



CONCERTED ACTION
ENERGY PERFORMANCE OF BUILDINGS

EPBD Key Implementation Decisions in Norway

Status in December 2016

AUTHORS

Olav K. Isachsen, Martin Strand, Tor Brekke

NATIONAL WEBSITES

www.enova.no, www.nve.no, www.dibk.no, www.ssb.no

1. Key Implementation Decisions, KIDs

no	Key Implementation Decisions - General Background	Description / value / response	Comments	Description
1.1	Definition of public buildings (according to article 9 b)		Not yet decided	
1.2	Definition of public buildings used by the public (according to article 13)		Not applicable. The display of EPC is a duty for all non-residential buildings. Reference is to Directive 2002/91/EC.	
1.3	Number of residential buildings	1,535,000 - of which 1,163,000 are single-family houses	End of 2016, Statistics Norway	
1.4	Number of non-residential buildings	2,606,000	End of 2016, Statistics Norway	
1.5	If possible, share of public buildings included in the number given in 1.4		No definition available	
1.6	If possible, share of commercial buildings included in the number given in 1.4		No definition available	
1.7	Number of buildings constructed per year (estimate)	50,000	Statistics Norway (https://www.ssb.no/bygg-bolig-og-eiendom/statistikker/bygningsmasse)	
1.8	If possible, share of residential buildings constructed per year (estimate, included in the number given in 1.7)	90 %	Estimate by NVE	
1.9	If possible, share of non-residential buildings constructed per year (estimate, included in the number given in 1.7)	10 %	Estimate by NVE	
1.10	Useful floor area of buildings constructed per year in million square meters (estimate)	10.3 mill. m ² (2016)	Statistics Norway (https://www.ssb.no/bygg-bolig-og-eiendom/statistikker/byggeareal/aar)	

2. KIDs for New Buildings

no	Key Implementation Decision - New Buildings	Description / value / response	Comments	Description																						
2.1	Requirements for energy performance of residential buildings in current building code	<p>There are two methods for fulfilling the requirements: specific energy limits set in kWh/m² per year net energy need, or specific component requirements, in total 9 measures.</p> <p>Regardless of the method chosen, a set of absolute minimum requirements must also be fulfilled.</p> <p>In addition, all buildings larger than 1,000 m² shall have flexible heating systems, normally waterborne, and must be prepared for low-temperature heating distribution. Single-family houses need to have a chimney flue, unless flexible heat distribution is installed. Installation of heating systems prepared for fossil fuels is not allowed.</p>	<p>Net energy demand (kWh/m² per year): Single-family house/row house etc: 100 + 1,600/m² heated floor area, Apartment buildings: 95</p> <p>Component requirements: Max U-value: exterior wall 0.18 W/(m²K) Max U-value: roof 0.13 W/(m²K) Max U-value: exposed floors 0.10W/(m²K) Max U-value: windows/doors 0.80 W/(m²K) Thermal bridges (max linear U-value) W/(m²K): (0.05 for houses and 0.007 for apartment buildings) Minimum efficiency of heat recovery in ventilation air: 80% Minimum airtightness (Max air changes/hour at 50 Pa pressure difference) 0.6 Max SFP factor 1.5 kW/(m³/s)</p>	<p>Absolute minimum requirements: Max U-value: exterior wall 0.22 W/(m²K) Max U-value: roof 0.18 W/(m²K) Max U-value: exposed floors 0.18W/(m²K) Max U-value: windows/doors 1.20 W/(m²K) Minimum airtightness (Max air changes/hour at 50 Pa pressure difference) 1.5</p>																						
2.2	Requirements for energy performance of non-residential buildings in current building code	<p>For non-residential buildings one can only choose the specific energy limit option. There are 11 categories with specific energy limits for each.</p> <p>In addition, all buildings larger than 1,000 m² shall have flexible heating systems, normally waterborne, and must be prepared for low-temperature heating distribution. Single-family houses need to have a chimney flue, unless flexible heat distribution is installed. Installation of heating systems prepared for fossil fuels is not allowed.</p>	<p>Net energy demand (kWh/m² heated floor area per year)</p> <table border="0"> <tr><td>Kindergarten</td><td>135</td></tr> <tr><td>Office Building</td><td>115</td></tr> <tr><td>Schools</td><td>110</td></tr> <tr><td>Universities</td><td>125</td></tr> <tr><td>Hospitals</td><td>225 (265)</td></tr> <tr><td>Nursing homes</td><td>195 (230)</td></tr> <tr><td>Hotels</td><td>170</td></tr> <tr><td>Sports facilities</td><td>145</td></tr> <tr><td>Commercial building</td><td>180</td></tr> <tr><td>Cultural buildings</td><td>130</td></tr> <tr><td>Light industries/workshops</td><td>140 (160)</td></tr> </table>	Kindergarten	135	Office Building	115	Schools	110	Universities	125	Hospitals	225 (265)	Nursing homes	195 (230)	Hotels	170	Sports facilities	145	Commercial building	180	Cultural buildings	130	Light industries/workshops	140 (160)	<p>The same minimum requirements as above have to be fulfilled.</p> <p>Requirements within parenthesis applies where heat recovery of ventilation air increases the risk of spreading contaminated air or infections.</p> <p>If electricity is produced on the property (more than 20 kWh/m² per year), the specific energy limit can be exceeded by 10 kWh/m² per year (for all categories)</p>
Kindergarten	135																									
Office Building	115																									
Schools	110																									
Universities	125																									
Hospitals	225 (265)																									
Nursing homes	195 (230)																									
Hotels	170																									
Sports facilities	145																									
Commercial building	180																									
Cultural buildings	130																									
Light industries/workshops	140 (160)																									

2.3	Is the performance level of nearby zero energy (NZEB) for new buildings set in national legislation?	Not yet decided		
2.4	Nearly zero energy (NZEB) level for residential buildings (if set)	Not yet decided	Set in values, formula for calculation or text for instance based on model building	
2.5	Nearly zero energy (NZEB) level for non- residential buildings (if set)	Not yet decided	Set in values, formula for calculation or text for instance based on model building.	
2.6	Are nearly zero energy buildings (NZEB) defined using a carbon or environment indicator	Not yet decided	Yes / no or text to indicate. Please indicate if this is only value or on top of requirements on energy.	
2.7	Year for nearly zero energy (NZEB) to be implemented for residential buildings	Not yet decided	Planned for 2020	
2.8	Year for nearly zero energy (NZEB) to be implemented for non-residential buildings	Not yet decided	Planned for 2020	
2.9	Is renewable energy a part of the overall or an additional requirement	Not yet decided		
2.10	Specific comfort criteria for new buildings, provide specific parameters for instance for airtightness, minimum ventilation rates	Not yet decided		

3. KIDs for Existing Buildings

no	Key Implementation Decision - Existing Buildings	Description / value / response	Comments	Description
3.1	Is the level of nearly zero energy) NZEB) for existing buildings set in national legislation?	Not yet decided		
3.2	Is the level of nearly zero energy (NZEB) for existing buildings similar to the levels for new buildings?	Not yet decided	Expectedly Yes	
3.3	Definition of nearly zero energy (NZEB) for existing residential buildings (if different from new buildings)	Not yet decided		
3.4	Definition of nearly zero energy (NZEB) for existing non-residential buildings (if different from new buildings)	Not yet decided		
3.5	Overall minimum requirements in case of major-renovation	Same as for new buildings	See above. In general, when measures are applied to existing buildings the same requirements are used as for new buildings. This includes extensions, additions, underpinning, change of use etc.	The local authorities can give exemptions from the requirements under certain conditions. This applies to necessary remodelling, renovation and change of use, and in cases when for example the requirements will be unreasonable compared to the energy savings the measures will provide.
3.6	Minimum requirements for individual building parts in case of renovation	The absolute minimum requirements for new buildings will apply.		Max U-value: exterior wall 0.22 W/(m ² K) Max U-value: roof 0.18 W/(m ² K) Max U-value: exposed floors 0.18W/(m ² K) Max U-value: windows/doors 1.20 W/(m ² K) Minimum airtightness (Max air changes/hour at 50 Pa pressure difference) 1.5

4. KIDs for Energy Performance Certificates, EPCs

no	Key Implementation Decision - Energy Performance Certificates	Description / value / response	Comments	Description
4.1	National database for EPCs	Part of the Energy Certification System	Hosted by Enova	Yes
4.2	Number of energy performance certificates per year (for instance average of 3 years)	100,000 (house/apartment/holiday house) 2000 (non-residential)		
4.3	Number of EPCs since start of scheme	600,000 (house/apartment/holiday house) 20,000 (non-residential)	As of end 2016	
4.4	Number of assessors	1,500	Estimate by NVE	Experts are needed only for certification of new buildings and non-residential buildings.
4.5	Basic education requirements for assessors	Bachelor's degree in buildings technique and energy, plus experience form calculation of energy performance	Length of experience (2-6 years) depends on building complexity	
4.5	Additional training demands for assessors	No other requirements		
4.6	Quality assurance system	<ul style="list-style-type: none"> Built-in features in Energy Certification System (ECS) Buyer and user's interest in correct information and control of registered data Independent control of certification and inspections 	The ECS has restrictions on what a lay person is allowed to register. Only experts are given full freedom and responsibility	The first sanctions were used in 2015 based on the lack of valid EPC or inspection report. Of a sample of 81 non-residential buildings, 61 building owners were addressed with warning of sanctions. In this first round, the owners were given ample time to conform to the requirements. A decision of compulsory fine was decided for 8 companies concerning 13 buildings. All the cases were finalised in December 2015 with fines for 5 companies (7 buildings).

5. KIDs for Inspection Systems

no	Key Implementation Decision - Inspection Systems	Description / value / response	Comments	Description
5.1	Is there a national database for heating inspections	Yes, same database as for EPC	Inspection reports are stored as PDF, which means that data is not available for thorough analysis.	
5.2	Is there a national database for cooling inspections / AC	Yes, same database as for EPC	Inspection reports are stored as PDF, which means that data is not available for thorough analysis.	
5.3	Are inspection databases combined with EPC database for registration of EPCs and inspection reports	Yes	But data only in pdf-documents	
5.4	Chosen option A or B for heating systems (inspection or other measures)	Option A		
5.5	Number of heating inspections; reports per year (if option A)	200	Altogether approximately 1,000	
5.5	Chosen option A or B for heating systems (inspection or other measures)	Inspection (A)	Including ventilation systems	
5.6	Number of air-condition / cooling system inspections; reports per year (if option A)	22,000	As of December 2016: 4,000 systems for cooling and 18,000 ventilation systems have had an inspection	



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 692447.

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the views of the European Commission. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.