## Reporting template of the European Union on the Member States application of national definitons of Nearly Zero Energy Buildings

Items and assessment categories which are mandatory due to the EPBD or RED are explained or referenced by an example in the column "EPBD / RED requirement". The source is given in the column to its left. Additional typical definition categories that are not mandatory EPBD requirements are included to give the possibility to explain what is defined beside and beyond the EPBD and RED. These categories are differentiated by colour (dark grey letters). For each aspect a number of possible choices is given in a combo box. Explanatory texts and figures are shown by a click in the according cells. Comments and explanations should be entered in the cells on the right.

| **1. General information** | | | | |
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| **Country** | | | United Kingdom | |
| **Name of regulation, directive, certification scheme** | | | **Building Regulations Energy Efficiency Requirements: England (Part L); Wales (Part L); Scotland (Section 6); Northern Ireland (Technical Booklet F)** | |
| **Editor of regulation, directive, certification scheme** | | | HM Government; Welsh Government; Scottish Government; Northern Ireland Assembly | |
| **Year of introduction of current version** | | | 2014; 2014; 2013; 2014 | |
| **Energy benchmark of current version** | | | efficient buildings | |
| **Integration and consideration in national directive** | | | will be considered | |
| **2. Field of application** | **EPBD / RED requirement** | **EPBD / RED reference** | **Content in Member States national definition** | **Explanation, comment, source** |
| **2.1 building category** | *Member States shall ensure that all new buildings are nearly zero- energy buildings by 31 December 2020 respreciveley after 31 December 2018 (occupied and owned by public authorities). For the purpose of the calculation buildings should be adequately classified into the [...] categories.* | EPBD article 9.1a/b | residential/non-residential | Regulation only makes a distinction between residential and non-residential buildings, with two separate tools comprising the National Calculation Methodology (NCM) - SAP for dwellings and SBEM for non-domestic buildings (including defined residential uses). The NCM for calculating energy performance targets for new non-domestic buildings takes into account use of building so making distinction between building classifications for the purpose of setting overall performance targets. Recent editions of the NCM were reviewed and refined to better address calculation of the performance of very low energy buildings and are therefore considered suitable for calculations relating to nZEB. |
| ▪ **single-family houses** | | | included in directive | |
| ▪ **apartment blocks** | | | included in directive | |
| ▪ **offices** | | | included in directive | |
| ▪ **educational buildings** | | EPBD annex I | included in directive | |
| ▪ **hospitals** | | | included in directive | |
| ▪ **hotels and restaurants** | | | included in directive | |
| ▪ **sports facilities** | | | included in directive | |
| ▪ **wholesale and retail trade service buildings** | | | included in directive | |
| ▪ **other types of energy-consuming buildings** | | | possible | |
| **2.2 new/retrofit buildings** | *New, and existing buildings that are subject to major renovation, should meet minimum energy performance requirements adapted to the local climate.* | EPBD preamble recital 15 | new and retrofit | National Building Regulations set minimum energy efficiency requirements for new buildings and when building work is carried out to existing buildings. There is a national renovation strategy being led by the UK Department for Energy and Climate Change which sets out the UK policies to stimulate investment in energy efficiency building renovation. |
| | *Member States shall furthermore [...] stimulate the transformation of buildings that are refurbished into nearly zero-energy buildings.* | EPBD article 9.2 | | |
| **2.3 private/public buildings** | *Member States shall ensure that by 31 December 2020, all new buildings are nearly zero- energy buildings and after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.* | EPBD article 9.1a/b | private/public | Building regulations do not differentiate buildings by private or public sector occupancy. It is mandatory that all new central government buildings (including departments, executive agencies, and arms length bodies for which are they are responsible) must be built to a standard of BREEAM excellent (or equivalent) and refurbishment of existing central government buildings with a cost in excess of £500k must be carried out to a standard of BREEAM very good (or equivalent). In Wales all public buildings receiving funding from the Welsh Government are required to achieve BREEAM Excellent. Building Regulations in both England & Wales require that all new buildings occupied by public authorities must be NZEB |
| **2.4 In case that a additional or separate definiton(s) exists (e.g. for different building types), please add a new sheet by using the button on the right (to use this option Excel macros need to be activated).** | | | click to add new sheet | |
| **3. Energy Balance / Calculation** | | | | |
| **3.1 balance type** | *[...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources* | EPBD article 2.2 | energy demand vs. energy generation | The Building Regulations set a target for the amount of carbon dioxide which new buildings must not exceed, this being demonstrated by calculation through the NCM. The regulations do not specifically mandate the the materials, technologies or solutions that a developer must use although they do emphasise the importance of good fabric insulation, efficient services and effective control of energy use. In order to meet these progressively strengthening standards, developers are increasingly considering use of renewable energy systems, such as solar panels. Where generating technologies are used, their contribution can be used within the NCM to directly offset (reduce) calculated energy demand within the building. |
| | *Energy performance of a building means the calculated or measured amount of energy needed to meet the energy demand [...]* | EPBD article 2.4 | | |

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| **3.2 physical boundary** | *This directive lays down requirements as regards the common general framework for [...] buildings and building units.*<br>*[…] building' means a roofed construction having walls, for which energy is used to condition the indoor climate.* | EPBD article 1.2a<br><br>EPBD article 2.1 | building unit | The energy efficiency requirements of the Building Regulations 2010 (England) apply to roofed constructions having walls that use energy to condition indoor climate so this is in line with EU EPBD definition. Regulation 35 defines "building"as a whole or parts of it that have been designed or altered to be used separately – this is in line with definitions of both "building" and "building unit" in EU EPBD.Building Regulations applicable to Wales utilise the same definitions. |
| **3.3 system boundary demand / energy uses included** | | | | |
| ▪ **space heating, domestic hot water** | *[...] energy performance of a building means the calculated or measured 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.* | EPBD article 2.4 | considered | Fixed space heating and hot water included in national methodology for calculating the energy performance of buildings. |
| ▪ **ventilation, cooling, air conditioning** | | | considered | Fixed ventilation and air conditioning included in national methodology for calculating the energy performance of buildings |
| ▪ **auxiliary energy** | | | considered | Auxiliary energy for fixed heating and hot water and ventilation and cooling included in national methodology for calculating the energy performance of buildings |
| ▪ **lighting** | | | considered | Fixed lighting included in national methodology for calculating the energy performance of buildings |
| ▪ **plud loads, appliances, IT** | | | not considered | Although plug and appliance loads not directly included in national methodology for calculating the energy performance of buildings the heat gains from them are taken into account |
| ▪ **central services** | | | considered | Central services e.g. common heating systems in apartment buildings included in national methodology for calculating the energy performance of buildings |
| ▪ **electric vehicles** | | | not considered | There is no explicit requirement for electric vehicles under EPBD Article 2.4 or Annex 1. |
| ▪ **embodied energy** | | | not considered | There is no explicit requirement for embodied energy under EPBD Article 2.4 or Annex 1. |
| **3.4 system boundary generation / renewable energy sources included** | | | | |
| ▪ **generation on-site** | *[...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby.*<br>*[...] energy from renewable sources means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.* | EPBD article 2.2<br><br>EPBD article 2.6 | considered | Building Regulations already set maximum carbon dioxide emissions targets for all new buildings, based upon an assessment of energy demand and the carbon impact of chosen fuel sources are allowed to emit. In meeting these targets, it is widely recognised practice to first seek top reduce energy demand (through effective insulation) deliver that demand through highly efficient technicla building systems (heating, lighting, etc) effectively controlled.<br>Additionally, to meet progressively strengthened standards, developers are increasingly also installing renewable energy systems, such as on site generation, as a means of further offsetting energy demand.<br>The current edition of the NCM will only consider the contribution of renewables that are either located on the building or development site or connected directly to is by a dedicated supply ('private wire'). The exception to this is the contribu |
| ▪ **generation near by** | *[...] minimum levels of energy from renewable sources [...] to be fulfilled, inter alia, through district heating and cooling [...].* | EPBD article 13.4 | not defined | |
| ▪ **generation external** | | | not defined | |
| ▪ **crediting** | | | not defined | |
| **3.5 balance period / calculation step** | *[…] The methodology for calculating energy performance should be based not only on the season in which heating is required, but should cover the annual energy performance of a building […]*<br>*[…] requirements should be set with a view to [...] the cost-optimal balance between the investments involved and the energy costs saved throughout the lifecycle of the building [...]* | EPBD preamble recital 9<br><br>EPBD preamble recital 10 | yearly | The NCM calculates performance on a yearly basis, though the calcualtion itself takes seasonal variation in to consideration through use of different parameters applied on applied across each month of the year.<br>Emissions are measured in units of kilograms of carbon dioxide generated per square metre of floor area per year. Fabric energy efficiency and energy demand/primary energy consumption are measured in kWh per square metre per year |
| **3.6 monthly accounting limitation** | | | monthly source based end energy crediting | The NCM uses seasonal monthly energy balance for calculating compliance against new building energy performance targets, with any overall contribution from generating technologies being considered across the reporting year. |
| **4. Accounting System** | | | | |
| **4.1 normalization** | *[…] including a numerical indicator of primary energy use expressed in kWh/m² per year* | EPBD article 9.3a | conditioned area | Conditioned floor area is used in calculation methodolgy and consistent with EU EPBD definition of building. Treated floor area is what is used in English and Norhern Irish Building Regulations. |

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| **4.2 primary metric** | *The energy performance of a building shall be expressed in a transparent manner and shall include an energy performance indicator and a numeric indicator of primary energy use, based on primary energy factors per energy carrier, which may be based on national or regional annual weighted averages or a specific value for on- site production.*<br>*[...] including a numerical indicator of primary energy use expressed in kWh/m 2 per year.*<br>*[…] primary energy' means energy from renewable and non- renewable sources which has not undergone any conversion or transformation process* | EPBD Annex 1<br><br>EPBD 9.3a<br><br>EPBD article 2.5 | (equivalent) carbon emissions | The Building Regulations set limits for the amount of carbon dioxide that new buildings are allowed to emit. The calculation methodology also reports indicator of primary energy use in line with EU EPBD requirements |
| **4.3 secondary metric** | | | primary / source energy (renewable part not | |
| **4.4 symmetric or asymmetric weighting** | | | symmetrical weighting | Both waited with the same, e.g a low carbon emission rate will not offset a high primary energy demand. Both are counted towards delivering energy performance requirements |
| **4.5 time dependent weighting** | *Primary energy factors […] may be based on national or regional yearly average values and may take into account […] European standards* | EPBD 9.3a | static conversion factors | CO2 and primary energy factors can be found in National Calculation Methodology. See SAP Table 12. Paper outlining development methodolgy is available online at: http://www.bre.co.uk/filelibrary/SAP/2012/STP11-CO204_emission_factors.pdf |
| **5. Further requirements** | | | | |
| **5.1 fraction of renewables** | *Member States shall introduce [...] appropriate measures [...] to increase the share of all kinds of energy from renewable sources in the building sector [...]. By 31 December 2014, Member States shall [...] require the use of minimum levels of energy from renewable sources in new buildings and in existing buildings [...]*<br>*[...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources [...]* | RED article 13.4<br><br>EPBD article 2.2 | not defined | No guidelines are published on the fraction of energy demand to be delivered from renewables.<br>The Building Regulations set a target for the amount of carbon dioxide which new buildings must not exceed, this being demonstrated by calculation through the NCM.<br>The regulations do not specifically mandate the the materials, technologies or solutions that a developer must use although they do emphasise the importance of good fabric insulation, efficient services and effective control of energy use. **In order to meet these progressively strengthening standards, developers are increasingly considering use of renewable energy systems, such as solar panels.** Where generating technologies are used, their contribution can be used within the NCM to directly offset (reduce) calculated energy deman |
| **5.2 temporal performance** | | | | |
| ▪ **load match** | | | not defined | |
| ▪ **grid interaction** | | | not defined | |
| **5.3 energy performance or rating requirements** | *nearly zero-energy building means a building that has a very high energy performance [...]. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources […]*<br>*The energy performance [...] shall [...] include an energy performance indicator and a numeric indicator of primary energy use [....]* | EPBD article 2.2<br><br>EPBD Annex 1 | defined | This information is now incorporated in the UK National Calculation Methodologies. It can be found on the domestic Energy Performance Certificate (EPC) in use inall four UK administrations. The EPC shows a dwelling's current primary energy use per square metre of floor area. We will ensure that this information is taken into account when looking at increasing the number of nearly zero energy buildings. |
| ▪ **energy performance indicator** | | | | |
| ▪ **numeric indicator of primary energy use** | | | | |

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| **5.4** | **general framework / prescriptive requirements** | *The methodology shall [...] take into consideration: thermal characteristics (thermal capacity, insulation, passive heating, cooling elements, and thermal bridges), heating installation and hot water supply, air-conditioning installations, natural and mechanical ventilation, built-in lighting, the design, positioning and orientation of the building, outdoor climate, passive solar systems and solar protection, [...], internal loads* | EPBD Annex 1 | defined | The UK National Calculation Methodology, SAP for homes and SBEM for non domestic buildings, takes into consideration all of the aspects set out in EU EPBD Annex 1 |
| **5.5** | **definition of comfort level & IAQ requirements (for winter and summer season, beside other national directives)** | *This Directive [...] takes into account [...] indoor climate requirements [...]*<br>*The methodology shall [...] take into consideration: [...] indoor climatic conditions [...]*<br>*That includes […] indoor air-quality, adequate natural light […].* | EPBD article 1.1<br><br>EPBD Annex 1<br><br>EPBD preamble recital 9 | defined | The UK National Calculation Methodology, SAP for homes and SBEM for non domestic buildings, takes into consideration indoor climatic conditions as set out in set out in EU EPBD Annex 1. National Building Regulations control minimum ventilations rates for buildings to maintain good indoor air quality. |
| **5.6** | **monitoring procedure** | *[…] energy performance of a building means the calculated or measured amount of energy needed […]*<br>*Member States shall encourage the introduction of intelligent metering systems […] and the installation of automation, control and monitoring systems […]* | EPBD article 2.4<br><br>EPBD article 8.2 | defined | Smart Meters will be complusory before 2020 and English, Welsh and Northern Irelands Building Regulations also require sub metering for non domestic buildings and automated monitoring equipment for larger buildings. Similar measures exist within Scottish building regulations |