

## Reporting template of the European Union on the Member States application of national definitions 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				
Country			Croatia	
Name of regulation, directive, certification scheme				
Editor of regulation, directive, certification scheme				
Year of introduction of current version			2013	
Energy benchmark of current version			nearly zero energy 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
<b>2.1 building category</b> <ul style="list-style-type: none"> <li>▪ <b>single-family houses</b></li> <li>▪ <b>apartment blocks</b></li> <li>▪ <b>offices</b></li> <li>▪ <b>educational buildings</b></li> <li>▪ <b>hospitals</b></li> <li>▪ <b>hotels and restaurants</b></li> <li>▪ <b>sports facilities</b></li> <li>▪ <b>wholesale and retail trade service buildings</b></li> <li>▪ <b>other types of energy-consuming buildings</b></li> </ul>	<i>Member States shall ensure that all new buildings are nearly zero- energy buildings by 31 December 2020 respectively after 31 December 2018 (occupied and owned by public authorities). For the purpose of the calculation buildings should be adequately classified into the [...] categories.</i>	EPBD article 9.1a/b  EPBD annex I	residential included in directive not defined not defined not defined not defined not defined not defined not defined not defined	
<b>2.2 new/retrofit buildings</b>	<i>New, and existing buildings that are subject to major renovation, should meet minimum energy performance requirements adapted to the local climate. Member States shall furthermore [...] stimulate the transformation of buildings that are refurbished into nearly zero-energy buildings.</i>	EPBD preamble recital 15  EPBD article 9.2	new and retrofit	

<b>2.3 private/public buildings</b>	<i>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.</i>	EPBD article 9.1a/b	private	
<b>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).</b>			click to add new sheet	
<b>3. Energy Balance / Calculation</b>				
<b>3.1 balance type</b>	<i>[...] 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 Energy performance of a building means the calculated or measured amount of energy needed to meet the energy demand [...]</i>	EPBD article 2.2  EPBD article 2.4	virtual balance between demand and generation	renewable heat from solar thermal collector reduces energy use for DHW ; renewable electricity reduces energy use if used within system borders - electricity exported across system borders is excluded from building energy balance
<b>3.2 physical boundary</b>	<i>This directive lays down requirements as regards the common general framework for [...] buildings and building units. [...] building' means a roofed construction having walls, for which energy is used to condition the indoor climate.</i>	EPBD article 1.2a  EPBD article 2.1	building site	building site might include and allow for further subdivision to single building and/or building units
<b>3.3 system boundary demand / energy uses included</b>				
▪ <u>space heating, domestic hot water</u>	<i>[...] 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.</i>	EPBD article 2.4	considered	
▪ <u>ventilation, cooling, air conditioning</u>			considered	
▪ <u>auxiliary energy</u>			considered	
▪ <u>lighting</u>			considered	
▪ <u>plud loads, appliances, IT</u>			not considered	
▪ <u>central services</u>			considered	
▪ <u>electric vehicles</u>			not considered	
▪ <u>embodied energy</u>			not considered	

<b>3.4 system boundary generation / renewable energy sources included</b>				
▪ <b>generation on-site</b>	<i>[...] 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.</i>	EPBD article 2.2	considered	on-site inclusive import of off-site renewables (wood pellets, wood chips)
	<i>[...] 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.</i>	EPBD article 2.6		
▪ <b>generation near by</b>	<i>[...] minimum levels of energy from renewable</i>	EPBD article 13.4	not considered	
▪ <b>generation external</b>	<i>sources [...] to be fulfilled, inter alia, through district heating and cooling [...].</i>		not considered	
▪ <b>crediting</b>			not considered	
<b>3.5 balance period / calculation step</b>	<i>[...] 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 [...]</i> <i>[...] 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 [...]</i>	EPBD preamble recital 9  EPBD preamble recital 10	life cycle balance	monthly calculation period for heating energy demand, hourly calculation period for cooling energy demand
<b>3.6 monthly accounting limitation</b>			nothing defined	
<b>4. Accounting System</b>				
<b>4.1 normalization</b>	<i>[...] including a numerical indicator of primary energy use expressed in kWh/m<sup>2</sup> per year</i>	EPBD article 9.3a	conditioned area	

<b>4.2 primary metric</b>	<i>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. [...] including a numerical indicator of primary energy use expressed in kWh/m 2 per year. [...] primary energy' means energy from renewable and non- renewable sources which has not undergone any conversion or transformation process</i>	EPBD Annex 1  EPBD 9.3a  EPBD article 2.5	energy need	energy performance is expressed based on useful heating energy calculation
<b>4.3 secondary metric</b>			primary / source energy (renewable part included)	
<b>4.4 symmetric or asymmetric weighting</b>			select and describe right	
<b>4.5 time dependent weighting</b>	<i>Primary energy factors [...] may be based on national or regional yearly average values and may take into account [...] European standards</i>	EPBD 9.3a	static conversion factors	primary energy factors are based on national energy balances for 2010- 2012.
<b>5. Further requirements</b>				
<b>5.1 fraction of renewables</b>	<i>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 [...] [...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources [...]</i>	RED article 13.4  EPBD article 2.2	not defined	
<b>5.2 temporal performance</b>				

▪ load match			not defined	
▪ grid interaction			not defined	
<b>5.3 energy performance or rating requirements</b>	<i>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 [...]</i>	EPBD article 2.2	not defined	
▪ energy performance indicator	<i>The energy performance [...] shall [...] include an energy performance indicator and a numeric indicator of primary energy use [...]</i>	EPBD Annex 1	Q <sup>PH</sup> <sub>nd</sub> < 6,95 kWh/m <sup>2</sup> a (continental Croatia) Q <sup>PH</sup> <sub>nd</sub> < 0,19 kWh/m <sup>2</sup> a (littoral Croatia)	the best energy performance rating is lower than minimum requirements for NZEB, therefore no particular EP
▪ numeric indicator of primary energy use			E <sub>prim</sub> < 33 kWh/m <sup>2</sup> a (littoral Croatia) E <sub>prim</sub> < 41 kWh/m <sup>2</sup> a	
<b>5.4 general framework / prescriptive requirements</b>	<i>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</i>	EPBD Annex 1	defined	appliances, metering
<b>5.5 definition of comfort level &amp; IAQ requirements (for winter and summer season, beside other national directives)</b>	<i>This Directive [...] takes into account [...] indoor climate requirements [...]</i> <i>The methodology shall [...] take into consideration: [...] indoor climatic conditions [...]</i> <i>That includes [...] indoor air-quality, adequate natural light [...].</i>	EPBD article 1.1 EPBD Annex 1 EPBD preamble recital 9	defined	indoor min/max temperature, minimum air change rate, heat recovery efficiency, building fabric

5.6 monitoring procedure	<p><i>[...] energy performance of a building means the calculated or measured amount of energy needed [...]</i></p> <p><i>Member States shall encourage the introduction of intelligent metering systems [...] and the installation of automation, control and monitoring systems [...]</i></p>	<p>EPBD article 2.4</p> <p>EPBD article 8.2</p>	defined	calculated values are used for building energy rating













