

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

1. General information				
Country			Sweden	
Name of regulation, directive, certification scheme			Building regulations BBR 2012	
Editor of regulation, directive, certification scheme			The Swedish Board of Housing, Building and Planning	
Year of introduction of current version			2013	
Energy benchmark of current version			efficient buildings	
Integration and consideration in national directive			is current directive	
2. Field of application	EPBD / RED requirement	EPBD / RED reference	Content in Member States national definition	Explanation, comment, source
2.1 building category <ul style="list-style-type: none"> single-family houses apartment blocks offices educational buildings hospitals hotels and restaurants sports facilities wholesale and retail trade service buildings other types of energy-consuming buildings 	<p>Member States shall ensure that all new buildings are nearly zero- energy buildings by 31 December 2020 respresively after 31 December 2018 (occupied and owned by public authorities).</p> <p>For the purpose of the calculation buildings should be adequately classified into the [...] categories.</p>	<p>EPBD article 9.1a/b</p> <p>EPBD annex I</p>	<p>residential/non-residential</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>select</p> <p>select</p> <p>select</p> <p>select</p> <p>select</p>	
2.2 new/retrofit buildings	<p>New, and existing buildings that are subject to major renovation, should meet minimum energy performance requirements adapted to the local climate.</p> <p>Member States shall furthermore [...] stimulate the transformation of buildings that are refurbished into nearly zero-energy buildings.</p>	<p>EPBD preamble recital 15</p> <p>EPBD article 9.2</p>	<p>new and retrofit</p>	<p>Given how Swedish legislation in the field of planning and building is currently organised, an energy economy requirement for new buildings of nearly zero-energy level would indirectly mean that, even when an existing building is modified, it could become necessary to put measures in place to improve the characteristics of the building where this is reasonable given the conditions of the building. The requirement of nearly zero-energy level for new buildings thus also promotes the improvement of energy efficiency in existing buildings to nearly zero-energy level where reasonable.</p> <p>Requirements of energy for modifying old buildings are not only directed towards major renovations but to every alteration made where you have to take into account the size of the alternation and the possibilities of the building. Example if you change a window you have to consider chosing a highly efficient window, with at least U-value 1.1</p>
2.3 private/public buildings	<p>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.</p>	<p>EPBD article 9.1a/b</p>	<p>private/public</p>	
2.4 In case that a additional or separate definiton(s) exists (e.g. for different building types), please add a new			click to add new sheet	
3. Energy Balance / Calculation				
3.1 balance type	<p>[...] 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</p> <p>Energy performance of a building means the calculated or measured amount of energy needed to meet the energy demand [...]</p>	<p>EPBD article 2.2</p> <p>EPBD article 2.4</p>	<p>not specified</p>	<p>The Swedish overall energy balance for the energy grid consistst of more than 50% renewables. (hydropower, wind power, biofuel). When it comes to Solar energy installed on the building it is inside the system boundary so it is not taken into acount in the energy balance for the building and thus promoted.</p>

3.2 physical boundary	<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	single building	In Sweden the definition of a building has to be suitable for all kind of basic requirements so the definitions is; something having a roof and perhaps walls. The energy part of the definition is left out but the scope of energy performance requirements is directed to buildings that are using energy for heating, cooling, domestic hotwater or estate energy.
3.3 system boundary demand /				
▪ space heating, domestic hot water	<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	As we are using measured values the energy from the space heating and domestic hot water is included in the energy use requirements
▪ ventilation, cooling, air conditioning			considered	As we are using measured values the energy from the space heating needed to heat the exchanged air is included in the measurement of the energy use. The energy needed to run the fans in the ventilations systems is measured within the Energy for estate energy .
▪ auxiliary energy			considered	As we are using measured values the energy from auxillary energy will contribute to the energy balance through its losses but is not taken into consideration by measurement.
▪ lighting			considered	Energy for lighting is included in the estate energy in non-residential buildings otherwise the losses from the lighting contributes to the energy balance but is not measured
▪ plud loads, appliances, IT			not defined	As we are using measured values the energy from losses from appliances contributes to the energy balance but is not measured.
▪ central services			not defined	
▪ electric vehicles			not defined	
▪ embodied energy			considered	As we are using measured energy the embodid energy will contribute to the energy balance but is not measured
3.4 system boundary				
▪ generation on-site	<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</i>	EPBD article 2.2	considered	Solar energy on the building is considered to be inside of the system boundary as is the energy delivered to the on site heat pumps (from the ground or air etc) Generation nearby and other places is considered renewable if it is renewable.
▪ generation near by			considered	
▪ generation external			not defined	
▪ crediting			not defined	
3.5 balance period / calculation step	<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 [...] [...] 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	yearly	The energy need is measured through the whole year, one years consumption
3.6 monthly accounting			select and describe right	
4. Accounting System				
4.1 normalization	<i>[...] including a numerical indicator of primary energy use expressed in kWh/m² per year</i>	EPBD article 9.3a	treated floor area	
4.2 primary metric	<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/m² per year. [...] primary energy' means energy from renewable and non- renewable sources which has not undergone any conversion or transformation</i>	EPBD Annex 1 EPBD 9.3a EPBD article 2.5	delivered / site energy	The energy economy requirements in the BBR specify a maximum permissible energy use per m2 for a building (measured as delivered energy), a maximum U-value for the insulation, and a maximum installed power for electrical use when the building is heated with electricity
4.3 secondary metric			select and describe right	

4.4 symmetric or asymmetric			select and describe right	
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	In order to reduce the need for purchased energy, there is thus no need, when carrying out an installation of solar collectors or solar cells on a building, to add in the collected quantity of energy from these when calculating the specific energy consumption for the building and weigh this against the energy economy requirement. Also the heat collected via the heat pump is considered as on site renewable energy.
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 [...] [...] 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 EPBD article 2.2	not defined	Sweden's building regulations, which are general in nature, do not lay down what energy sources and forms of heating are to be used in individual buildings. The reason for that is, amongst other things, to allow flexibility in the choice of technical solutions and to ensure that the building regulations themselves do not end up forming an obstacle to technical developments in construction. The judgement reached is that this is ensured through a combination of the general instruments that the Swedish Government applies in order to support the supply and use of energy from renewable sources and the requirements laid down in Swedish legislation on energy certification relating to the analysis of alternative energy supply systems and the relatively advantageous conditions in the Swedish National Board of Housing, Building and Planning's building regulations for heating and air conditioning systems powered by energy from renewable sources. It must also be ensured that this requirement is implemented in a way that is consistent with the Swedish implementation of the Articles of the Directive concerning renewable energy sources, which cover the promotion of the use of energy from renewable sources in buildings Sweden has a target of having 50 % of end consumption of energy from renewable sources by 2020. In buildings, the proportion of renewable energy is around 62 %. This proportion is most dependent on the energy sources used for the production of heat and electricity, which are beyond the control of building owners. If all the electric heating in the form of direct electric heating and electricity in electric boilers were replaced by heat pumps with an annual heating factor of three and if all the fossil fuels in individually-owned combustion boilers were switched to district heating, it is calculated that the proportion of renewable energy for heating would only increase by 6 percentage points (to 68 %).
5.2 temporal performance				
▪ load match			select and describe right	
▪ grid interaction			select and describe right	
5.3 energy performance or	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 [...] The energy performance [...] shall [...] include an energy performance indicator and a numeric indicator of primary energy use [...]	EPBD article 2.2 EPBD Annex 1	select and describe right	
▪ energy performance indicator			yes	The energy economy requirements in the BBR specify a maximum permissible energy use per m2 for a building.
▪ numeric indicator of primary energy use			As an example: Electrically heated houses/ Climatic zone I: 95 kWh/m2, Climatic zone II: 75kWh/m2, Climatic zone III: 55 kWh/m2.	The energy economy requirements laid down in Swedish building regulations are laid down in such a way that account is given to primary energy use for certain kinds of energy. Thus, the level of requirements is differentiated between buildings heated using electricity and those which are not. Values on right column provides some examples of the maximum energy use per m2 and year permissible under current Swedish building regulations. The example relates to residential buildings and the values specified for electrically heated buildings are the levels applicable under BBR 19, which will fully apply as of January 2013. The electrically heated buildings also has a requirement of maximum U-value and maximum installed power which both can affect the maximum energy use of the building.
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	When this energy use is to be calculated it is made from adding the measurements from heating, cooling, domestic hot water and estate energy including energy to fans, pumps lighting in non-residential buildings. This takes into account all the parameters in annex I.

5.5 definition of comfort level & IAQ requirements (for winter and summer season, beside other national directives)	<i>This Directive [...] takes into account [...] indoor climate requirements [...]</i>	EPBD article 1.1	select and describe right	In the building code there is a special part about which indoor climate the building shall be able to deliver. What is considered normal comfort indoors is regulated in the environmental act. The building code also tells which day light inlet shall be at hand and what ventilation rate shall be applied. This is in part 6 " <i>Health, hygiene and the environment</i> "
	<i>The methodology shall [...] take into consideration: [...] indoor climatic conditions [...]</i>	EPBD Annex 1		
	<i>That includes [...] indoor air-quality, adequate natural light [...].</i>	EPBD preamble recital 9		
5.6 monitoring procedure	<i>[...] energy performance of a building means the calculated or measured amount of energy needed [...]</i>	EPBD article 2.4	select and describe right	Part 9.7 Stipulates the ability to measure the used energy in the building.
	<i>Member States shall encourage the introduction of intelligent metering systems [...] and the installation of automation, control and monitoring systems [...]</i>	EPBD article 8.2		