of storing renewable such as electric***	smartEn welcomes the creation of zero-emission buildings which will promote the decarbonization of the EU's building stock. Buildings are part of the energy system and should not be treated in isolation. As a result, the energy generated on site should be consumed or stored or traded in a flexible way in reaction to external signals, meaning when it contributes to increase the efficiency of the energy system. This will ensure that buildings are flexible assets integrated in the energy system.

		vehicles with bidirectional charging, **provided it is proven** ***by a real-time Guarantees of Origin,*** or from a district heating and cooling system, in accordance with the requirements set out in Annex III;	In its proposal, the Commission's objective is to provide an incentive for solar rooftop PV, including solar canopies over parking lots, and the deployment of renewable energy communities, which are now strongly supported by the EU Solar strategy. While this objective is welcome, it should not refrain buildings in consuming renewable electricity coming from the local grid outside renewable energy communities, provided that it can be certified by real-time guarantees of origin (24/7 GOs) that the revised REDIII should introduced as they can allow matching the supply of renewable energy with demand in a dynamic way. 24/7 GOs would increase information to electricity consumers on the source of their electricity and incentivise demand-side flexibility by allowing variable RES-electricity to be consumed when available, in a flexible way and at the right time. This can further support a cost-efficient penetration of RES in all end-use sectors. While the current definition of zero-emission buildings encompasses several segments of buildings including energy systems, as well as heating and cooling systems, it falls short of recognizing the potential of electric vehicles in providing decentralized sources of storage for

			renewable energy. This possibility should be explicitly included as electric vehicles parked in or next to buildings will represent a major share of their power, their consumption and one of their biggest sources of flexibility.
	3. 'nearly zero-energy building' means a building with a very high energy performance, as determined in accordance with Annex I, which cannot be lower than the 2023 cost-optimal level reported by Member States in accordance with Article 6(2) and where the nearly zero or very low amount of energy required is covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby	3. 'nearly zero-energy building' means a building, with a very high energy performance, as determined in accordance with Annex I, which cannot be lower than the 2023 cost-optimal level reported by Member States in accordance with Article 6(2) and where the nearly zero or very low amount of energy required is covered to a very significant extent **in a flexible and time-dependent way** by energy from renewable sources, including energy from renewable sources produced on-site**,** nearby ***or*** **from the distribution grid including through *decentralised sources capable of storing renewable electricity such as electric vehicles with bidirectional charging*, provided it is proven by a real-time Guarantees of Origin*;***	Following the same spirit as the justification for 'zero-emission buildings', 'nearly zero-emission buildings' definition should comprise renewable electricity coming from the grid provided they are certified by real-time GOs that the RED revision should set in article 19.
	6. 'technical building system' means technical equipment for space heating, space cooling, ventilation, domestic hot water, built-in lighting, building automation and control, on-site renewable energy generation and storage, or a combination thereof, including	6. 'technical building system' means technical equipment for space heating, space cooling, ventilation, domestic hot water, built-in lighting, building automation and control, ***electric vehicle charging infrastructure,*** on-site renewable energy generation and storage, or a combination thereof, including	The EV charging infrastructure is part of the building and will soon represent one of the main loads of the building's electricity consumption and power, playing a critical role in the energy performance of buildings, enabling the efficient consumption of electricity and production of renewable energy as well as an important source

	those systems using energy from renewable sources, of a building or building unit;	those systems using energy from renewable sources, of a building or building unit;	of flexibility facilitating system integration. Therefore, it should be explicitly mentioned as part of a technical building system.
	8. 'energy performance of a building' means the calculated or metered amount of energy needed to meet the energy demand associated with a typical use of the building, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting;	8. 'energy performance of a building' means the calculated or metered amount of energy needed to meet the energy demand associated with a typical use of the building ***as measured by meters, sub-meters or building energy management systems,*** which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting and ***technical building system***;	Beyond meters, submeters and BEMS allow for a more accurate energy performance computation, that allows it to be close to real-time. They should therefore be used to calculate the energy performance of a building. In order to reflect the actual performance of buildings, all energy uses should be part of the calculation of the energy performance of a building and this should include technical building system. The energy performance of a building must reflect the entire spectrum of energy use to ensure actual and real performance of a building is metered.
Article 3 **National building renovation plan**	1. Each Member State shall establish a national building renovation plan to ensure 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, with the objective to transform existing buildings into zero-emission	1. Each Member State shall establish a national building renovation plan to ensure 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, with the objective to transform existing buildings into zero-emission buildings. Each building renovation plan shall	The smart management of all decentralised resources in buildings through Building Energy Management Systems (BEMS) of Home Energy Management Systems (HEMS) interacting with the grid should be promoted by Member States. This represents an important flexibility enabler to unleash the system integration of buildings and to support the cost-effective consumption of renewable energy by buildings.

	buildings. Each building renovation plan shall encompass: (a) an overview of the national building stock for different building types, construction periods and climatic zones, based, as appropriate, on statistical sampling and the national database for energy performance certificates pursuant to Article 19, an overview of market barriers and market failures and an overview of the capacities in the construction, energy efficiency and renewable energy sectors (b) a roadmap with nationally established targets and measurable progress indicators, with a view to the 2050 climate neutrality goal, in order to ensure a highly energy efficient and decarbonised national building stock and the transformation of existing buildings into zero-emission buildings by 2050; (c) an overview of implemented and planned policies and measures, supporting the implementation of the roadmap pursuant to point (b); and	***be in line with the Energy Efficiency First principle and shall*** encompass: (b) an overview of the national building stock for different building types, construction periods and climatic zones, based, as appropriate, on statistical sampling and the national database for energy performance certificates pursuant to Article 19, an overview of market barriers and market failures and an overview of the capacities in the construction, energy efficiency and renewable energy sectors (b) a roadmap with nationally established targets and measurable progress indicators, with a view to the 2050 climate neutrality goal, in order to ensure a highly energy efficient and decarbonised national building stock and the transformation of existing buildings into zero-emission buildings by 2050; (c) an overview of implemented and planned policies and measures, supporting the implementation of the roadmap pursuant to point (b); and (d) an outline of the investment needs for the implementation of the building renovation	

	(d) an outline of the investment needs for the implementation of the building renovation plan, the financing sources and measures, and the administrative resources for building renovation. The roadmap referred to in point (b) shall include national targets for 2030, 2040 and 2050 as regards the annual energy renovation rate, the primary and final energy consumption of the national building stock and its operational greenhouse gas emission reductions; specific timelines for buildings to achieve higher energy performance classes than those pursuant to Article 9(1), by 2040 and 2050, in line with the pathway for transforming the national building stock into zero-emission buildings; an evidence-based estimate of expected energy savings and wider benefits; and estimations for the contribution of the building renovation plan to achieving the Member State's binding national target for greenhouse gas emissions pursuant to Regulation (EU) .../... [revised Effort Sharing Regulation], the Union's energy efficiency targets in accordance with Directive (EU) .../.... [recast EED], the Union's renewable energy targets, including the indicative target for the share of energy from renewable sources in the building sector in	plan, the financing sources and measures, and the administrative resources for building renovation. The roadmap referred to in point (b) shall include national targets for 2030, 2040 and 2050 as regards the annual energy renovation rate, the primary and final energy consumption of the national building stock and its operational greenhouse gas emission reductions; specific timelines for buildings to achieve higher energy performance classes than those pursuant to Article 9(1), by 2040 and 2050, in line with the pathway for transforming the national building stock into zero-emission buildings; ***a pathway with numerical targets for the deployment of decentralised energy resources in buildings such as solar energy, electric vehicles, storage devices, heat pumps and Building and Home Energy Management Systems enabling the seamless communication of behind-the-meter assets with the grid;*** an evidence-based estimate of expected energy savings, ***GHG emission reductions***, and wider benefits; and estimations for the contribution of the building renovation plan to achieving the Member State's binding national target for greenhouse gas emissions pursuant to Regulation (EU) .../... [revised Effort Sharing Regulation], the Union's energy efficiency	

	accordance with Directive (EU) 2018/2001 [amended RED], and the Union's 2030 climate target and 2050 climate neutrality goal in accordance with Regulation (EU) 2021/1119.	targets in accordance with Directive (EU) …/…. [recast EED], the Union's renewable energy targets, including the indicative target for the share of energy from renewable sources in the building sector in accordance with Directive (EU) 2018/2001 [amended RED], and the Union's 2030 climate target and 2050 climate neutrality goal in accordance with Regulation (EU) 2021/1119.	
Article 5 - setting minimum energy performance requirements	1. Member States shall take the necessary measures to ensure that minimum energy performance requirements for buildings or building units are set with a view to at least achieving cost-optimal levels. The energy performance shall be calculated in accordance with the methodology referred to in Article 4. Cost-optimal levels shall be calculated in accordance with the comparative methodology framework referred to in Article 6. Member States shall take the necessary measures to ensure that minimum energy performance requirements are set for building elements that form part of the building envelope and that have a significant impact on the energy performance of the building envelope when they are replaced or retrofitted, with a view to achieving at least	1. Member States shall take the necessary measures to ensure that minimum energy performance requirements for buildings or building units are set with a view to at least achieving cost-optimal levels. The energy performance shall be calculated in accordance with the methodology referred to in Article 4. Cost-optimal levels shall be calculated in accordance with the comparative methodology framework referred to in Article 6. Member States shall take the necessary measures to ensure that minimum energy performance requirements are set for ***technical building systems that have a significant impact on the energy performance of the building when they are installed, replaced or upgraded, at trigger points, in line with the Ecodesign***	The current EPBD provisions regarding the minimum energy performance requirements are inadequate as they only target the building elements that form part of the building envelope. However, the impact of technical building systems, such as HVAC, is not sufficiently taken into account. Natural gas represent 39% for total final energy consumption in buildings, while the deployment of renewable energy in the building sector (expected to reach 49% by 2030 according to the Renewable Energy Directive benchmark target) and the targets for private EV charging roll-out will have major implications in the increase of technical building systems consumption in buildings. Therefore, the EPBD should go a step further by including technical building systems (TBS) that have a significant impact on the energy performance of the building as part of the minimum energy performance

	cost-optimal levels. When setting requirements, Member States may differentiate between new and existing buildings and between different categories of buildings. Those requirements shall take account of general indoor climate conditions, in order to avoid possible negative effects such as inadequate ventilation, as well as local conditions and the designated function and the age of the building. (...)	***framework, or*** building elements that form part of the building envelope and that have a significant impact on the energy performance of the building envelope when they are replaced or retrofitted, with a view to achieving at least cost-optimal levels. When setting requirements, Member States may differentiate between new and existing buildings and between different categories of buildings. Those requirements shall take account of general indoor climate conditions, in order to avoid possible negative effects such as inadequate ventilation, as well as local conditions and the designated function and the age of the building. (...)	requirements, and requiring the retrofit of TBS, at trigger points, in order to improve buildings energy consumption.
Article 8 **Existing buildings**	4. Where a building is renovated in order to comply with a minimum energy performance standard, Member States shall ensure compliance with the minimum energy performance requirements for building elements pursuant to Article 5 and, in case of major renovation, with the minimum energy performance requirements for existing buildings pursuant to Article 8	4. Where a building is renovated in order to comply with a minimum energy performance standard, Member States shall ensure compliance with the minimum energy performance requirements for building elements ***including technical building systems*****,** pursuant to Article 5 and, in case of major renovation, with the minimum energy performance requirements for existing buildings pursuant to Article 8	While the proposed definition of building element include technical building systems, some confusions made in the proposal (e.g. article 5) could have negative consequences and exclude technical building systems from the obligation for compliance with the minimum energy performance requirements. We propose to clarify this by making sure technical building systems are considered as part of the obligation for minimum energy performance requirements in existing buildings.
Article 9 - minimum energy performa	1. Member States shall ensure that (a) buildings and building units owned by public bodies achieve at the latest	1. Member States shall ensure that (a) buildings and building units owned by public bodies achieve at the latest	While the Minimum Energy Performance Standards are a step in the right direction, they risk carbon lock-in. A clear and anticipated roadmap should be set out to achieve climate neutrality in

nce standards	(i) after 1 January 2027, at least energy performance class F; and (ii) after 1 January 2030, at least energy performance class E; (b) non-residential buildings and building units, other than those owned by public bodies, achieve at the latest (i) after 1 January 2027, at least energy performance class F; and (ii) after 1 January 2030, at least energy performance class E; (c) residential buildings and building units achieve at the latest (i) after 1 January 2030, at least energy performance class F; and (ii) after 1 January 2033, at least energy performance class E; In their roadmap referred to in Article 3(1)(b), Member States shall establish specific timelines for the buildings referred to in this paragraph to achieve higher energy performance classes by 2040 and 2050, in line with the pathway for transforming the national building stock into zero-emission buildings	(i) after 1 January ***2025***, at least energy performance class F; and (ii) after 1 January ***2027***, at least energy performance class E; ***(iii) after 1 January 2030, at least energy performance class D;*** ***(iv) after 1 January 2035, at least energy performance class C;*** ***(v) after 1 January 2040, at least energy performance class B;*** ***(vi) after 1 January 2045, at least energy performance class A;*** (b) non-residential buildings and building units, other than those owned by public bodies, achieve at the latest (i) after 1 January ***2025***, at least energy performance class F; and (ii) after 1 January ***2027***, at least energy performance class ~~E~~ ***D***; ***(iii) after 1 January 2030, at least energy performance class C;*** ***(iv) after 1 January 2035, at least energy performance class B;***	all building types by 2050. As the building stock will need to achieve carbon neutrality by 2050, a complete roadmap would help investors, financial institutions, building owners, manufacturers and construction companies to prepare. Public and private non-residential should lead by example. The proposed Art. 5. EED review requires 3% of the total floor area of buildings owned by public bodies to be renovated into nearly zero-energy buildings. The ambition for public buildings in this article should match the EED and go beyond the proposed F and E levels. As public and private non-residential buildings present very similar consumption patterns, the same of level of ambition should be applied for those buildings. Such pathway will also be consistent with the trajectory recommended by the Commission in the 'EU Save Energy' Communication as part of the REPowerEU Communication to introduce additional MEPS to boost renovation and upgrade worst-performing buildings. The EPBD revision is part of the 'Fit for 55' package and needs to be consistent with the other buildings-related provisions set out in other files, notably the new ETS for buildings and the renovation trajectory for tertiary buildings set in article 6 of the EED which should target both buildings owned by public entities and private ones.

		(v) after 1 January 2040, at least energy performance class A; (c) residential buildings and building units achieve at the latest (i) after 1 January 2030, at least energy performance class F; and (ii) after 1 January 2033, at least energy performance class E; ***(iii) after 1 January 2038, at least energy performance class D;*** ***(iv) after 1 January 2043, at least energy performance class C;*** ***(v) after 1 January 2048, at least energy performance class B;*** ***(vi) after 1 January 2050, at least energy performance class A;*** In their roadmap referred to in Article 3(1)(b), Member States shall establish specific timelines for the buildings referred to in this paragraph to achieve higher energy performance classes by 2040 and 2050, in line with the pathway for transforming the national building stock into zero-emission buildings ***(new) Minimum Energy Performance Standards set out in this article shall be in***	

		line with the requirements in Directive 2021/0211 (ETSII for road and transport) and in article 6 of Directive 2021/0203 (EED)	
Article 9a **Solar energy in buildings**	Member States shall ensure that all new buildings are designed to optimise their solar energy generation potential on the basis of the solar irradiance of the site, enabling the later cost-effective installation of solar technologies. Member States shall ensure the deployment of suitable solar energy installations: (a) by 31 December 2026, on all new public and commercial buildings with useful floor area larger than 250 square meters; (b) by 31 December 2027, on all existing public and commercial buildings with useful floor area larger than 250 square meters; and (c) by 31 December 2029, on all new residential buildings.	Member States shall ensure that all new buildings are designed to ~~***optimise***~~ ***maximise*** their solar energy generation potential on the basis of the solar irradiance of the site, enabling the later cost-effective installation of solar technologies. Member States shall ensure the deployment of suitable solar energy installations: (a) by ~~***31 December 2026***~~***1 January 2025***, on all new public and ***non-residential*** buildings with useful floor area larger than 250 square meters. ***A Building Energy Management System capable to interact with the grid shall be also deployed***; (b) by ~~***31 December 2027***~~ ***1 January 2026***, on all existing public and ***non-residential*** buildings with useful floor area larger than 250 square meters; and ***all existing public and non-residential buildings smaller than 250 square meters undergoing renovations or equipped with electric storage, EV-charging infrastructure or heat pump. A Building Energy Management System***	This new article introduced by the Commission as part of the REPowerEU plan should be used as an opportunity to ensure the smart interaction of buildings into the energy system. Beyond the deployment of solar PV on the full surface of the roof to maximise on-site generation, this article should support the development of flexible decentralised energy resources in buildings capable of interacting with the energy system since this represents an important source of flexibility to support a cost-effective energy system. Such approach would support the integration of buildings in the energy system, while contributing to energy system efficiency and resiliency. As a result, this article should be improved. Priority should be given to buildings with high energy consumption from an EV charging infrastructure or a heat pump, and those that are equipped with a building automation and control system, or a home energy management system, as this contribute to the optimisation of self-consumption while supporting the activation of the flexibility potential of buildings and their

	Member States shall define, and make publicly available, criteria at national level for the practical implementation of these obligations, and for possible exemptions for specific types of buildings, in accordance with the assessed technical and economic potential of the solar energy installations and the characteristics of the buildings covered by this obligation.	***capable to interact with the grid shall be also deployed;*** (c) by ~~***31 December 2029***~~ ***1 January 2027,*** on all new residential buildings ***and existing residential buildings undergoing renovations or equipped with electric storage, EV-charging infrastructure or heat pump.*** ***(d) by 1 January 2026, on all parking lots of more than 5 parking spaces attached to, or sharing their grid connection with, existing public and non-residential buildings.*** ***(e) by 31 December 2030 on all existing buildings not covered by (a), (b) and (c) of this article.*** ***Priority for solar energy installations shall be given to buildings with high energy consumption from an EV charging infrastructure or a heat pump, and accompanied for building types set out in sub-paragraph (a) and (b) of this article, by a Buildings Energy Management System capable to interact with the grid to optimise the energy performance and system integration of behind the meter assets in reaction to external signals.***	participation in electricity markets. It will also ensure that DERs in buildings are interlinked. Parking lots adjacent to or close to buildings represent an important opportunity to deploy solar canopies and should be included in this article. As part of the REPowerEU plan, storage assets complementing RES are considered to be in the overriding public interest and benefitting from streamlined administrative procedures. This approach should be replicated also to EV charging infrastructure capable of smart and bidirectional charging. The smart management of all decentralised resources in buildings through Building or Home Energy Management Systems (B/HEMS) interacting with the grid should be promoted by Member States since this represents important devices to enable the communication of behind the meter assets and activate the overall flexibility potential of buildings in reaction to external signals. A target that links installed solar power and distributed flexibility resources will ensure local optimization and system efficiency. Such distributed flexibility assets include distributed renewable generation, demand response and distributed storage assets, such as domestic

		The additional costs that this may imply to consumers should be carefully assessed and compensated, including through the participation in flexibility schemes. Member States shall ensure that their regulatory frameworks provide the necessary administrative, technical and financial capacities and incentives to support the integrated deployment of on-site renewables and smart energy assets. ***To increase the penetration of on-site renewable electricity in buildings the technical building systems should be designed and sized to ensure that at least 50% of the peak solar rooftop power is absorbed by distributed flexibility assets behind the meter, including from Electric Vehicles in the parking. This should contribute to the achievement of the national electricity peak demand reduction target that Member States may introduce in line with RED III.*** Member States shall define, and make publicly available, criteria at national level for the practical implementation of these obligations, and for possible exemptions for specific types of buildings, ***as specified in article 5, paragraph 3***, in accordance with the assessed technical and economic potential of the solar energy installations and the	batteries and batteries of electric vehicles and thermal storage. Creating this link through a target will ensure both technologies are deployed in symbiosis. Setting the level at minimum 50% of peak power capacity takes into account the seasonal variability of solar generation while ensuring it will not be met only with heating flexibility that rarely coincides with the peaks in solar generation. Finally, to support the integration of solar PV, DSO should prioritize the procurement of flexibility services and should not use congestion constraints on distribution grids as justification to limit PV connection and deployment. Overall, this article should be accompanied by stronger requirements for grid integrated DERs in buildings (notably in article 3 on the building renovation plan, in article 12 on emobility and in article 20 on inspection).

		characteristics of the buildings covered by this obligation. ***Member States shall ensure that distribution system operators support the objectives of this article to integrate solar rooftop and decentralised energy resources into the energy system, notably through the procurement of flexibility services in line with the provisions of the Regulation (EU) 2019/943 and the Directive (EU) 2019/944.***	
Article 12 **infrastructure for sustainable mobility**	1. With regard to new non-residential buildings and non-residential buildings undergoing major renovation, with more than five parking spaces, Member States shall ensure: (a) the installation of at least one recharging point (b) the installation of pre-cabling for every parking space to enable the installation at a later stage of recharging points for electric vehicles; and (c) at least one bicycle parking space for every car parking space; where 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.	1. With regard to new non-residential buildings and non-residential buildings undergoing major renovation, with more than ***three*** parking spaces, Member States shall ensure ***by 1 January 2025***: (a) the installation of at least one recharging point ***for every five parking spaces*** (b) the installation of pre-cabling for every parking space to enable the installation at a later stage of recharging points for electric vehicles ***that can be supplied by solar PV on the rooftop and enable the EVs to provide their flexibility***; and (c) at least one bicycle parking space for every car parking space; where the car park is physically adjacent to the building, and, for major renovations,	The current requirements for charging points in buildings are not ambitious enough and do not take into account the current uptake of electric vehicles as well as the fact that charging takes place most of the time in buildings. To foster sustainable mobility and smart integration of transport and building sectors, the existing requirements for electromobility should be strengthened. Therefore, more charging point per parking space should be installed. As of now, only §2 has a timeline for the installation of charging points and pre-cabling. To be consistent and keep the general ambition of this article, a timeline should be inserted in §1 as well. Pre-cabling must be future-proof and allow integration with solar PV installed on the

	Member States shall ensure that the pre-cabling is dimensioned so as to enable the simultaneous use of the expected number of recharging points. By way of derogation from the first subparagraph, point (a), for new office buildings and office buildings undergoing major renovation, with more than five parking spaces, Member States shall ensure the installation of at least one recharging point for every two parking spaces.	renovation measures include the car park or the electrical infrastructure of the car park. Member States shall ensure that the pre-cabling is dimensioned so as to enable the simultaneous use of the expected number of recharging points. By way of derogation from the first subparagraph, point (a), for new office buildings and office buildings undergoing major renovation, with more than five parking spaces, Member States shall ensure the installation of at least one recharging point for every two parking spaces.	building rooftop as well as EVs to provide the flexibility of their battery to the building and the power system.
	2. With regard to all non-residential buildings with more than twenty parking spaces Member States shall ensure the installation of at least one recharging point for every ten parking spaces, and at least one bicycle parking space for every car parking space, by 1 January 2027. In case of buildings owned or occupied by public authorities, Member States shall ensure pre-cabling for at least one in two parking spaces by 1 January 2033.	2. With regard to all non-residential buildings with more than ***ten*** parking spaces Member States shall ensure the installation of at least one recharging point for every ***five*** parking spaces, and at least one bicycle parking space for every car parking space, by 1 January ***2025***. In case of buildings owned or occupied by public authorities, Member States shall ensure pre-cabling ***that can be supplied by solar PV on the rooftop and enable the EVs to provide their flexibility*** for at least one in two parking spaces by 1 January ***2028***.	The ambition of this provision should be raised by advancing the dates to install charging points and pre-cabling.
	4. With regard to new residential buildings and residential buildings undergoing major	4. With regard to new residential buildings and residential buildings undergoing major	As of now, only §2 has a timeline for the installation of charging points and pre-cabling. To be consistent and keep the general ambition

	renovation, with more than three parking spaces, Member States shall ensure: (a) the installation of pre-cabling for every parking space to enable the installation, at a later stage, of recharging points for electric vehicles; and (b) (...) Member States shall ensure that the pre-cabling is dimensioned to enable the simultaneous use of recharging points on all parking spaces. Where, in the case of major renovation, ensuring two bicycle parking spaces for every dwelling is not feasible, Member States shall ensure as many bicycle parking spaces as appropriate.	renovation, with more than three parking spaces, Member States shall ensure: (a) the installation of pre-cabling ***that can be supplied by solar PV on the rooftop and enable the EVs to provide their flexibility*** for every parking space to enable the installation, at a later stage, of recharging points for electric vehicles ***by 1 January 2025***; and (b) (...) Member States shall ensure that the pre-cabling is dimensioned to enable the simultaneous use of recharging points on all parking spaces. ***They shall also ensure pre-cabling is future-proof and able to supply the charging infrastructure by solar PV on the rooftop and enable the EVs to provide their flexibility.*** Where, in the case of major renovation, ensuring two bicycle parking spaces for every dwelling is not feasible, Member States shall ensure as many bicycle parking spaces as appropriate.	of this article, a timeline should be inserted in §4 as well.
		(new) 5 bis. With regard to both residential and non-residential existing buildings with less than twenty parking spaces, Member States shall ensure the installation of at least one recharging point by 1 January 2025.	To foster sustainable mobility and smart integration of transport and building sectors, the existing requirements for electromobility should be strengthened for all types of buildings with parking spaces (new built, renovated, existing, non-residential and residential).

			The current proposal only targets new buildings and the ones undergoing major renovations. With a current renovation rate at 1%, targeting only a small share of the building stock would endanger the uptake of Electric Vehicles. Given the lower turn-over of the building stock, only setting requirements for EV charging for new and heavily renovated buildings or existing non-residential buildings with more than 20 parking space—would indeed not be sufficient to match the charging needs. Therefore, the scope of the EPBD regarding e-mobility should be extended to cover all existing buildings.
	6. Member States shall ensure that the recharging points referred to in paragraphs 1, 2 and 4 are capable of smart charging and, where appropriate, bidirectional charging, and that they are operated based on non-proprietary and non-discriminatory communication protocols and standards, in an interoperable manner, and in compliance with any legal standards and protocols in the delegated acts adopted pursuant to Article 19(6) and Article 19(7) of Regulation (EU) …/… [AFIR].	6. Member States shall ensure that the recharging points referred to in paragraphs 1, 2,~~*and*~~ 4 ***and 5 bis*** are capable of smart charging and, where appropriate, bidirectional charging, and that they are operated based on non-proprietary and non-discriminatory communication protocols and standards, in an interoperable manner, and in compliance with any legal standards and protocols in the delegated acts adopted pursuant to Article 19(6) and Article 19(7) of Regulation (EU) …/… [AFIR].	The EU Solar Strategy recognises the role of EV in supporting the deployment of solar rooftop PV in buildings by serving as an energy storage devices and enabling an optimised consumption of the building. The mandatory installation of bidirectional charging when there are on-site renewables in the building (V2H/V2B), or when the building is part of a renewable energy community, ensures that the EV is filled with renewable energy, and that it can feed the building back with renewable energy.

		When the building has on-site renewable energy generation, or when the building is part of a renewable energy community, Member States shall ensure that the recharging point is capable of bidirectional charging. ***In the case that consumers with electric vehicles with bidirectional capability have opted for dynamic price and network tariffs, Member States shall encourage the adoption of dynamic price and network tariffs when exporting electricity to the grid.***	Bidirectional charging also supports a more dynamic integration of distributed solar energy assets into the energy system, by injecting this self-generated electricity to the grid, at times that are best to improve the overall efficiency of the energy system. This will also create additional revenues opportunities for consumers. Setting dynamic tariffs when exporting electricity to the grid has the potential to foster both the deployment of bidirectional charging in the residential sector and the deployment of on -site renewable generation units, as this can create an additional incentives to activate their flexibility potential and participate in electricity markets, in reaction to dynamic price signals.
	8. 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 remove regulatory barriers, including permitting and approval procedures, without prejudice to the property and tenancy law of the Member States. Member States shall remove barriers to the installation of recharging points in residential buildings with parking spaces, in particular the need to obtain consent from the landlord or co-	8. 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 remove regulatory barriers, including permitting and approval procedures, without prejudice to the property and tenancy law of the Member States. Member States shall remove barriers to the installation of recharging points in residential buildings with parking spaces, in particular the need to obtain consent from the landlord or co-owners for a private recharging point for own use***, in line with paragraph 6 requiring new***	smartEn welcomes the 'right to plug' supported by this article, under which Member States shall remove barriers to the installation of recharging points in residential buildings with parking spaces, in particular the need to obtain consent from the landlord or co-owners for a private recharging point for own use. In addition, the 'right to plug' needs to be a right to 'smart' plug. Although there are already provisions requiring charging points to be smart, the link with paragraph 6 would ensure that there is no loophole when Member States transpose this directive in their national

	owners for a private recharging point for own use.	***installed charging points to be smart capable, and bidirectional capable when appropriate***.	legislation and that tenants will be able install a smart or bidirectional capable charging point without the need to obtain the consent from the landlord or co-owners for a private recharging point.
Article 13 - smart readiness of buildings	2. The Commission shall, by 31 December 2025, adopt a delegated act in accordance with Article 29, requiring the application of the common Union scheme for rating the smart readiness of buildings, in accordance with Annex IV, to non-residential buildings with an effective rated output for heating systems, or systems for combined space heating and ventilation of over 290 kW	2. The Commission shall~~, by 31 December 2025,~~ adopt a delegated act in accordance with Article 29, requiring the ***mandatory*** application of the common Union scheme for rating the smart readiness of buildings, in accordance with Annex IV, to non-residential buildings with an effective rated output for heating systems, ***air-conditioning systems*** or systems for combined space heating***, air-conditioning*** and ventilation of over 290 kW ***by 31 December 2024. The threshold for the effective rated output shall be lowered to 70 kW by 31 December 2029.***	The Smart Readiness Indicator (SRI) application should be linked to the deadline and scope for the implementation of the Building Automation and Control System requirements (31 December 2024) under Art. 20..
	4. The Commission shall, by 31 December 2025, and after having consulted the relevant stakeholders, adopt an implementing act detailing the technical modalities for the effective implementation of the application of the scheme referred to in paragraph 2 to non-residential buildings with an effective rated output for heating systems, or systems	4. The Commission shall, by 31 December ~~2025~~ ***2024***, and after having consulted the relevant stakeholders, adopt an implementing act detailing the technical modalities for the effective implementation of the application of the scheme referred to in paragraph 2 to non-residential buildings with an effective rated output for heating	

	for combined heating and ventilation of over 290 kW. That implementing act shall be adopted in accordance with the examination procedure referred to in Article 30(3).	systems, or systems for combined heating and ventilation of over 290 kW. That implementing act shall be adopted in accordance with the examination procedure referred to in Article 30(3). ***(new) 4 bis : The Commission shall, by 31 December 2029, and after having consulted the relevant stakeholders, adopt an implementing act detailing the technical modalities for the effective implementation of the application of the scheme referred to in paragraph 2 to non-residential buildings with an effective rated output for heating systems, or systems for combined heating and ventilation of over 70 kW***	
Article 14 **Data exchange**	1. Member States shall ensure that the building owners, tenants and managers can have direct access to their building systems' data. At their request, the access or data shall be made available to a third party. Member States shall facilitate the full interoperability of services and of data exchange within the Union in accordance with paragraph 6. For the purpose of this Directive, building systems data shall include at least all data related to the energy performance of building elements, the energy performance of building services, building automation and	1. Member States shall ensure that the building owners, tenants and managers can have direct access to their building systems' ***near real-time*** data. At their request, the access or ***unprocessed*** data shall be made available to a third party ***locally at the building systems' interface or remotely, following consumer's explicit consent***. Member States shall facilitate the full interoperability of services and of data exchange within the Union in accordance with paragraph 6. For the purpose of this Directive, building systems data shall include at least all data related to the energy	Access to data to building owners or occupants is key to empower them in the energy transition. This article contributes to putting the user in control of their data and the sharing to third-party service providers. As of now, data provided is historical and does not display accurate information on a range of indicators such as the energy consumption or the carbon footprint of a building. The lack of, or poor, granularity of data undermines the accuracy of the operational performance of a building.

	control systems, meters and charging points for e-mobility.	performance of building elements, the energy performance of building services, building automation and control systems, meters, charging points for e-mobility, ***and all relevant submetering devices aggregated through Building and Home Energy Management Systems capable of interacting with the energy grid. In case that there are no Building and Home Energy Management Systems installed in the building, near real-time data at disaggregated level for individual devices should also be made available to building owners, tenants and managers as well as to eligible parties, following the consumer's explicit consent.***	Providing near real-time data from smart metering devices and sub-metering devices, such as IoT sensors or EVs, at disaggregated or aggregated levels through Energy Management Systems interacting with the grid would ensure more transparency and accuracy on energy consumption data while supporting the system integration of all behind the meter assets. This would support the activation of demand-side flexibility in buildings, contributing to reduce their carbon footprint. Eligible parties such as energy service providers should be ensured access to such data when useful for providing flexibility services, following explicit consumer's consent. The smart management of all decentralised resources in buildings through Building Energy Management Systems (BEMS) interacting with the grid and capable of reacting to external signals should be promoted by Member States since this represents an important flexibility resources to achieve dynamic improvements in buildings while supporting a cost-efficient energy system.
	2. When laying down the rules regarding the management and exchange of data, Member States or, where a Member State has so provided, the designated competent authorities, shall specify the rules on the access to building systems data by eligible	2. When laying down the rules regarding the management and exchange of data, Member States or, where a Member State has so provided, the designated competent authorities, shall ***follow*** the ***harmonised Union*** rules ***set out in the implementing acts***	There should be a common EU building data management framework in line with the applicable EU legal framework to avoid fragmentation across Member States in rules on the access to buildings system data by eligible parties. Given the variety of stakeholders in the

	parties in accordance with this Article and the applicable Union legal framework.	***as specified in paragraph on the access to building systems data by eligible parties ~~in accordance with this Article~~*** and ***other ~~the~~*** applicable Union legal framework. ***The rules on the access and any charges shall not constitute a barrier nor create discrimination for third parties to access the building's data. Cybersecurity shall be ensured in any data exchange and by every party.***	building sector with their mainly temporary involvement in a building's lifecycle and their diverse needs, we recommend that the roles and rules for data sharing should be clearly defined at EU level. The Commission should orchestrate the efforts to create a data framework that is acceptable to all players at the EU level and foster quality, trust and cooperation between market roles. Consumers' access to data by third parties such as flexibility service providers is key to allow prosumer business models and the provision of flexibility services from all decentralised energy resources such as renewable energy sources, demand-response, storage and EVs.
	3. No additional costs shall be charged to the building owner, tenant or manager for access to their data or for a request to make their data available to a third party. Member States shall be responsible for setting the relevant charges for access to data by other eligible parties such as financial institutions, aggregators, energy suppliers, energy services providers and National Statistical Institutes or other national authorities responsible for the development, production	3. No additional costs shall be charged to the building owner, tenant or manager for access to their data or for a request to make their data available to a third party. Member States shall be responsible for setting the relevant charges for access to data by other eligible parties such as financial institutions, aggregators, energy suppliers, energy services providers and National Statistical Institutes or other national authorities responsible for the development, production	Same justification as the paragraph above.

	and dissemination of European statistics. Member States or, where applicable, the designated competent authorities, shall ensure that any charges imposed by regulated entities that provide data services are reasonable and duly justified.	and dissemination of European statistics. Member States or, where applicable, the designated competent authorities, shall ensure that any charges imposed by regulated entities that provide data services are reasonable and duly justified ***and do not create any type of barrier nor discrimination for third parties to access the building's data***.	
	5. The Commission shall adopt implementing acts detailing interoperability requirements and non-discriminatory and transparent procedures for access to the data. Those implementing acts shall be adopted in accordance with the advisory procedure referred to in Article 30(2)	5. The Commission shall adopt implementing acts detailing interoperability requirements and non-discriminatory and transparent procedures for access to the data. Those implementing acts shall be adopted in accordance with the advisory procedure referred to in Article 30(2) ***before 31 December 2023. A consultation strategy shall be prepared setting out consultation objectives, targeted stakeholders and the consultation activities for preparing the implementing acts.***	The work on the implementing acts should begin as soon as possible involving the relevant stakeholders to ensure acceptance and ease of implementation as well as to ensure that the interoperability requirements apply to the relevant and necessary data to monitor and improve the energy performance of buildings, including submetering data. The Digitalisation of Energy Action Plan should anticipate the work on these implementing acts notably by setting up an expert group.
Article 15 - financial incentives and market barriers	9. Member States shall link their financial measures for energy performance 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	9. Member States shall link their financial measures for energy performance improvements, ***including the reduction in operational greenhouse gas emissions***, in the renovation of buildings to the targeted or achieved energy savings ***and improvements***, as determined by one or more of the following criteria:	smartEn welcomes the fact that this revised provision links financial measures with energy performance, and no longer with efficiency improvements. This should be accompanied by an improved methodology for calculating the energy performance of buildings to reflect the operational greenhouse gas emission of a building as required under article 4. As such, this

	renovation is to be installed by an installer with the relevant level of certification or qualification and shall comply with minimum energy performance requirements for building elements; (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.	(a) the energy performance ***and operational greenhouse gas emission reduction*** 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 and shall comply with ***at least*** minimum energy performance requirements for building elements; (b) standard values for calculation of energy ***and GHG emission*** 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 ex-post monitoring and actual measurement** (***f***) the results of another relevant, transparent and proportionate method that shows the improvement in energy performance. ***9a (new). Member States shall in particular link their financial measures to:***	would allow financial incentives to be linked with the actual, measured (not theoretical) reduction of the building's carbon footprint, also resulting from the activation of their demand-side flexibility. Financial incentives should also be based on the results of ex-post monitoring and actual measurement which reflect actual energy performance improvements. In addition, financial incentives should be linked with the achievement of the MEPS, zero-emission and nearly-zero energy buildings and savings expected under the renovation passports as well as with the SRI. This Will ensure consistency and support the achievement of the obligations and requirements set under this Directive.

		(a) the achievement of the Minimum Energy Performance Standards as set out in article 9 ***(b) the evolution towards zero-emission or nearly zero-emissions buildings*** ***(c) the expected savings of a building under the renovation passport as set out in article 10*** ***(d) the implementation of the Smart Readiness Indicator***	
		(new) 10. Member States shall link their financial measures to the fulfilment of minimum access to charging infrastructure as set out in article 12, introducing the possibility to provide additional support mechanisms for bidirectional charging, when there is no on-site renewable generation, and when foreseen as an additional functionality contributing to system efficiency and creating socio-economic welfare as demonstrated by the assessment in line with article 20a.3 of Directive 2021/0218 (REDIII) and article 14.4 of Directive 2021/0223 (AFIR). ***9b (new) Member States may ensure that the level of financing corresponds to the actual level of energy and GHG emission***	The charging infrastructure will soon represent the biggest load in a building, and if unmanaged, it will accentuate the peak, creating constraints for the grid. Smart and bidirectional charging can mitigate these effects. While smart charging is already well considered in the Commission's proposal, there is some room to improve for bidirectional charging. We already propose to introduce a new provision to mandate bidirectional charging when there is on-site renewable generation. Therefore, financial incentives for bidirectional charging when there is no on-site renewable production should be set, since the payback period can be longer. In addition, financial measures should be linked to the actual level of energy and GHG emission

		savings achieved, based on ex-post monitoring and actual measurement.	savings achieved, using 24/7 calculation of carbon footprints based on real-time measurements. This would allow financial incentives to be linked with the actual, measured (not theoretical) reduction of the building's carbon footprint, also resulting from the activation of their demand-side flexibility.
Article 16 **Energy Performance Certificates**	1. Member States shall lay down the necessary measures to establish a system of certification of the energy performance of buildings. The energy performance certificate shall include the energy performance of a building expressed by a numeric indicator of primary energy use in kWh/(m2.y), and reference values such as minimum energy performance requirements, minimum energy performance standards, nearly zero-energy building requirements and zero-emission building requirements, in order to make it possible for owners or tenants of the building or building unit to compare and assess its energy performance. (…) 3. Member States shall ensure the quality, reliability and affordability of energy performance certificates. They shall ensure that energy performance certificates are	1. Member States shall lay down the necessary measures to establish a system of certification of the energy performance of buildings. The energy performance certificate shall include the energy performance of a building expressed by a numeric indicator of primary **and final** energy use in kWh/(m2.y) and ***of the operational greenhouse gas emissions in kgCO2eq/(m2 .y),*** and reference values such as minimum energy performance requirements, minimum energy performance standards, nearly zero-energy building requirements and zero-emission building requirements, in order to make it possible for owners or tenants of the building or building unit to compare and assess its energy performance. (…) 3. Member States shall ensure the quality, reliability and affordability of energy performance certificates. They shall ensure that energy performance certificates are	Certified digital carbon and energy performance metering systems enable the building occupant to have actual energy performance data of its building. Member States should allow their use to determine the energy performance of buildings within the EPCs. Buildings that use this alternative approach should be exempt from the independent expert inspection following an on-site visit. SRI should also be made a mandatory part of the EPCs for buildings which have to apply such indicator. This will help raising awareness among Member States as well as further supporting the uptake of smart and flexible buildings.

	issued by independent experts following an on-site visit. 4. The energy performance certificate shall include recommendations for the cost-effective improvement of the energy performance and the reduction of operational greenhouse gases emissions of a building or building unit, unless the building or building unit already complies with the relevant zero-emission building standard.	issued by independent experts following an on-site visit. ***3a (new) Member States may use certified digital carbon and energy performance metering systems as an alternative approach to determining the energy performance of a building in accordance with Article 16.1.*** ***3b (new) The Commission will establish, at the latest by the 31st of December 2023, a European certification approach for digital carbon and energy performance metering systems, taking into account cybersecurity requirements.*** ***3c (new) Certified digital carbon and energy performance metering systems will be considered an acceptable approach to determining improvement in energy performance for the purposes of Article 15 paragraph 9.*** 4. The energy performance certificate shall include recommendations for the cost-effective improvement of the energy performance, the reduction of operational greenhouse gases emissions of a building or building unit, unless the building or building unit already complies with the relevant zero-emission building standard ***and the***	

		improvement of the smart readiness indicator score for buildings which have to be equipped with the indicator as required by article 13 of this Directive.	
	11. Member States shall make simplified procedures for updating an energy performance certificate available where only individual elements are upgraded (single or standalone measures). Member States shall make simplified procedures for updating an energy performance certificate available where measures identified in a renovation passport are put in place.	11. Member States shall make simplified procedures for updating an energy performance certificate available where only individual elements are upgraded (single or standalone measures). Member States shall make simplified procedures for updating an energy performance certificate available where measures identified in a renovation passport are put in place ***or to reflect the actual energy performance measured by certified digital carbon and energy performance metering systems contemplating the use of numerical indicators for the actual operational greenhouse gas emissions in kgCO2eq/time/m²,*** **using when available real-time 24/7 carbon measurement, as well as for the demand-side flexibility performance of a building expressed in maximum kW of shiftable capacity at different times of the day per season and in kWh of activated volume of energy per season.**	The use of certified digital carbon and energy performance metering system that allow the measurement of the actual energy performance of a building, should allow for a simplified update of the EPC. The measurement of the actual energy performance of a building should contemplate the use of the following numerical indicators to measure the carbon and the demand-side flexibility performance of each building: • kgCO2eq/time/m² that provides figures on the actual carbon footprint of a building in a specific time frame (which could vary from real-time to annual) • maximum kW of shiftable capacity at different times of the day per season, which highlights the maximum power capacity that could be available from the participating assets in a buildings. • kWh of activated volume of energy per season which measures the amount of energy being dispatched from the buildings as a result of its participation in flexibility schemes.

			Altogether, these indicators provide an accurate overview on: • the carbon emissions of a building • the capacity of flexible assets behind the meter • the flexibility volume activated by a building Such ex-ante and ex-post comparisons should also be linked to financial incentives in order to drive smart building renovations and keep track of the contribution of buildings to increase the efficiency of the whole energy system
Article 20 - Inspections	7. 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 31 December 2024. The threshold for the effective rated output shall be lowered to 70 kW by31 December 2029. 8. Member States shall lay down requirements to ensure that from 1 January 2025, new residential buildings and residential buildings undergoing major renovations are equipped with:	7. 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, ***cooling systems*** or systems for combined space heating, ***cooling*** and ventilation of over 290 kW are equipped with building automation and control systems 31 December 2024. The threshold for the effective rated output shall be lowered to 70 kW by31 December 2029. ***The requirements should be considered as economically feasible when the return on investments is inferior to 6 years.*** The building automation and control systems shall be capable of:	The scope (290kW) in the current EPBD is calculated referring to space heating and ventilation (Art. 14, par.4) but it also covers space cooling (Art.15, par.4). The proposed revision does not match the current BACS provisions, which the Member States are already implementing. Finally, to avoid loopholes, the member states should clearly identify, frame and justify the parameters defining economic feasibility as suggested in the Commission's guidelines on EPBD implementation. If self-production of solar energy becomes systematic in line with the solar mandate set out in REpowerEU, BACS must be capable of interfacing with it.

	(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	a. (…) b.(…) ***c. interfacing with solar energy installations, including capable of optimisation of production, of self-consumption and of any connection to the grid.*** 8. Member States shall lay down requirements to ensure that from 1 January 2025, new residential buildings and residential buildings undergoing major renovations 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 and ***demand-side management*** functionalities to ensure optimum generation, distribution, storage and use of energy ***via the deployment of Buildings or Home Energy Management Systems capable to interact with the grid.*** ***(new) (c) the functionality of a certified continuous electronic monitoring that measures and benchmarks the actual***	

		primary and final energy use of a building and its operation greenhouse gas emissions	
Article 26 **Information**	3. Member States shall ensure that guidance and training are made available for those responsible for implementing this Directive. Such guidance and training shall address the importance of improving energy performance, and shall enable consideration of the optimal combination of improvements in energy efficiency, reduction of greenhouse gas emissions, use of energy from renewable sources and use of district heating and cooling when planning, designing, building and renovating industrial or residential areas. Such guidance and training may also address structural improvements, adaptation to climate change, fire safety, risks related to intense seismic activity, the removal of hazardous substances including asbestos, air pollutant emissions (including fine particulate matter) and accessibility for persons with disabilities.	3. Member States shall ensure that guidance and training are made available for those responsible for implementing this Directive. Such guidance and training shall address the importance of improving energy performance, and shall enable consideration of the optimal combination of improvements in energy efficiency, reduction of greenhouse gas emissions, ***activation of demand-side flexibility,*** use of energy from renewable sources and use of district heating and cooling when planning, designing, building and renovating industrial or residential areas. Such guidance and training may also address structural improvements, adaptation to climate change, fire safety, risks related to intense seismic activity, the removal of hazardous substances including asbestos, air pollutant emissions (including fine particulate matter) and accessibility for persons with disabilities.	More than mere energy efficiency improvements, guidance and skills towards the activation of demand-side flexibility should be enabled. In particular, ensuring skills for smart buildings technicians would be crucial to provide installation, servicing and support services, while contributing to increase awareness and information to consumers on existing demand-side flexibility solutions.
Annex I **Common General Framewo**	1. The energy performance of a building shall be determined on the basis of calculated or metered energy use and shall reflect typical energy use for space heating, space cooling, domestic hot water, ventilation, built-in	1. The energy performance of a building shall be determined on the basis of calculated or metered energy use***, including from a building energy management system, submeters, sensors as to allow actual***	The energy performance of a building needs to be as close to real-time as possible, in order to empower consumers to manage accurately their energy. For this to happen, digital devices need

rk For The Calculation Of Energy Performance Of Buildings	lighting and other technical building systems. Member States shall ensure that the typical energy use is representative of actual operating conditions for each relevant typology and reflects the typical user behaviour. Where possible, typical energy use and typical user behaviour shall be based on available national statistics, building codes and metered data. Where metered energy is the basis for calculating the energy performance of buildings, the calculation methodology shall be capable of identifying the influence of the behaviour of occupants and the local climate, which shall not be reflected in the result of the calculation. Metered energy to be used for the purposes of calculating the energy performance of buildings shall require readings of at least hourly intervals and must differentiate between energy carriers. (...) The energy performance of a building shall be expressed by a numeric indicator of primary energy use per unit of reference floor area per year, in kWh/(m2 .y) for the purpose of both energy performance certification and compliance with minimum energy performance requirements. The methodology applied for the determination	***quantification of the building energy consumption based on all available building-related consumption data,*** and shall reflect typical energy use for space heating, space cooling, domestic hot water, ventilation, built-in lighting and other technical building systems ***such as the activation of the demand-side flexibility from all installed Decentralised Energy Resources, including on-site renewables, EV charging, demand-response and storage***. Member States shall ensure that the typical energy use is representative of actual operating conditions for each relevant typology and reflects the typical user behaviour. Where possible, typical energy use and typical user behaviour shall be based on available national statistics, building codes and metered data. Where metered energy is the basis for calculating the energy performance of buildings, the calculation methodology shall be capable of identifying the influence of the behaviour of occupants and the local climate, which shall not be reflected in the result of the calculation. Metered energy to be used for the purposes of calculating the energy performance of buildings shall require readings of at least hourly intervals and must differentiate between energy carriers.	to be installed in a building such as a BEMS, behind the meter assets or sensors. Annex I should ensure that the activation of the flexibility potential from all installed Decentralised Energy Resources, including on-site renewables, EV charging, demand-response and storage are fully recognised in the building's actual energy performance calculation. The energy performance of a building shall be expressed both in primary and final energy use. Final energy use will provide accurate information consumers on they actual energy use, more appropriate to accompany the electrification of buildings, while enabling a better engagement of consumers.

	of the energy performance of a building shall be transparent and open to innovation	(...) The energy performance of a building shall be expressed by a numeric indicator of primary ***and final*** energy use per unit of reference floor area per year, in kWh/(m2 .y)for the purpose of both energy performance certification and compliance with minimum energy performance requirements. The methodology applied for the determination of the energy performance of a building shall be transparent and open to innovation	
	3. 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 operational greenhouse gas emissions produced in kgCO2eq/(m2 .y)	3. For the purpose of expressing the energy performance of a building, Member States ***shall*** define additional numeric indicators of total, non-renewable and renewable primary energy use, and of operational greenhouse gas emissions produced in kgCO2eq/(m2 .y), ***relying on close to real-time information shared by system operators on the greenhouse gas emission content coming from the grid of the electricity supplied in each bidding zone, in line with article 20a§1 of Directive (EU) 2018/2001 [amended RED].***	The operational greenhouse gas emissions creates opportunities for the actual quantification of benefits stemming from the activation of demand-side flexibility (kg CO2/(m2 year). The use of such a numerical indicator should not be optional but be a mandatory and integral part of calculating and expressing the energy performance of a building. Such metric should rely on the close to real time information on the GHG content of electricity supplied and coming from the grid, that system operators should make accessible, in accordance with article 20a of the revised RED.

	4. The methodology shall be laid down taking into consideration at least the following aspects: (a) the following actual thermal characteristics of the building including its internal partitions: (i) thermal capacity; (ii) insulation; (iii) passive heating; (iv) cooling elements; and (v) thermal bridges; (b) heating installation and hot water supply, including their insulation characteristics; (c) air-conditioning installations; (d) natural and mechanical ventilation which may include air-tightness; (e) built-in lighting installation (mainly in the non-residential sector); (f) the design, positioning and orientation of the building, including outdoor climate; (g) passive solar systems and solar protection; (h) indoor climatic conditions, including the designed indoor climate;	4. The methodology shall be laid down taking into consideration at least the following aspects: (a) the following actual thermal characteristics of the building including its internal partitions: (i) thermal capacity; (ii) insulation; (iii) passive heating; (iv) cooling elements; and (v) thermal bridges; (b) heating installation and hot water supply, including their insulation characteristics; (c) air-conditioning installations; (d) natural and mechanical ventilation which may include air-tightness; (e) built-in lighting installation (mainly in the non-residential sector); (f) the design, positioning and orientation of the building, including outdoor climate; (g) passive solar systems and solar protection; (h) indoor climatic conditions, including the designed indoor climate;	As buildings electrification is expected to increase, new electrical loads will add to the energy consumption. However, as of today, it is not sufficiently taken into account. The methodology for calculating the energy performance of buildings should take into consideration the buildings' capabilities to monitor and optimise its energy use, notably through the activation of its demand-side flexibility potential. Monitoring and optimisation through the smart management of energy use are is key to spark continuous improvement of energy performance, especially in regard to the rise of EV charging stations at home. This should therefore be part of the methodology for calculating the energy performance of buildings.

	(i) internal loads. 5. The positive influence of the following aspects shall be taken into account: (a) local solar exposure conditions, active solar systems and other heating and electricity systems based on energy from renewable sources; (b) electricity produced by cogeneration; © district or block heating and cooling systems; (d) natural lighting	(i) internal load ***(j) building automation and technical building management capabilities to monitor, control and optimize energy performance, such as building or home energy management systems;*** 5. The positive influence of the following aspects shall be taken into account: (a) local solar exposure conditions, active solar systems and other heating and electricity systems based on energy from renewable sources; (b) electricity produced by cogeneration; © district or block heating and cooling systems; (d) natural lighting ***(e) demand-side flexibility capability should also be taken into account***	
Annex II **Template for the national building**	Mandatory indicators Targets for annual renovation rates: number and total floor area (m²): (...)	Mandatory indicators Targets for annual renovation rates: number and total floor area (m²): (...)	The list of mandatory indicators to be included in the roadmap for 2030, 2040 and 2050 should be improved by explicitly including targets for the share of RES-E in buildings covering both on-site and from the grid which is currently only listed as an optional indicator. [It should therefore be

renovation plans (b) Roadmap for 2030, 2040, 2050	Contribution to the Union's renewable energy targets in accordance with Directive (EU) 2018/2001 [amended RED] (share, MW generated): — against the overall target for energy from renewable sources — against the indicative target for the share of energy from renewable sources in the building sector	Contribution to the Union's renewable energy targets in accordance with Directive (EU) 2018/2001 [amended RED] (share, MW generated): — against the overall target for energy from renewable sources — against the indicative target for the share of energy from renewable sources in the building sector (...) ***(new) Target for the demand-side flexibility activation in buildings:*** ***- target for increase of share of energy from renewable sources in the building sector covering both on-site and off-site renewable energy, in line with the target for the share of energy from renewable sources in the building sector set in Article 15a(1) of ... [amended RED]***	deleted from the optional indicator column and be moved to the mandatory one.] A target for DSF activation in buildings should also be included as part of the mandatory indicators. Such target will contribute to the achievement of the national minimum target for the reduction of peak demand by 2030 that we proposed to include under article 3 of the Renewable Energy Directive to support the cost-efficient penetration of renewables.
(c) Overview of implemented and planned policies	Policies and measures with regard to the following elements: (…)	Policies and measures with regard to the following elements: (...) l) the promotion of smart technologies and infrastructure for sustainable mobility in buildings ***as well as for the smart energy***	The template should also mandate having policies and measures for digitalisation and smart technologies development in buildings beyond those for mobility in buildings, since they are key to activate the DSF potential of a building, contributing to the achievement of

and measures	l) the promotion of smart technologies and infrastructure for sustainable mobility in buildings;	***management of buildings such as building or home energy management systems capable of interacting with the energy grid***.	operational greenhouse gas emission reduction target. In that regard, Energy management systems be interoperable with the grid, i.e. capable to react to external signals, should be supported. This is key to ensure the achievement of dynamic improvements replying to the needs of the energy system
ANNEX III	The total annual primary energy use of a new or renovated zero-emission building shall be fully covered, on a net annual basis, by – energy from renewable sources generated on-site and fulfilling the criteria of Article 7 of Directive (EU) 2018/2001 [amended RED], – renewable energy provided from a renewable energy community within the meaning of Article 22 of Directive (EU) 2018/2001 [amended RED], or – renewable energy and waste heat from an efficient district heating and cooling system in accordance with Article (24(1) of Directive (EU) …/… [recast EED] […] Only where, due to the nature of the building or lack of access to renewable energy communities or eligible district heating and cooling systems, it is technically not feasible	The total annual primary energy use of a new or renovated zero-emission building shall be fully covered, on a net annual basis, by – energy from renewable sources generated on-site and fulfilling the criteria of Article 7 of Directive (EU) 2018/2001 [amended RED], – renewable energy provided from a renewable energy community within the meaning of Article 22 of Directive (EU) 2018/2001 [amended RED], or – renewable energy and waste heat from an efficient district heating and cooling system in accordance with Article (24(1) of Directive (EU) …/… [recast EED] ***– electricity from renewable sources coming from the local grid certified by real-time Guarantees of Origins, including stored renewable electricity coming from storage***	In line with our recommendation for the 'zero-emission building' definition, renewable sources coming from the grid provided they are certified by a real-time GO should be accounted as part of a zero-emission building. It would ensure that the building is not in isolation and is an active and flexible assets integrated in the energy system, providing services to the grid and supporting local energy system efficiency.

	to fulfil the requirements under the first paragraph, the total annual primary energy use may also be covered by energy from the grid complying with criteria established at national level	***devices or electric vehicles provided they are capable of bidirectional charging.*** […] ~~***Only where, due to the nature of the building or lack of access to renewable energy communities or eligible district heating and cooling systems, it is technically not feasible to fulfil the requirements under the first paragraph, the total annual primary energy use may also be covered by energy from the grid complying with criteria established at national level***~~	
ANNEX V **Template for energy performance certificates**	1. On its front page, the energy performance certificate shall display at least the following elements: (b) the calculated annual primary energy use in kWh/(m2 year); (c) the calculated annual primary energy consumption in kWh or MWh; (d) the calculated annual final energy use in kWh/(m2 year); (e) the calculated annual final energy consumption in kWh or MWh; (f) renewable energy production in kWh or MWh;	1. On its front page, the energy performance certificate shall display at least the following elements: (b) the calculated annual primary energy use in kWh/(m2 year); (c) the calculated annual primary energy consumption in kWh or MWh; (d) the calculated annual final energy use in kWh/(m2 year); (e) the calculated annual final energy consumption in kWh or MWh; (f) renewable energy production in kWh or MWh;	The EPBD requires buildings, both existing and new ones, to be equipped with EV charging points. As 90% of charging takes place at home, buildings are expected to become the pivotal point of an integrated energy system, and a cornerstone of the electric mobility. This is even more relevant as by 2025, all new car and van sales will have to be zero emission. Hence, we recommend to make mandatory – and no longer optional - the display in the energy performance certificates of the number of type charging points for electric vehicles. Regarding the SRI, the indicator is The EU Recovery Plan has already increased and channeled public funding and private investments in buildings energy renovation. At

	(g) renewable energy in % of energy use; (h) operational greenhouse gas emissions (kg CO2/(m2 year)); (i) the greenhouse gas emission class (if applicable). 2. In addition, the energy performance certificate may include the following indicators: (a) energy use, peak load, size of generator or system, main energy carrier and main type of element for each of the uses: heating, cooling, domestic hot water, ventilation and in-built lighting; (b) renewable energy produced on site, main energy carrier and type of renewable energy source; (…) (e) a yes/no indication whether a renovation passport is available for the building; (…) (l) number and type of charging points for electric vehicles; (m) presence, type and size of energy storage systems	(g) renewable energy***, from both on-site and off-site,*** in % of energy use; (h) operational greenhouse gas emissions (kg CO2/(m2 year)); (i) the greenhouse gas emission class (if applicable). ***(j) number and type (simple, smart or bidirectional) of charging points for electric vehicles;*** ***(k) the smart readiness indicator score, for buildings which must be equipped with it.*** ***(l) renewable energy produced on site or off-site, main energy carrier and type of renewable energy source;*** ***(m) level of digitalisation in the building e.g., smart meters, sub-meters, building energy management systems, necessary to activate the demand-side flexibility coming from decentralised energy resources*** ***(n) the demand-side flexibility performance expressed in maximum kW of shiftable capacity at different times of the day per season and in kWh of activated volume of energy per season.***	the same time, The lack of generally accepted key performance indicators, metrics and benchmarks providing a clear and comprehensive economic rationale for decarbonisation in buildings hinders the renovation as, at the current state, they are often grounded on simplified business modelling approaches based merely on payback expectation. Currently, the financial sector lacks sufficient indicators to compare energy efficiency investment projects with other capital market investments, as there is no generally accepted quantification available related to the increase of the building's intrinsic and real estate value when performing energy renovation. The building value chain is incredibly fragmented and the private sector needs incentives to invest in the renovation and the solutions with the highest impact. The mandatory display of the SRI as part of the EPC will drive further uptake and investments for digital solutions: they are a "game changer": with the same level of investment, we could dramatically reduce the estimated time by deploying digital technologies. (For the same budget, digital can renovate between 10 to 15m2 while traditional technologies can only achieve 1m2.) As Member States are implementing BACS verification checks in buildings falling under Art

		2. In addition, the energy performance certificate may include the following indicators: (a) energy use, peak load, size of generator or system, main energy carrier and main type of element for each of the uses: heating, cooling, domestic hot water, ventilation and in-built lighting; ~~*(b) renewable energy produced on site, main energy carrier and type of renewable energy source;*~~ (…) (e) a yes/no indication whether a renovation passport is available for the building; (…) ~~*(l) number and type of charging points for electric vehicles;*~~ (m) presence, type and size of energy storage systems *(…)* ***(r) a yes/no indication whether the building complies with Building Automation and Control System requirements set out under EPBD Art. 20***	20, it would be valuable to aggregate these under the EPC scheme. Furthermore, this would promote the uptake of these efficiency-increasing technologies. Besides, the EPC should take account of the actual energy performance of a building contemplating the use of the following numerical indicators to measure the actual carbon and the demand-side flexibility performance of each building: • kgCO2eq/time/m² that provides figures on the actual carbon footprint of a building in a specific time frame (which could vary from real-time to annual) • maximum kW of shiftable capacity at different times of the day per season, which highlights the maximum power capacity that could be available from the participating assets in a buildings. • kWh of activated volume of energy per season which measures the amount of energy being dispatched from the buildings as a result of its participation in flexibility schemes. Altogether, these indicators provide an accurate overview on: • the carbon emissions of a building

			• the capacity of flexible assets behind the meter • the flexibility volume activated by a building The use of such indicators has been tested by smartEn through demonstration trials to quantify the actual carbon and flexibility performance of buildings. More details can be found in this smartEn report.
ANNEX VII **Comparative methodology**	The comparative methodology framework shall require Member States to: – define reference buildings that are characterised by and representative of their functionality and geographic location, including indoor and outdoor climate conditions. The reference buildings shall cover residential and non-residential buildings, both new and existing ones;, – define energy efficiency measures to be assessed for the reference buildings. Those may be measures for individual buildings as a whole, for individual building elements, or for a combination of building elements; – assess the final and primary energy need and resulting emissions of the reference	The comparative methodology framework shall require Member States to: – define reference buildings that are characterised by and representative of their functionality and geographic location, including indoor and outdoor climate conditions. The reference buildings shall cover residential and non-residential buildings, both new and existing ones;, – define energy efficiency measures to be assessed***, including demand-side flexibility measures in line with the Energy Efficiency First Principle,*** for the reference buildings. Those may be measures for individual buildings as a whole, for individual building	the comparative methodology framework shall enable Member states to determine the energy and emission performance of buildings and the costs of measures in order to identify the cost-optimal level. The cost-optimal level determination should take into account the contribution of demand-side flexibility to system efficiency. It should be aligned with the Energy Efficiency First principle that identified demand-side flexibility as part of the measures needed to implement this principle.

	buildings with the defined energy efficiency measures applied;	elements, or for a combination of building elements; – assess the final and primary energy need and resulting emissions of the reference buildings with the defined energy efficiency measures applied; ***– assess the contribution of demand-side flexibility that contributes to system efficiency;***	

About smartEn - Smart Energy Europe

smartEn is the European business association integrating the consumer-driven solutions of the clean energy transition. We create opportunities for every company, building and car to support an increasingly renewable energy system. Our membership consists of the following companies:

The positions expressed in this document represent the views of smartEn as an association, but not necessarily the opinion of each specific smartEn member.

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