

Appendix 1. Current building regulations for new buildings

The project "Roadmap for Trainings to Develop Skills and Knowledge on Intelligent Energy Solutions in Buildings for Bulgaria until 2020" (BUILD UP Skills Bulgaria), is conducted by a consortium consisting of EnEffect (coordinator), National Agency for Vocational Education and Training and Bulgarian Construction Chamber.

Current building regulations for new buildings¹

Energy performance and specific component requirements

In Bulgaria there are no energy performance requirements in building norms, but there are minimum U-values requirements for specific building components, indicated by the building norms in force from 2009².

Table 1: Specific building component requirements in (W/m².K)

	Walls	Roof	Floor	Windows
Single family buildings	0.35	0.28	0.4	1.7
Multi-family buildings	0.35	0.28	0.4	1.7
Office building	0.35	0.28	0.4	1.7
Other non-residential buildings	0.35	0.28	0.4	1.7

Any new building must have a technical certificate, the energy certificate being a part of it. For receiving the energy certificate, it is necessary to calculate the energy performance of the building (in kWh/m²/yr) as well as to determine the energy class it belongs to. The energy performance for new buildings is calculated based on the referent U-values prescribed by the law.

The energy certificate shows whether that the new building refers to class A or class B. All new buildings are at least in energy class B, because the minimum threshold of energy class B is set by the minimum requirements from the existing regulations in place at the

¹ Source: Buildings Performance Institute Europe (2012) *Implementing Nearly Zero-Energy Buildings (NZEB) in Bulgaria. Towards a Definition and Roadmap*. Available at: http://www.bpie.eu/documents/BPIE/publications/Bulgaria_nZEB/BG/BG_full_report.pdf. Analysis conducted by EnEffect.

² Bulgarian Ministry of Regional Development and Public Works (2009). Ordinance RD-16-932 in accordance EN 15378.

moment of evaluation (table 6). In other words, if the U-value requirements from Table 5 are fulfilled, than the building is in class B, if the energy performance of the building is more than two times better than the one resulted from the norms, then the building goes into energy class A.

In some cases the U-value for one building component can be out of range, but if the final energy performance is lower than the EP calculated with the U-values required by norms, then the energy certificate is issued.

Table 2: Energy classes for buildings in Bulgaria³

Limits	Energy Efficiency Class	Explanation
$EP \leq 0.5 \cdot EP_{max,r}$	A	High Energy Efficiency
$0.5 \cdot EP_{max,r} < EP \leq EP_{max,r}$	B	
$EP_{max,r} < EP \leq 0.5 \cdot (EP_{max,r} + EP_{max,s})$	C	
$0.5 \cdot (EP_{max,r} + EP_{max,s}) < EP \leq EP_{max,s}$	D	
$EP_{max,s} < EP \leq 1.25 \cdot EP_{max,s}$	E	
$1.25 \cdot EP_{max,s} < EP \leq 1.5 \cdot EP_{max,s}$	F	
$1.5 \cdot EP_{max,s} < EP$	G	High Energy Consumption

Where:

EP – Energy performance characteristic (kWh/m²/yr) with the U-values of the building.

EP_{max,r} – Energy performance characteristic (kWh/m²/yr) of the building calculated with the last issued U-values norms (i.e. the existing norms in accordance with the current legislation at the moment of the estimations).

EP_{max,s} – Energy performance characteristic (kWh/m²/yr) of the building calculated with the U-values norms active in the moment of building commissioning.

Requirements concerning the efficiency and the exhaust gases of boilers are also prescribed by the law.

Table 3: Requirements for efficiency and the exhaust gasses of boilers⁴

Fuel	O ₂ [%]	Temperature [°C]	CO [ppm]	Efficiency of burning processes [%]
Natural gas conventional	2 – 4	120 – 160	< 100	> 92

³Bulgarian Ministry of Regional Development and Public Works (2009). Ordinance RD-16-1058.

⁴Bulgarian Ministry of Regional Development and Public Works (2009). Ordinance RD-16-932.

boiler				
Natural gas – condensing	2 – 4	$\Theta_{gn,w,r} 5 – 20^*$	< 100	*
Light Fuel Oil - conventional	3 - 5	140 – 180	< 50	> 90

* Depends on the temperature of the returned water ($\Theta_{gn,w,r}$) and the heat capacity.