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ANNEX 11

ANNEX

to the

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Approval of the content of the draft Commission Notice providing guidance on new or substantially modified provisions of the recast Energy Performance of Buildings Directive (EU) 2024/1275

Fossil fuel boilers (Article 13, Annex II)

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to the

Commission Notice providing guidance on new or substantially modified provisions of the recast Energy Performance of Buildings Directive (EU) 2024/1275

Fossil fuel boilers (Article 13, Annex II)

1. INTRODUCTION

Space heating and domestic hot water generation[1] accounts for more than three quarters of the final energy consumed by EU households[2]. Almost two thirds of that energy use is still based on fossil fuels, mostly natural gas[3]. The decarbonisation of the building sector therefore depends on phasing out the use of fossil fuels for heating from a variety of appliances, most notably boilers.

2. SUMMARY OF THE LEGAL PROVISIONS

The recast Energy Performance of Buildings Directive (the 'recast EPBD')[4] sets a long-term vision for achieving a zero-emission building stock by 2050 and steers Member States in their efforts to this end. It provides the framework for the gradual phase-out of fossil fuels in boilers and requires Member States to set out policies and measures to achieve this in 2040.

The recast EPBD contains several provisions related to the phase-out of fossil fuels:

- Article 17(15) mandates the phasing out of **financial incentives** for stand-alone boilers powered by fossil fuels[5].
- Article 3 / Annex II provides that Member States' national building renovation plans (NBRPs) must include **policies and measures** with a view to a complete phasing out fossil fuel boilers by 2040, setting 2040 as an indicative target date for phasing out fossil fuel boilers**.**
- Article 13(1) contains a **clear legal basis for Member States to set requirements** for heat generators based on GHG emissions, share of renewables or type of fuel. In other words, it contains a legal basis for national bans.
- Article 13(7) **obliges Member States to make best efforts** to phase out stand-alone boilers powered by fossil fuels in existing buildings, in line with the national phase-out plans for fossil fuel boilers.
- Article 13(8) stipulates that "*The Commission shall issue guidance on what qualifies as a fossil fuel boiler."* While the recast EPBD does not define 'fossil fuel boiler', the notion is used in Article 13(7) and (8), Article 29(2) and Annex II.

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1 Hereafter space heating and domestic hot water generation is referred to as "heating".

2 In 2022 space heating accounted for 63.5% of the final energy consumption in the residential sector and water heating accounted for 14.9%. See Energy use in EU households in 2022 lowest since 2016 - Eurostat (europa.eu).

3 Based on Eurostat data ([nrg_d_hhq__custom_14333299] and [nrg_bal_s__custom_14295506]) at EU level in 2022 about 60% of space and water heating in households came from direct (boilers onsite) and indirect (district heating) use of fossil fuels. In 2022 direct use of fossil fuels for space and water heating in households accounted for more than 80% of individual heating in Ireland, Luxembourg, the Netherlands and Belgium but less than 10% in Sweden, Finland, Estonia, and Malta.

4 Directive (EU) 2024/1275.

5 See Commission Notice on phasing out financial incentives for stand-alone boilers powered by fossil fuels under the recast Energy Performance of Buildings Directive.

3. PURPOSE

The legal provisions summarised above and the notion of **'**fossil fuel boilers' must be seen in the context of the recast EPBD objective to set a long-term vision for achieving a zero-emission building stock by 2050.

This annex provides guidance on what qualifies as a fossil fuel boiler, pursuant to the obligation under Article 13(8). It provides guidance on how Member States may comply with (i) the requirement for the NBRPs to include policies and measures with a view to a complete phase-out of fossil fuel boilers by 2040 (Article 3 and Annex II(c) point f); and (ii) the obligations to strive to replace stand-alone boilers powered by fossil fuels in existing buildings, in line with the national phase-out plans for fossil fuel boilers (Article 13(7)).

4. GUIDANCE ON THE NOTION OF FOSSIL FUEL BOILER AND NATIONAL PHASE-OUT PLANS

4.1. Relevant definitions

Pursuant to Article 2(48) of the recast EPBD, **'boiler'** means the combined boiler body-burner unit, designed to transmit to fluids the heat released from burning[6].

'Fossil fuels' are not defined in the recast EPBD but are understood in the same manner as in Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action, which defines in Article 2(62) 'fossil fuel' as 'non-renewable carbon-based energy sources such as solid fuels, natural gas and oil'.

'Renewable fuels' as defined in Article 2(22a) of the amended Renewable Energy Directive[7], i.e. 'biofuels, bioliquids, biomass fuels and renewable fuels of non-biological origin' are not considered fossil fuels.

4.2. Interpretation

The notion of 'fossil fuel boilers' is particularly relevant for the national policies and measures with a view to a complete phasing out of fossil fuel boilers by 2040. Member States need to include these policies and measures in their NBRPs pursuant to Annex II(c) point f. These policies and measures are referred to as 'national phase-out plans for fossil fuel boilers' in Article 13(7). The wording of Annex II(c) point f indicates that the long-term objective is 'the phasing out of fossil fuels in heating and cooling'. In the context of the phasing out of 'fossil fuel boilers', the objective is therefore phasing out the combustion of fossil fuels in boilers for heating. For this reason and in line with the technology neutrality of the EPBD**, it is the fuel that is used in the boiler that defines whether a boiler is a 'fossil fuel boiler' or not.** In that respect, the notions of 'fossil fuel boiler' and 'boiler powered by fossil fuels' (used in Article 13(7) and Article 17(15)) are interchangeable. With respect to the timeframe for the policies and measures to be included in the NBRPs, **it is the fuel used in the boiler in 2040 that defines whether in 2040 a boiler is to be considered a 'fossil fuel boiler' or not.**

Phasing out the use of fossil fuels in boilers in buildings can be achieved through different measures at national, regional and/or local level, including combinations of such measures. Three possible categories of such measures are set out in the points below.

- Replacing, partly or completely, individual boilers with alternative solutions such as heat pumps, solar thermal installations, or efficient district heating.

6 This definition covers space heaters, water heaters and combinations of such in buildings.

7 Directive (EU) 2018/2001 as amended by Directive (EU) 2023/2413.

- Replacing the fossil fuels burnt in boilers with renewable fuels such as biofuels, bioliquids, biomass fuels and renewable fuels of non-biological origin. In particular, biomethane can be used without the need for any changes in the end-user equipment employing the same pipeline and storage infrastructure.
- Combinations of measures from the above two broad categories.

4.3. Planning obligation

The recast EPBD requires Member States to include policies and measures in their NBRPs with a view to a complete phasing out of fossil fuel-boilers by 2040. 2040 is an indicative target date; the obligation on Member States is to set out **credible policies and measures** with a view to achieving a complete phasing out of fossil fuel boilers by that year.

To this end, **Member States need to plan policies and measures to (i) replace the fossil fuels that boilers combust; and/or (ii) replace the boilers themselves**. Due to the diversity of the energy systems across Member States, the strategy and pace of decarbonisation of heating will be set at national, regional and/or local level in view of the decarbonisation objective in 2040. This strategy supports compliance with the requirement of the Renewable Energy Directive for Member States to contribute to an EU-wide share of 49% renewables in the building sector by 2030[8].

This notice provides **examples** of pathways and measures that – on their own or combined – can be the basis for a national or regional implementation plan to (i) replace the fossil fuels that boilers combust and/or (ii) replace the boilers themselves. Member States are advised to take the following methodological steps when drawing up their national phase-out plans, without any obligation to deploy all steps:

- consider whether and which measures to take for the full decarbonisation of the gas grid to the extent it will be used to heat or cool buildings in 2040;
- estimate the share of boilers in the country that would be burning renewable fuels in 2040;
- draw up a plan for phasing out the remaining boilers that would be burning fossil fuels in 2040.

The above list is not ranked by order of preference, but merely reflects a move from the energy system perspective to the individual boiler perspective. National circumstances and policy choices will determine which pathways will be deployed and through what measures. As with other aspects of the NBRPs, the Commission will assess to which extent the measures planned and reported offer realistic and achievable prospects for a complete phasing out of fossil fuel boilers by 2040, taking into consideration both (i) the degree to which these measures account for the trends across all energy vectors and energy end-uses; and (ii) developments in the relevant infrastructure.

4.3.1. Measures for the full decarbonisation of the gas grid to the extent it will be used to heat buildings in 2040

Decarbonisation of the gas grid could play a role in phasing out fossil fuels from heating and ensuring that all boilers in buildings combust 100% renewable fuels.

To the extent that Member States intend to rely on the decarbonisation of the gas grid to phase out fossil fuels from heating buildings, Member States will need to:

[8] In the buildings sector, an indicative target of 49% for the share of renewable energy by 2030, in addition to binding national obligations to increase the share of renewables in heating and cooling on average by 0.8 percentage points per year until 2025 and by 1.1 percentage points from 2026 to 2030, and indicative targets for higher annual increases.

- decide whether and to what extent decarbonisation of the gas grid should contribute to the decarbonisation of buildings;
- ensure the sufficient production/supply of sustainable renewable fuels[9] and their large-scale and cost-effective injection into the grid[10];
- take into consideration (i) energy-infrastructure developments across all energy vectors, (including production, transport, distribution and storage for each type of renewable fuel); and (ii) the decarbonisation plans and pathways of all end-use sectors.

Energy efficiency measures to reduce the consumption of gas for heating in buildings would greatly facilitate the decarbonisation of the gas grid by reducing the amount of natural gas that needs to be replaced by renewable gases.

Decarbonising the gas grid could rely on a commitment to progressively increase the share of renewables being fed into the grid. Examples of policies and measures to ensure such a progressively increasing share of renewables in the natural gas grid include **blending obligations, gas network transformation plans drawn by distribution system operators (DSOs) and/or other targets**[11]. Such measures need to be sequenced, financed and monitored.

Whether or not network-based measures on their own can be sufficient to decarbonise the heating of buildings depends, in part, on the decarbonisation pathways of other end-use sectors. For example, whether a gas grid can be completely decarbonised by using renewable gas available in sufficient quantities depends on the overall demand for renewable gas, which in turn depends on developments in gas consumption in buildings and in other end-uses.

4.3.2. Estimating the share of heating appliances that will burn renewable fuels in 2040

Taking into consideration the expected level of decarbonisation of the gas grid, Member States can estimate **the expected share of the boiler fleet that will combust renewable fuels in 2040** and thus not be considered as 'fossil fuel boilers', both for on-grid and off-grid boilers[12]. This forecast would provide transparency as to the role of renewable fuels in the heating of buildings in 2040.

In doing this, national authorities need to give useful effect and deliver on the objective to phase out fossil fuels in heating in buildings with a view to a complete phase-out of fossil fuel boilers by 2040. Where relevant, national authorities should ensure **consistency with – and coordination between – existing strategic plans**, including in particular on heat planning, infrastructure planning across energy vectors, and building and boiler regulations. This consistency and coordination should focus on planning at national and/or regional level, in particular through:

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9 In line with Article 29 of Directive (EU) 2018/2001

10 Some countries already have high shares of biomethane in their grids (Denmark achieved 37.9% in November 2023), others are at earlier development stages. While the full utilisation of the sustainable potential of biomethane could cover a growing share of current natural gas demand in buildings and, in some countries, even exceed annual demand requirements for natural gas, this is not happening at a scale that suggests that biogas and biomethane are set to become business-as-usual in heating in buildings. In the case of hydrogen, a meta-review of 54 studies on hydrogen heating concludes that the scientific evidence does not support the widespread use of hydrogen for heating buildings, see A meta-review of 54 studies on hydrogen heating.

11 For example, in the German GEG there is a reference to binding transformation plans for DSO and the DSO needs to compensate customers if hydrogen networks cannot be built.

12 As indicated in the Commission notice on phasing out financial incentives for stand-alone boilers powered by fossil fuels under the recast Energy Performance of Buildings Directive (C/2024/6206), for off-grid boilers not to be considered powered by fossil fuels', the competent authorities in Member States need to require and verify in a robust and credible manner that in reality the unit will operate on renewable fuels at the time of installation and also over its lifetime, given that the beneficiary remains in control of the fuel used in an off-grid boiler during that off-grid boiler's entire lifetime.

- the National Energy and Climate Plans (NECPs)[13];
- the network development plans at distribution level that will take into consideration heating and cooling plans[14, 15];
- local heating and cooling plans in municipalities, particularly those with a population greater than 45 000[16];
- the comprehensive national heating and cooling assessments[17] and the assessment of the potential to use renewable energy and waste heat and cold in the heating and cooling sector[18];
- the National plans to support EU action to phase out Russian gas[19].

In particular, compliance with all the provisions of the Energy Performance of Buildings Directive, as well as with the obligations and provisions of the Renewable Energy Directive, the Energy Efficiency Directive and the Electricity Directive will help achieve the phase-out of fossil fuel boilers. Success in replacing fossil fuels in the heating of buildings with other heating solutions at the individual and/or collective/ district level will depend on choices by national, regional and local authorities and operators in implementing the interlinked provisions in the body of energy legislation.

As an example, the revised Renewable Energy Directive requires Member States to assess the potential of renewable energies and waste heat for heating and cooling. This assessment must also (i) include an analysis of areas suitable for the development of renewable energy and waste heat for heating and cooling at low ecological risk and areas with the potential for small-scale household projects using these technologies and (ii) consider available and economically feasible technology for industrial and domestic uses of renewable energy and waste heat for heating and cooling in order to set out milestones and measures (Article 23(1b)).

The revised Renewable Energy Directive also requires coordinated planning of electricity and district heating systems. Member States must put in place a framework under which electricity distribution system operators will assess, at least once every four years and in cooperation with the operators of district heating and cooling systems in their respective areas: (i) the potential for district heating and cooling systems to provide balancing and other system services, including demand response and thermal storage of excess electricity from renewable sources; and (ii) whether the use of the identified potential would be more resource- and cost-efficient than alternative solutions (Article 24(8)). In addition, Member States must ensure that electricity transmission and distribution system operators: (i) take due account of the results of this assessment in grid planning, grid investment and infrastructure development in their respective territories; and (ii) facilitate coordination between operators

13 Regulation (EU) 2018/1999.

14 For electricity distribution the network development plans are prepared every 2 years (Article 32(3) of Directive EU 2019/944); for hydrogen distribution and for gas decommissioning network development plans are prepared every four years (Article 24(8) of Directive EU 2018/2001.

15 There is a requirement for consistency of the distribution network development plans with the Union-wide Ten-Year Network Development Plans (TYNDPs). There are also requirements for cooperation among system operators (DSO-TSO and among DSOs in electricity, gas, etc.) (Article 31(9) of Directive EU 2019/944). Directive (EU) 2024/1788 places the responsibility on Member States to ensure that DSOs develop plans for decommissioning of natural gas networks in the event that there is a reduction in demand for natural gas. The plans should be based on the heating and cooling plans in the Energy Efficiency Directive.

16 Article 25(6) of Directive (EU) 2023/1791.

17 Article 25(1) and Annex X of Directive (EU) 2023/1791.

18 Directive EU 2018/2001.

19 COM (2025) 440 "Roadmap towards ending Russian energy imports".

of district heating and cooling systems and electricity transmission and distribution system operators. This assessment and coordination may be extended to gas networks.

Local heating and cooling plans, pursuant to Article 25(6) of the Energy Efficiency Directive must include an analysis of heating and cooling appliances and systems in the local building stock.

The next comprehensive national heating and cooling assessments, as part of the integrated national energy and climate plans, are due by 1st January 2029. These plans must provide information on the heating and cooling sector on an aggregated level, but the analysis of economic potential in those assessments may provide insights into the deployment of renewable energy in heating, further complemented with information on measures to be taken to promote the use of heating and cooling appliances that use renewable energy.

Heating and cooling plans need to become part of the scenarios used for network development at all levels and across all energy sectors[20]. For example, replacing gas boilers with heat pumps or district heating will play a key role in determining the need for electricity or heat networks, and this needs to be reflected in the demand scenarios set out in the electricity DSOs' network development plans (DSO NDPs) but also in the gas DSOs' NDPs. These scenarios for network development must be consistently integrated into the national plans (transmission NDPs) and EU plans (the ten-year network development plans).

4.3.3. Drawing up a plan for phasing out boilers that will burn fossil fuels in 2040

Replacing individual boilers that would burn fossil fuels with other appliances may be:

- a complementary pathway, in addition to decarbonising the gas grid, in order to reduce gas demand to a level that can be provided by renewable fuels; or
- a stand-alone pathway to phasing out fossil fuel combustion in boilers by 2040.

In either case, Member States need to plan policies and measures to gradually phase out these boilers that would still burn fossil fuels in 2040 and replace them with alternative heating solutions, such as heat pumps, solar thermal solutions, district heating or direct use of waste heat.

The recast EPBD provisions on zero-emission buildings require that no fossil fuel combustion take place in **new buildings** at the latest from 2030[21]. For **existing buildings**, Member States need to draw up measures that will move from progressively reducing the reliance on fossil fuel boilers to setting out a plan the ultimate aim of which is to completely phase out such boilers and replace them with alternative heating solutions.

When it comes to replacing boilers in existing buildings, Member States may deploy requirements set pursuant to the recast EPBD. Pursuant to the first subparagraph of Article 13(1), Member States must set system requirements for technical building systems (which include heating systems) to be installed in buildings. In addition, the third subparagraph of Article 13(1) of the recast EPBD introduces a clear legal basis for national bans on fossil fuel boilers by introducing requirements related to the greenhouse gas emissions, or to the type of fuel used by heat generators or to the minimum part of renewable energy used for heating at building level.

Examples of such requirements that may be introduced at national level with a view to phasing out boilers include:

20 Regulation EU 2022/869.

21 Article 7(1) and Article 11(1).

- a maximum specific consumption at system level (in kWh/m^2 for heating);
- thresholds for a minimum share of renewables in a heat generator (in % of the energy output);
- emission thresholds (in gCO_2/kWh output).