SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Ireland National Annex/ Datasheet to overarching EPB standards for

Buildings Other than Dwellings

EN ISO 52000-1, 52003-1, 52010-1, 52016-1, 52018-1

Ireland National Annex/ Datasheet to Overarching EPB standards for Buildings other than Dwellings

EN ISO 52000-1, 52003-1, 52010-1, 52016-1, 52018-1

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Report prepared for SEAI by:

Building Research Establishment, UK

Sustainable Energy Authority of Ireland

SEAI is Ireland's national energy authority investing in, and delivering, appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. We work with the public, businesses, communities and the Government to achieve this, through expertise, funding, educational programmes, policy advice, research and the development of new technologies.

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Introduction

This publication describes Ireland's national calculation methodology, Domestic Energy Assessment Procedure (DEAP) following the national annexes of the overarching standards, namely EN ISO 52000-1, EN ISO 52003-1, EN ISO 52010-1, EN ISO 52016-1 and EN ISO 52018-1, developed under mandate M/480 given to the European Committee for Standardisation (CEN) in accordance with **DIRECTIVE (EU) 2018/844 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings**

1. Annex A of IS EN ISO 52000-1: 2017

Energy performance of buildings — Overarching EPB assessment — Part 1: General framework and procedures

A.1 Annex A of IS EN ISO 52000-1: 2017: General

Annex A to this standard is used to specify the choices between methods, the required input data and references to other documents for buildings other than dwellings in Ireland.

It captures original text from the defaults in Annex B of the above overarching standard, with national choices differing from the Annex B defaults according to the following legend to facilitate comparison with other countries and to quickly identify national choices other than use of defaults outlined in the standards:

- Black font = from Annex A (in the tables these elements are usually grey shaded)
- Black font = National data/choices that are following the data/choices of Annex B
- ~~Grey Highlighted Text~~, = Data/choices of Annex B that are not used as national data/choices
- Green Highlighted Text = National data/choices that are not found as data/choices in Annex B, but that are in agreement with Annex A (the template; so: in agreement with the standard).

It is intended that this section could be extracted to form the basis for a National Annex A to the above standard published by NSAI or a National Datasheet to the above standard published by SEAI.

Key references are:

- The overarching standards as published on www.standards.ie
  - EN ISO 52000-1; Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures[1]
  - EN ISO 52003-1; Energy performance of buildings - Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance
  - EN ISO 52010-1, Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations
  - EN ISO 52016-1, Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 1: Calculation procedures
  - EN ISO 52018-1 Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options
- Technical Guidance Document to Part L of Irish Building Regulations for buildings other than dwellings (2017) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Non-Domestic Energy Assessment Procedure (NEAP) Methodology and associated tools/documents published by the Sustainable Energy Authority of Ireland www.seai.ie .

[1] A number of references in the tables below are to sections in this standard.

A.2 Annex A of IS EN ISO 52000-1: 2017: References

The references, identified by the module code number, are as per the following table:

Table A.1 — References (See Clause 2)

Reference	Number	Reference document
		Title
M1–1	ISO 52000-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~This document~~
M1–2		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M1-1~~
M1–3		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M1-1~~
M1–4		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15217 Methods of expressing energy performance and for energy certification of buildings ~~*Energy performance of buildings – Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance*~~
M1–5, M1–7		~~See M1-1~~
M1–8, M1–9		~~See M1-1~~
M1–10		
M1–6, M2–7	ISO 17772-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Indoor environmental quality – Part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings*~~
M1–11		
M1–13	ISO 52010-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – External climatic conditions – Part 1: Conversion of climatic data for energy calculations*~~
M1–14	EN 15459-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018

Reference	Number	Reference document
		Title
		SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M2–2	ISO 52016-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads – Part 1: Calculation procedures*~~
M2–3	ISO 52017-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ISO 52017-1
M2–4	ISO 52018-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15217 Methods of expressing energy performance and for energy certification of buildings ~~*Energy performance of buildings – Indicators for partial EPB requirements related to thermal energy balance and fabric features – Part 1: Overview of options*~~
M2–5.1	ISO 13789	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of buildings – Transmission and ventilation heat transfer coefficients – Calculation method*~~
M2–5.2	ISO 13370	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of buildings – Heat transfer via the ground – Calculation methods*~~
M2–5.3	ISO 6946	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Building components and building elements – Thermal resistance and thermal transmittance – Calculation methods*~~
M2–5.4	ISO 10211	SEAI, A Technical Manual for SBEMie, 30 Nov 2018

Reference	Number	Reference document
		Title
		SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations*~~
M2–5.5	ISO 14683	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal bridges in building construction – Linear thermal transmittance – Simplified methods and default values*~~
M2–5.6	ISO 10077-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 1: General*~~
M2–5.7	ISO 10077-2	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 2: Numerical method for frames*~~
M2–5.8	ISO 12631	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of curtain walling – Calculation of thermal transmittance*~~
M2–9	ISO 13786	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of

Reference	Number	Reference document
		Title
		building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of building components – Dynamic thermal characteristics – Calculation methods*~~
M2–7		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M2–5~~
M2–8	ISO 52022-3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Thermal, solar and daylight properties of building components and elements – Part 3: Detailed calculation method of the solar and daylight characteristics for solar protection devices combined with glazing*~~
M3–1	EN 15316–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 1: General and Energy performance expression, Module M3–1, M3–4, M3–9, M8–1, M8–4*~~
M3–2		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M3–3	EN 12831–1	
M3–4	EN 15316–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–1~~
M3–5	EN 15316–2	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 2: Space emission systems (heating and cooling), Module M3–5, M4–5*~~
M3–6	EN 15316–3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 3: Space distribution systems (DHW, heating and cooling), Module M3–6, M4–6, M8–6*~~
M3–7	EN 15316–5	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 5:*~~

Reference	Number	Reference document
		Title
		~~*Space heating and DHW storage systems (not cooling), Module M3–7, M8–7*~~
M3–8	EN 15316–4-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 BS EN 15316-4-3:2007 - Heating systems in buildings — Method for calculation of system energy requirements and system efficiencies — Part 4-3: Heat generation systems, thermal solar systems ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4–1: Space heating and DHW generation systems, combustion systems (boilers, biomass), Module M3–8-1 and M 8–8-1*~~
M3–9		
M3–10	EN 15378–3	~~*Energy performance of buildings –Heating and DHW systems in buildings – Part 3: Measured energy performance, Module M3–10 and M8–10*~~
M3–11	EN 15378–1	~~*Energy performance of buildings – Heating systems and DHW in buildings – Inspection of boilers, heating systems and DHW, Module M3–11, M8–11*~~
M3–12		
M4–1	EN 16798–9	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings –Ventilation for buildings – Part 9: Calculation methods for energy requirements of cooling systems (Modules M4-1, M4-4, M4-9) – General*~~
M4–2		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M4–3	ISO 52016–1	~~See M2-2~~
M4–4	EN 16798–9	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M4–1~~
M4–5	EN 15316–2	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–5~~
M4–6	EN 15316–3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–6~~
M4–7	EN 16798–15	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019

Reference	Number	Reference document
		Title
		~~*Energy performance of buildings – Ventilation for buildings – Part 15: Calculation of cooling systems (Module M4–7) – Storage*~~
M4–8	EN 16798–13	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Ventilation for buildings – Part 13: Calculation of cooling systems (Module M4–8) – Generation*~~
M4–9		
M4–10		
M4–11	EN 16798–17	~~*Energy performance of buildings – Ventilation for buildings – Part 17: Guidelines for inspection of ventilation and air conditioning systems (Module M4–11, M5–11, M6–11, M7–11)*~~
M4–12		
M5–1	EN 16798–3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15242 Ventilation for buildings – Calculation of room temperatures and of load and energy for buildings with room conditioning systems ~~*Energy performance of buildings – Ventilation for buildings – Part 3: For non-residential buildings – Performance requirements for ventilation and room conditioning systems (Modules M5–1, M5–4)*~~
M5–2		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15242 Ventilation for buildings – Calculation of room temperatures and of load and energy for buildings with room conditioning systems
M5–3		
M5–4	EN 16798–3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M5–1~~
M5–5	EN 16798–7	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Ventilation for buildings – Part 7: Calculation methods for the determination of air flow rates in buildings including infiltration (Module M5–5)*~~
M5–6	EN 16798–5–1 and EN 16798–5–2	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Ventilation for buildings – Part 5–1: Calculation methods for energy requirements of ventilation and air conditioning systems (Modules M5–6, M5–8, M6–5, M6–8, M7–5, M7–8) – Method 1: Distribution and generation*~~

Reference	Number	Reference document
		Title
		~~*Energy performance of buildings – Ventilation for buildings – Part 5–2: Calculation methods for energy requirements of ventilation and air conditioning systems (Modules M5–6, M5–8, M6–5, M6–8, M7–5, M7–8) – Method 2: Distribution and generation*~~
M5–7		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M5–8	EN 16798–5–1 and EN 16798–5–2	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M5–6~~
M5–9		
M5–10		
M5–11	EN 16798–17	See M4–11
M6–1		See M5–1
M6–2		See M5–2
M6–3		See M5–3
M6–4		See M5–4
M6–5	EN 16798–5–1 and EN 16798–5–2	See M5–6
M6–6		See M5–6
M6–7		See M5–7
M6–8	EN 16798–5–1 and EN 16798–5–2	See M5–6
M6–9		See M5–9
M6–10		See M5–10
M6–11	EN 16798–17	See M5–11
M7–1		See M5–1
M7–2		See M5–2
M7–3		See M5–3
M7–4		See M5–4
M7–5	EN 16798–5–1 and EN 16798–5–2	See M5–6
M7–6		See M5–6
M7–7		See M5–7

Reference	Number	Reference document
		Title
M7–8	EN 16798–5–1 and EN 16798–5–2	See M5–6
M7–9		See M5–9
M7–10		See M5–10
M7–11	EN 16798–17	See M5–11
M8–1	EN 15316–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15316-3 Heating systems in buildings – Method for calculation of system energy requirements and system efficiencies – part 3 Domestic hot water systems ~~See M3–1~~
M8–2	EN 12831–3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15316-3 Heating systems in buildings – Method for calculation of system energy requirements and system efficiencies – part 3 Domestic hot water systems ~~*Energy performance of buildings – Method for calculation of the design heat load – Domestic hot water systems heat load and characterization of needs, Module M8–2, M8–3*~~
M8–3	EN 12831–3	~~See M8–2~~
M8–4	EN 15316–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M8–1~~
M8–5		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M8–6	EN 15316–3	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–6~~
M8–7	EN 15316–5	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–7~~
M8–8	EN 15316–4-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–8~~
M8–9		
M8–10	EN 15378–3	~~See M3–10~~

Reference	Number	Reference document
		Title
M8–11	EN 15378–1	~~See M3–11~~
M9–1	EN 15193–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 Energy performance of buildings — Energy requirements for lighting – BS EN 15193:2007. ~~*Energy performance of buildings – Energy requirements for lighting – Part 1: Specifications, Module M9*~~
M9–2	EN 15193–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 Energy performance of buildings — Energy requirements for lighting – BS EN 15193:2007. ~~See M9–1~~
M9–3		
M9–4	EN 15193–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 Energy performance of buildings — Energy requirements for lighting – BS EN 15193:2007. ~~See M9–1~~
M9–5		
M9–6		
M9–8		
M9–10	EN 15193–1	~~See M9–1~~
M9–11	EN 15193–1	~~See M9–1~~
M10–1	EN 15232–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy performance of buildings – Part 1: Impact of Building Automation, Controls and Building Management – Modules M10–4,5,6,7,8,9,10*~~
M10–2		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M10–3		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M10–4		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15217 Methods of expressing energy performance and for energy certification of buildings
M10–5	EN 15232–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019

Reference	Number	Reference document
		Title
		~~See M10–1~~
M10–6	EN 15232–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M10–1~~
M10–7	EN 15232–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M10–1~~
M10–8	EN 15232–1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M10–1~~
M10–11	EN 16946-1	~~*Energy Performance of Buildings – Inspection of Automation, Controls and Technical Building Management – Part 1: Module M10–11*~~
M10–12	EN 16947-1	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~*Energy Performance of Buildings – Building Management System – Part 1: Module M10–12*~~
M11–1		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019
M11–4		SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 EN 15217 Methods of expressing energy performance and for energy certification of buildings
M11–8	EN 15316-4-3, 4-4, 4-5, 4-10	SEAI, A Technical Manual for SBEMie, 30 Nov 2018 SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019 ~~See M3–8~~

A.3 Annex A of IS EN ISO 52000-1: 2017: Overarching preparation steps

Table A.2 — Energy performance assessment types according to building category and application (See 5.3)

Application	Building category	Assessment type	Conditions
Energy performance certificate	All categories	As built type	-
Building permit	All categories	Design type	-
Permit to use	All categories	As built type	-

Energy audit	~~All categories~~	~~Tailored type~~	-
NOTE Add rows in case of more assessment purposes.			

Table A.3 — Object types (See Clause 6 and 10.1)

EPB_OBJECT_TYPE			
Type [a]	**Description**	**Subset** [b]	**Comments**
EPB_OBJECT_BLDNG_TOT	Whole building	1	For EPC and Part L compliance check
EPB_OBJECT_BLDNG_UNIT	Building unit	1	For EPC and Part L compliance check
EPB_OBJECT_BLDNG_PART	~~Part of a building (lacking one or more features of a complete building or building unit)~~	~~1~~	
EPB_OBJECT_ LCYCLE_NEW.DESIGN	New building design	12	Provisional assessment for plans for EPC and Part L compliance check
EPB_OBJECT_ LCYCLE_AS.BUILT	Existing building as built (without long term use data)	12	Assessment of buildings as built for sale or rent for EPC and new buildings for Part L compliance check
EPB_OBJECT_ LCYCLE_EXIST.RENOV	Existing building after renovation (without long term use data)	12	Assessment of actual building for sale or rent. Check major renovation meets primary energy requirements
EPB_OBJECT_ LCYCLE_EXIST.EXTENS	~~Existing building extension (without long term use data)~~	~~2~~	
EPB_OBJECT_ LCYCLE_EXIST.IN.USE	~~Existing building in use~~	~~2~~	
EPB_OBJECT_CAT_RES	~~Residential building~~	~~3~~	
EPB_OBJECT_CAT_NRES	Non-residential building	3	As per comments above
EPB_OBJECT_USER_L.PUBL	~~Large public building~~	~~4~~	
EPB_OBJECT_USER_OTHER	~~Other~~	~~4~~	
NOTE The type of object may have an effect on the choices in this overarching document and in the other EPB standards. This property is therefore inherited by the other EPB standards, where relevant. [a] One choice is possible per subset. [b] Definition of the calculation case, one selection shall be done for each subset.			

Table A.4 — Building categories (See Clauses 6 and 9)

BLDNGCAT_TYPE		
Type	**Description**	**Comments**
~~*BLDNGCAT_RES_SINGLE*~~	~~Single-family houses of different types~~	[a]
~~*BLDNGCAT_RES_APPBLOCK*~~	~~Apartment blocks~~	
~~*BLDNGCAT_RES_ELDER*~~	~~Homes for elderly and disabled people~~	
BLDNGCAT_RES_COLL	Residence for collective use	For community dwellings, the number of bedrooms in a dwelling in DEAP is limited to 8. Community dwellings with more than 8 bedrooms are typically assessed under the Non-Domestic Energy Assessment Procedure (NEAP)
~~*BLDNGCAT_RES_MOBIL*~~	~~Mobile home~~	
~~*BLDNGCAT_RES_HOL*~~	~~Holiday home~~	
BLDNGCAT_OFF	Offices	
BLDNGCAT_EDUC	Educational buildings	
BLDNGCAT_HOSP	Hospitals	
BLDNGCAT_HOTEL	Hotels and restaurants	
BLDNGCAT_SPORT	Sports facilities	
BLDNGCAT_RETAIL	Wholesale and retail trade services buildings	
BLDNGCAT_DATA_CENTER	Data centre	
BLDNGCAT_INDUS	Industrial sites	
BLDNGCAT_WORKS	Workshops	
BLDNGCAT_AGRIC	Non-residential agricultural buildings	
a List copied from ISO 13675, Annex 1.5[8], but residential sector more differentiated and other buildings use energy more differentiated.		
NOTE The building category may have an effect on the choices in this overarching document and in the other EPB standards. This property is therefore inherited by the other EPB standards, where relevant.		

Table A.5 — Which building categories are included in EPB assessment (See 6.2.2)

Building categories	**Identifier**	**Included in EPB assessment [a] Yes/No**
Residential buildings:		
~~Single family houses of different types~~	~~*BLDNGCAT_RES_SINGLE*~~	~~YES~~
~~Apartment block~~	~~*BLDNGCAT_RES_APPBLOCK*~~	~~YES~~
~~Homes for elderly and disabled people~~	~~*BLDNGCAT_RES_ELDER*~~	~~YES~~

~~Residence for collective use~~	~~*BLDNGCAT_RES_COLL*~~	~~YES~~
~~Mobile home~~	~~*BLDNGCAT_RES_MOBIL*~~	~~YES~~
~~Holiday home~~	~~*BLDNGCAT_RES_HOL*~~	~~YES~~
Non-residential buildings:		
Office buildings	*BLDNGCAT_OFF*	YES
Educational buildings	*BLDNGCAT_EDUC*	YES
Hospitals	*BLDNGCAT_HOSP*	YES
Hotels and restaurants	*BLDNGCAT_HOTEL*	YES
Sport facilities	*BLDNGCAT_SPORT*	YES
Wholesale and retail trade services buildings	*BLDNGCAT_RETAIL*	YES
Industrial sites	*BLDNGCAT_INDUS*	YES
Workshops	*BLDNGCAT_WORKS*	YES
~~Non-residential agricultural buildings~~	~~*BLDNGCAT_AGRIC*~~	~~NO~~

[a] Building category for which this document applies, e.g. because there is an EPB requirement for this building category.

Table A.6 — Differentiation of space categories (See Clauses 6, 9 and 10.1)

Choice		
Type	**Choice**	**Comments**
Differentiation of space categories in a building	Yes	

In case of differentiation Table A.7 has to be completed. Otherwise the list of space categories is equal to the list of building categories: (SPACECAT_X = BLDNGCAT_X).

Table A.7 — Space categories (See Clauses 6 and 9)

SPACECAT_TYPE		
Type	**Description**	**Comments**
SPACECAT_RES_LIV	Residential living space, kitchen, bed room, study, bath room or toilet	Applicable to Community Dwellings
SPACECAT_RES_INDIV_OTHER	Residential individual: hall, corridor, staircase inside thermal envelope, attic inside thermal envelope	Applicable to Community Dwellings
SPACECAT _RES_COLL	Residential collective or non-residential: hall, corridor, staircase inside thermal envelope	
SPACECAT_TH.UNCOND_OTHER	Thermally unconditioned adjacent space, such as storage room or unconditioned attic	
~~*SPACECAT_TH.UNCOND_SUN*~~	~~Thermally unconditioned sunspace or atrium~~	

SPACECAT_HALL	Entrance hall/foyer	
SPACECAT_CORR	Corridor	
SPACECAT_TH.UNCOND_CORR	Hall, corridor outside thermal envelope	
SPACECAT_OFF	Office space	Generic Office Area
SPACECAT_EDUC	Educational space	Teaching Areas
SPACECAT_HOSP_BED	Hospital bed room	Bedroom Unit
SPACECAT_HOSP_OTHER	Hospital other room	
SPACECAT_HOTEL	Hotels room	
SPACECAT_REST	Restaurant space	Eating/drinking area
SPACECAT_REST_KITCH	Restaurant kitchen	Food preparation area
SPACECAT_MEET	Meeting or seminar space	
SPACECAT_AUDIT	Auditorium, lecture room	Hall.lecture theatre/assembly area
SPACECAT_THEAT	Theatre or cinema space	Auditoria
SPACECAT_SERVER	Server or computer room	Computer lab
SPACECAT_SPORT_TH.COND	Sport facilities, thermally conditioned	Fitness suite/gym
SPACECAT_SPORT_TH.UNCOND	Sport facilities, thermally unconditioned	Fitness suite/gym
SPACECAT_RETAIL	Wholesale and retail trade services space (shop)	Sales area -general
SPACECAT_NONRES_BATH	Non-residential bath room, shower, toilet, if inside thermal envelope	
~~*SPACECAT_SPA*~~	~~Spa area with sauna shower and/or relaxing area~~	
SPACECAT_SWIMM	Space with indoor swimming pool	Swimming pool
SPACECAT_STOR_HEAT	Heated storage space	Store Room
~~*SPACECAT_STOR_COOL*~~	~~Cooled storage space~~	
SPACECAT_STOR_NOCON	Non conditioned storage space	Store Room
~~*SPACECAT ENGINE*~~	~~Engine room~~	
SPACECAT_CAR	Individual garage or collective indoor car park	
~~*SPACECAT_BARN*~~	~~Barn~~	

NOTE 1 Each space category requires a set of conditions of use (temperature settings, ventilation, and lighting requirements, domestic hot water needs, etc.), to be specified in M1–6.

NOTE 2 The space category may have an effect on the choices in this overarching document and in the other EPB standards. This property is therefore inherited by the other EPB standards, where relevant.

Table A.8 — Application types (See Clauses 6, 9 and 10.1)

EPB_APPLIC_TYPE		
Type	**Description**	**Comments**

EPB_APPLIC_REQ	To check compliance with energy performance requirements	Checks Energy, CO2, RER, Fabric
EPB_APPLIC_CERTIF	Energy performance certification	BER Certificate requirement
EPB_APPLIC_PERMIT_BLD	To obtain building permit	Requirement to comply with building regulations. Requirement for BER certificate for new buildings Requirement for BER certificate for all buildings sale/ rent
EPB_APPLIC_PERMIT_USE	To obtain permit to use	Requirement to comply with building regulations. Requirement for BER certificate for new buildings Requirement for BER certificate for all buildings sale/ rent
~~*EPB_APPLIC_AUDIT*~~	~~Energy audit (tailored)~~	
~~*EPB_APPLIC_INSP*~~	~~Energy performance inspection~~	
NOTE The type of application may have an effect on the choices in this overarching document and in the other EPB standards. This property is therefore inherited by the other EPB standards, where relevant.		

Table A.9 — EPB assessment types (See Clauses 6 and 9)

EPB_ASSESS_TYPE (see Table 3)		
Type	**Description**	**Comments**
EPB_ASSESS_CALC_DESIGN	Calculated, design	For buildings in design phase
EPB_ASSESS_CALC_ASBUILT	Calculated, as built	For newly constructed and existing buildings
~~*EPB_ASSESS_CALC_ACTUAL*~~	~~Calculated, actual~~	
~~*EPB_ASSESS_CALC_TAILORED*~~	~~Calculated, tailored~~	
~~*EPB_ASSESS_MEAS_ACTUAL*~~	~~Measured, actual~~	
~~*EPB_ASSESS_MEAS_CORR_CLIM*~~	~~Measured, corrected for climate~~	
~~*EPB_ASSESS_MEAS_CORR_USE*~~	~~Measured, corrected for use~~	
~~*EPB_ASSESS_MEAS_STAND*~~	~~Measured, standard (corrected for climate and use)~~	

Table A.10 — Combination services types (See Clauses 6 and 9)

EPB_LISTSERVICES_TYPE		
Type	**Description**	**Comments**
~~*EPB_LISTSERVICES_RES*~~	~~Services included for the EPB assessment of residential buildings~~	n/a to NEAP

*EPB*_LISTSERVICES_*NRES*	Services included for the EPB assessment of non-residential buildings	Includes energy for space heating, cooling, ventilation, water heating, lighting less savings from energy generation technologie

NOTE 1 The combination may be different for different building or space categories.

NOTE 2 The type of services combination may have an effect on the choices in this overarching document and in the other EPB standards. This property is therefore inherited by the other EPB standards, where relevant.

A.4 Annex A of IS EN ISO 52000-1: 2017: Method

Table A.11 — Electricity use types (See 7.3.3.4.)

Electric energy use type	Identifier
Main input to a generator	EL_USE_MAIN
Auxiliary energy	EL_USE_AUX
Direct heating (Joule effect)	EL_USE_JOULE
~~Non EPB uses~~	~~EL_USE_NEPB~~

Table A.12 — Electricity generation types (See 7.3.3.6 and 9.6.6.2.4)

Electric energy generation type	Identifier
Photovoltaic	EL_PROD_PV
Wind turbine	EL_PROD_WIND
Cogeneration	EL_PROD_CHP

Table A.13 — Gross calorific value of some common solid fuels (See 7.3.4 and 9.6.2)

Fuel	Gross calorific value kWh/kg
~~Anthracite~~	~~8,9 – 9,7~~
~~Bituminous coal~~	~~4,7–6,9~~
~~Charcoal~~	~~8,22~~
~~Coke~~	~~7,8 – 8,6~~
~~Lignite~~	~~4,2 – 8,3~~
~~Peat~~	~~3,6 – 5,6~~
~~Wood (dry) biomass?~~	~~3,9 – 4,7~~
~~Dual fuel appliances (mineral + wood)~~	~~?~~
NOTE Add the rows of the energy carriers.	

Table A.14 — Gross calorific value of some common liquid fuels (See 7.3.4 and 9.6.2)

Fuel	Density kg/l	Gross calorific value kWh/kg
Oil		
Heating oil, light	~~0,84 – 0,85~~	~~12,44~~
Heating oil, heavy	~~0,96~~	~~13,94 – 11,75~~
Liquid gas		
80 propane:20 butane	~~0,52~~	~~13,83~~
70 propane:30 butane	~~0,53~~	~~13,83~~
60 propane:40 butane	~~0,53~~	~~13,81~~
50 propane:50 butane	~~0,55~~	~~13,78~~
Commercial propane	~~0,51~~	~~13,89~~
[a] Confidence interval for liquid gas is about ± 0,1 MJ/kg.		
NOTE Add the rows of the energy carriers.		

Table A.15 — Gross calorific values of some gaseous energy carriers (see 7.3.4 and 9.6.2)

Fuel	Density kg/m³	Gross calorific value kWh/m³
Natural gas L	~~0,64~~	~~9,75 – 9,78~~
Natural gas H	~~0,61~~	~~11,41 – 11,47~~
Methane	~~0,55~~	~~11,06 – 11,08~~
Propane	~~1,56~~	~~28,03~~
Butane	~~2,09~~	~~37,19~~
Hydrogen	~~0,09~~	~~39~~
Biogas	~~1,2~~	~~4 to 8~~ [a]
[a] Depending on its methane content.		
NOTE Add the rows of the energy carriers.		

Table A.16 — Weighting factors (based on gross or net calorific value) (See 7.3.5, 9.5.1, 9.6.2, 9.6.5 and 9.6.6.3)

	Energy carrier Delivered from distant		f_{Pnren}	f_{Pren}	f_{Ptot}	K_{CO2e} (g/kW h)
1	Fossil fuels	Solid	1,1	0	1,1	Ave = 373 ~~360~~
2		Liquid	1,1	0	1,1	LPG = 232

						Oil = 272 ~~290~~
3		Gaseous	1,1	0	1,1	203 ~~220~~
4	Bio fuels	Solid	0,1 ~~0,2~~	1	1,1 ~~1,2~~	25 ~~40~~
5		~~Liquid~~	~~0.5~~	~~1~~	~~1.5~~	~~70~~
6		Gaseous	0,1 ~~0,4~~	1	1,1 ~~1,4~~	25 ~~100~~
7	Electricity [c]		2.08 ~~2.3~~	0 ~~0.2~~	2.08 ~~2.5~~	409 ~~420~~
	Delivered from nearby					
8	District heating [a]		1,2 default Defined by operator	0 default Defined by operator	1,2 default Defined by operator	293 default Defined by operator
9	District cooling		~~1,3~~	~~0~~	~~1,3~~	~~260~~
	Delivered from on-site					
10	Solar	PV electricity	0	2.08 ~~1~~	2.08 ~~1~~	0
11		Thermal	0	1	1	0
12	Wind		0	2.08 ~~1~~	2.08 ~~1~~	0
13	Environment	Geo-, aero-, hydrothermal	0	1	1	0
	Exported					
14	Electricity [b c]	To the grid	0 ~~2.3~~	2.08 ~~0.2~~	2.08 ~~2.5~~	409 ~~420~~
15		To non EPB uses	2.08 ~~2.3~~	0 ~~0.2~~	2.08 ~~2.5~~	409 ~~420~~

[a] Default value based on a natural gas boiler. Specific values are calculated according to M3–8.5.

[b] It is possible to differentiate between different sources of electricity like wind or solar.

[c] These values are established in line with the default coefficient provided in Annex IV of Directive 2012/27/EU. This default coefficient is currently being reviewed and a later amendment of the above factors could be needed.

NOTE 1 Add a column in case of other requirements, e.g., CO_2 requirement.

NOTE 2 Add rows for each relevant energy carrier.

Table A.17 — k_{exp}-factor (See 7.3.5 and 11.6.2.1)

Description	Value
k_{exp} factor that is used to control which part of the exported energy is included in the energy performance of the building	1

Table A.18 — Building services considered in the energy performance calculation (See 8.2 and 8.5)

Combination of services type	**Choice: included in the energy performance calculation** ***< one column per service mix type, see Table B.10 >***	
Building service [a]	***EPB*_**LISTSERVICES**_RES**	***EPB*_**LISTSERVICES**_NRES**
Heating	~~Yes~~	Yes
Cooling	~~Yes~~	Yes
Ventilation	~~Yes~~	Yes
Humidification	~~No~~	No
Dehumidification	~~No~~	No
Domestic hot water	~~Yes~~	Yes
Lighting	~~No~~	Yes
External lighting	~~No~~	No
People transport (e.g., elevators, escalators)	~~No~~	No
Other services consuming electricity (e.g., appliances)	~~No~~	No
Others	~~No~~	No
[a] Add rows or edit the lines in case of other/more differentiated services.		

Table A.19 — Principle assumed presence of systems (See 9.2)

Method		**Choice Yes/No** [a]
1	Principle “Assumed system”	NO
2	Principle “Presence of system”	YES
3	Other principle	NO
In case of method 3:		
	Reference to procedure:	< reference >
a Only one choice possible; choice may be differentiated per service. NOTE Consistency with the conditions of use (module M1–6) is required.		

Table A.20 — Specification of the useful floor area (See 9.3)

Specification and/or reference to document with more information
From SBEMie 4.1.3: The dimension system used to calculate, A_{fl}, uses the internal dimensions of each zone’s structural elements (i.e., the internal horizontal dimensions between the internal surfaces of the external zone walls and half-way through the thickness of the internal zone walls) so that the area presented to the heat flux from inside the building coincides with the overall internal dimensions.

Table A.21 — Type or types of metric for the building size (See 9.3 and 9.4)

Quantity	Unit	Specification and/or reference to document with more information
Reference floor area	~~m^2~~	~~Useful floor area as in Table B.20 of this document, with fractions according to Table B.22~~
Total floor area	m^2	Sum of the floor areas of every zone. Where area is defined with the same dimensions as given in table A.20 also supported by NEAP pg49.
NOTE Add rows for each metric.		

Table A.22 — Which space categories are contributing to the reference size (See 9.4)

Space categories	Contributing?	If YES: (Optional) fraction of-size contributing to ref. size ($f_{ref;cat,}$). Default value = 1 [a]
Residential living space, kitchen, bed room, study, bath room or toilet	YES	1,0
Residential individual: hall, corridor, staircase inside thermal envelope, attic inside thermal envelope	YES	1,0
Residential collective or non-residential: hall, corridor, staircase inside thermal envelope	YES	1,0
Thermally unconditioned adjacent space, such as storage room or unconditioned attic	YES	1,0
Thermally unconditioned sunspace or atrium	YES	1,0
Hall, corridor outside thermal envelope	YES	1,0
Office space	YES	1,0
Educational space	YES	1,0
Hospital bed room	YES	1,0
Hospital other room	YES	1,0
Hotels room	YES	1,0
Restaurant space	YES	1,0
Restaurant kitchen	YES	1,0
Meeting or seminar space	YES	1,0
Auditorium, lecture room	YES	1,0
Theatre or cinema space	YES	1,0
Server or computer room	YES	1,0
Sport facilities, thermally conditioned	YES	1,0
Sport facilities, thermally unconditioned	YES	1,0~~0.5~~

Wholesale and retail trade services space (shop)	YES	1,0
Non-residential bath room, shower, toilet, if inside thermal envelope	YES	1,0
Heated storage space	YES~~NO~~	1,0
Cooled storage space	YES~~NO~~	1,0
Engine room	YES~~NO~~	1,0
individual garage or collective indoor car park	YES~~NO~~	1,0
Barn	YES~~NO~~	1,0

[a] The choices in this table are choices that actually cannot be made without the holistic view on all EPB standards. The categorization of spaces is directly related to the assumed conditions of use for each space category and to the specific rules for combining spaces into zones. For instance, a fine subdivision into different space categories, with for each space category different conditions of use (such as temperature settings, ventilation rates, lighting levels, etc.) could easily lead to unwanted complexities in the assessment.

Table A.23 — Perimeter specification (See 9.5.1 and 9.6.1)

Energy carrier		**Specification of nearby perimeter** (see **3.4.24)**
Bio fuels	Solid	Not specified further
	Liquid	N/A ~~Connected to the same branch of the distribution network or having a dedicated connection, requiring specific equipment for the assessed object to be connected to it~~
	Gaseous	Connected to the same branch of the distribution network or having a dedicated connection, requiring specific equipment for the assessed object to be connected to it
Electricity		Connected to the same branch of the distribution network, meaning medium voltage or lower
District heating		Always nearby
District cooling		N/A ~~Always nearby~~

Table A.24 — Perimeter choice (See 9.5.1 and 9.7)

Perimeter choice	**Choice – RER calculation (renewable energy)**	**Choice – RER calculation (total energy)**	**Choice – EPB calculation (delivered energy)**
On-site	Yes	Yes	Yes
Nearby	Yes	Yes	Yes
Distant	No	Yes	Yes

Table A.25 — Conversion factors for net to gross calorific values for energy carriers (See 9.6.2)

Energy carrier	**Conversion factor fGCV/NCV**
Natural gas	1.11
LPG (propane or butane)	1.09
Oil (kerosene or gas oil)	1.07~~1.06~~

Biodiesel or bioethanol	1.07
Coal	1.031~~1.04~~
Anthracite or manufactured smokeless fuels	1.02
Wood fuels	1.10~~1.08~~
Solid multi-fuel	1.06
NOTE Add the rows of the energy carriers.	

Table A.26 — Overheads included in the primary energy and CO2 emission factors (See 9.6.2 and 9.6.3)

		Primary energy factors	Emission coefficients
Included overheads	Energy to extract the primary energy carrier	Yes	Yes
	Energy to transport the primary energy carrier	Yes	Yes
	Energy used for any other operations necessary for the delivery to the building (e.g., storage)	Yes	Yes
	Energy to build, operate and dismantle the transformation units	No	No
	Energy to build, operate and dismantle the transportation system	No	No
	Energy to clean up or dispose the wastes	No	No
	Energy embedded in materials	No	No
Other greenhouse gases than CO2 included [a]		NA	No
Applicable for ratings based on		Gross calorific value ~~Net calorific value~~	Gross calorific value ~~Net calorific value~~
a It is possible to list the other greenhouse gases.			

Table A.27 — Basis for the energy performance of buildings (See 9.6.2)

Basis for the building energy performance	Choice	Application type (see Table A.6)
Total energy performance (EP = EPtot) or non-renewable energy performance (EP = EPnren)	EP = EPtot for all systems barring certain renewable systems (i.e. heat pumps , PV, wind, solar thermal only have EPnren included and biomass and biogas have EPnren of 0.1) ~~$E_P = E_{Pnren}$~~	All application types in Table A.6

NOTE Add lines in case of more assessment purposes.

Table A.28 — Priority for generation system, export (See 7.3.3.6 and 9.6.6.2.4)

Priority level to export	Priority identifier	Generation type
Priority level 1 (highest)	~~EL_EXP_PRIO_LEVEL_1~~	~~EL_PROD_PV~~
Priority level 2	~~EL_EXP_PRIO_LEVEL_2~~	~~EL_PROD_WIND~~
Priority level 3 (lowest)	~~EL_EXP_PRIO_LEVEL_3~~	~~EL_PROD_CHP~~

Table A.29 — Subdivision rules (See 10.5.1)

Type of zone or service area [a]	General rule	Specific rules (if any)
Thermal zone	Useful floor area weighted	See ISO 52016-1
Heating system service area	Useful floor area weighted	
Cooling system service area	Useful floor area weighted	
Ventilation service area	Useful floor area weighted	
DHW service area	Useful floor area weighted	
Lighting service area	Useful floor area weighted	

[a] Add lines in case of more service areas.

Table A.30 — Energy flows taken into account in the building balance (See 11.6.2.1)

System or component	Counted as delivered energy? (Yes/No) [a]	Exported energy taken into account under step B of the energy performance assessment (11.6.2.1)[b] (Yes/No)
Needs		
Passive renewable energy	No	Not applicable
On-site		
Technical building systems located "on-site" and producing energy from renewable sources	Yes	No~~Yes~~
Solar energy captured by thermal solar panels	Yes	No~~Yes~~
Free cooling as renewable energy	~~Yes~~	~~Not applicable~~
Free heating as renewable energy	~~Yes~~	~~Not applicable~~
Heat from environment captured by heat pumps	Yes	No
Electricity produced by wind power	Yes	No
Nearby	[c]	
District heating	Yes	No

District cooling	N/A ~~Yes~~	N/A ~~No~~
Heat produced by biomass	Yes	No
Distant	[d]	
Electricity production from renewable sources	Yes	No

[a] A "No" in the second column implies "not applicable" in the third column.
[b] Only relevant if $k_{exp} > 0$, see Table A.19/B.19.
[c] If choice of perimeter is "nearby" (see Table A.9).
[d] If choice of perimeter is "distant" (see Table A.9).
NOTE Rows may be deleted or added.

Table A.31 — Electrical uses not satisfied by on-site electricity production (See 11.6.2.4)

On-site electricity production type	Not allowed uses	Comment
All	None	Any EPB use of electricity can be satisfied by any type of on-site electricity production

Table A.32 — Matching factor of produced and used electricity (See 11.6.2.4)

Calculation interval	Case	Matching factor function and parameters
Monthly	All building categories	1

2. Annex A of IS EN ISO 52003-1: 2017

Energy performance of buildings — Indicators, requirements, ratings and certificates — Part 1: General aspects and application to the overall energy performance

A.1 Annex A of IS EN ISO 52003-1: 2017: General

Annex A to this standard is used to specify the choices between methods, the required input data and references to other documents for buildings other than dwellings in Ireland.

It captures original text from the defaults in Annex B of the above overarching standard, with national choices differing from the Annex B defaults according to the following legend to facilitate comparison with other countries and to quickly identify national choices other than use of defaults outlined in the standards:

- Black font = from Annex A (in the tables these elements are usually grey shaded)
- Black font = National data/choices that are following the data/choices of Annex B
- ~~Grey Highlighted Text~~, = Data/choices of Annex B that are not used as national data/choices
- Green Highlighted Text = National data/choices that are not found as data/choices in Annex B, but that are in agreement with Annex A (the template; so: in agreement with the standard).

It is intended that this section could be extracted to form the basis for a National Annex A to the above standard published by NSAI or a National Datasheet to the above standard published by SEAI.

Key references are:

- The overarching standards as published on www.standards.ie
  - EN ISO 52000-1; Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures
  - EN ISO 52003-1; Energy performance of buildings - Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance[2]
  - EN ISO 52010-1, Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations
  - EN ISO 52016-1, Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 1: Calculation procedures
  - EN ISO 52018-1 Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options
- Technical Guidance Document to Part L of Irish Building Regulations for Buildings other than Dwellings (2017) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Non Domestic Energy Assessment Procedure (NEAP) Methodology and associated tools/documents published by the Sustainable Energy Authority of Ireland www.seai.ie .

[2] [2] A number of references in the tables below are to sections in this standard.

A.2: Annex A of IS EN ISO 52003-1: 2017: References

The references, identified by the EPB module code number, are given in a table complying with the format given in Table A.1 (template).

Table A.1 — References

Reference	Number	Reference document
		Title
M1-6b	ISO 17772-1 EN 16798-1c	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Indoor environmental Quality — Part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings*~~ ~~*Energy performance of buildings – Ventilation of buildings – Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics* (Module M1–6)~~
M1-14b	EN 15459-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Economic evaluation procedure for energy systems in buildings — Part 1: Calculation procedures, Module M1-14*~~
M2-4b	ISO 52018-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN 15217 Methods of expressing energy performance and for energy certification of buildings* ~~*Energy performance of buildings — Indicators for partial EPB requirements related to thermal energy balance and fabric features — Part 1: Overview of options*~~
M3-4b	EN 15316-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Method for calculation of system energy requirements and system efficiencies — Part 1: General and Energy performance expression, Module M3-1, M3-4, M3-9, M8-1, M8-4*~~
M4-4b	EN 16798-9	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019*

		~~*Energy performance of buildings — Ventilation for buildings — Part 9: Calculation methods for energy requirements of cooling systems (Module M4–1, M4–4 M4–9) — General*~~
M5-4b	EN 16798-3	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Ventilation for buildings — Part 3: For non-residential buildings — Performance requirements for ventilation and room-conditioning systems (Modules M5-1, M5-4)*~~
M6-4b	EN 16798-3	See M5-4
M7-4b	EN 16798-3	See M5-4
M8-4b	EN 15316-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~See M3–4~~
M9-4b	EN 15193-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *Energy performance of buildings — Energy requirements for lighting – BS EN 15193:2007.* ~~*Energy performance of buildings — Energy requirements for lighting — Part 1: Specifications, Module M9*~~
M10-4b	EN 15232-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN 15217 Methods of expressing energy performance and for energy certification of buildings* ~~*Energy performance of buildings — Part 1: Impact of Building Automation, Controls and Building Management - Modules M10-4,5,6,7,8,9,10*~~

A.3: Annex A of IS EN ISO 52003-1: 2017: Energy performance requirements

The following table of the overall energy performance requirement mix should be filled out as follows:

— The first column lists the overall energy performance features that can be considered for setting requirements. The motivation for the chosen mix shall be reported. If required, other overall EPB features can be added at the bottom of the table. By means of a numbered reference, a precise description of each additional overall EPB feature will then be given and the motivation shall be described in a clear manner.

— In the second column, an X-mark is put at each of the features chosen to set a requirement.

— In the third column, a numbered reference is made to a full, detailed and clear explanation for each exception, including the motivation for the exception.

The table should be seen in conjunction with all the partial EPB requirements (which are beyond the scope of this document, e.g. concerning technical systems). Partial EPB requirements related to the fabric are discussed in ISO 52018, which also provides reporting templates for the corresponding EPB features.

New buildings: Default mix of the overall energy performance requirements:

Table A.2a — Default choices with respect to the overall EPB requirements (see 9.5)

Application: New buildings		
Overall energy performance feature	**Requirement?**	**Exceptions*?**
Total primary energy use	X	-
Non-renewable primary energy use	-	-
Renewable primary energy use		
Renewable energy ratio	X	
Greenhouse gas emissions	X	
Annual energy costs		
Energy policy factors (define*)		
The columns or cells that are marked with an asterisk * (i.e. any cell involving a specific national/regional element) shall be marked with a numbered reference. Clear explanation and motivation shall be given for each of these new elements. Complete: Explanations according to each of the numbered references:		
Exceptions: new religious buildings can apply (based on a well-motivated dossier) on a case by case basis for waiving of one or both of the requirements, or for laxer quantitative requirements. Motivation: the traditional appearance of such buildings cannot always be combined with energy efficiency techniques. Motivation for the requirement mix: — The first requirement on the total primary energy use ensures that in a first instance energy saving techniques are applied to a sufficient extent. — The second, complementary requirement ensures that renewable energy is applied to an extent that is warranted. Since the technical and economic potential for renewable energy may vary strongly from project to project, it may however prove very difficult to set an equitable, tailored requirement.		

Table A.2b — Default choices with respect to the overall EPB requirements (see 9.5)

Application: Existing buildings		
Overall energy performance feature	**Requirement?**	**Exceptions*?**
Total primary energy use	X	
Non-renewable primary energy use		
Renewable primary energy use		
Renewable energy ratio		
Greenhouse gas emissions	X	
Annual energy costs		
Energy policy factors (define*)		
The columns or cells that are marked with an asterisk * (i.e. any cell involving a specific national/regional element) shall be marked with a numbered reference. Clear explanation and motivation shall be given for each of these new elements. Complete: Explanations according to each of the numbered references:		
No default choice in this annex for existing buildings.		

As explained in Clause 9, the numerical value of the requirement on the total primary energy use (notably whether variable or constant) should be set with great care.

Table A.3 — Numeric indicator used for the requirement on the total primary energy use (see 9.5)

Numeric indicator	**Choice**
Total primary energy use per useful floor area [kWh/m^2]	NO
Total primary energy use E_{Ptot} [kWh]	YES
EPC	Primary energy consumption rate of the assessed building is divided by that of the reference building to obtain the Energy Performance Coefficient. The coefficient should be no greater than 1.
BER	Primary energy consumption rate of the assessed building is divided by that of the notional building in order to obtain the Building Energy Rating.
If another indicator is used, it shall be clearly described and precise reference shall be made to the determination method: (1) ... < free text > (2) ...	

As explained in Clause 9, the numerical value of the requirement on the non-renewable primary energy use (notably whether variable or constant) should be set with great care.

Table A.4 — Numeric indicator used for the requirement on the non-renewable primary energy use (see 9.5)

Numeric indicator	**Choice**
~~No default choice in this annex~~	

If another indicator is used, it shall be clearly described and precise reference shall be made to the determination method: (1) ...<free text> (2) ...	

As explained in Clause 9, the numerical value of the requirement on the renewable primary energy use (notably whether variable or constant) should be set with great care.

Table A.5 — Numeric indicator used for the requirement on the renewable primary energy use (see 9.5)

Numeric indicator	**Choice**
RER: renewable energy ratio	X
If another indicator is used, it shall be clearly described and precise reference shall be made to the determination method: (1) From the NEAP modelling guide pg18: if EPC (energy performance coefficient) ≤ 0.9 & CPC (carbon performance coefficient) ≤ 1.04 then RER ≥ 0.1 else, RER ≥ 0.2.	

A.4 Annex A of IS EN ISO 52003-1: 2017: Rating

Table A.6 — Energy rating methods (see 10.2 and 10.3)

Method	Choice[a]
1) Default energy rating method with two reference points (see 10.2)	NO
2) Default energy rating method with a single reference point (see 10.2)	YES
3) Other energy rating method (see 10.2)	NO
In case of method 1:	**Parameters**
Subclasses to expand the classes	~~A+~~
Position of the energy performance regulation reference, R_r,	~~Between class B and C~~
Position of the building stock reference, R_s,	~~Between class D and E~~
Measure for the building stock reference	~~Median (50%)~~
Position of $EP = 0$	~~Top of class A~~
In case of method 2:	**Parameters**
Numbering of the classes 1 to 7	A to G
Subclasses to expand the classes	A1, A2, A3, B1, B2, B3, C1, C2, C3, D1, D2, E1, E2, F, G
Boundary for the reference position, n_{ref}	2 (B3)
In case of method 3:	**Reference**
Reference to procedure:	~~Not applicable~~

[a] Only one "YES" is possible.

A.5 Annex A of IS EN ISO 52003-1: 2017: Label Model

Table A.7 — Graphical representation of the rating (see 11.3)

Method	Choice [a]
1) Default model for the graphical representation of the rating (see 11.3)	YES
2) Other model for the graphical representation of the rating (see 11.3)	NO
In case of method 2:	
Reference to procedure:	Not applicable
[a] Only one "YES" is possible.	

3. Annex A of IS EN ISO 52010-1: 2017

Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations

A.1: Annex A of IS EN ISO 52010-1: 2017: General

Annex A to this standard is used to specify the choices between methods, the required input data and references to other documents for buildings other than dwellings in Ireland.

It captures original text from the defaults in Annex B of the above overarching standard, with national choices differing from the Annex B defaults according to the following legend to facilitate comparison with other countries and to quickly identify national choices other than use of defaults outlined in the standards:

- Black font = from Annex A (in the tables these elements are usually grey shaded)
- Black font = National data/choices that are following the data/choices of Annex B
- ~~Grey Highlighted Text~~, = Data/choices of Annex B that are not used as national data/choices
- Green Highlighted Text = National data/choices that are not found as data/choices in Annex B, but that are in agreement with Annex A (the template; so: in agreement with the standard).

It is intended that this section could be extracted to form the basis for a National Annex A to the above standard published by NSAI or a National Datasheet to the above standard published by SEAI.

Key references are:

- The overarching standards as published on www.standards.ie
  - EN ISO 52000-1; Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures
  - EN ISO 52003-1; Energy performance of buildings - Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance
  - EN ISO 52010-1, Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations[3]
  - EN ISO 52016-1, Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 1: Calculation procedures
  - EN ISO 52018-1 Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options
- Technical Guidance Document to Part L of Irish Building Regulations for Buildings other than dwellings (2017) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Non Domestic Energy Assessment Procedure (NEAP) Methodology and associated tools/documents published by the Sustainable Energy Authority of Ireland www.seai.ie .

[3] A number of references in the tables below are to sections in this standard.

A.2: Annex A of IS EN ISO 52010-1: 2017: References

The references, identified by the EPB module code number, are given in Table A.1.

Table A.1 — References

Reference	Reference document	
	Number	Title
Mx-y[a]	…	…
	…	…

[a] In this document there are no choices in references to other EPB standards. The Table is kept to maintain uniformity between all EPB standards.

A.3: Annex A of IS EN ISO 52010-1: 2017: Climatic input data

Table A.2 — Weather station and climatic data set (See 6.3.2)

Name	Value					
Identifier for climatic data set	Dublin 039690 (IWEC) ~~DRYCOLD.TMY~~					
Station and/or name of data set	Dublin, Ireland File: IRL_Dublin.039690_IWEC.epw ~~Denver, Colorado, USA~~ ~~File: DRYCOLD.TMY~~					
	Symbol	**Unit**	**Value**	**Validity interval[a]**	**Origin**	**Varying[b]**
Latitude	φ_w	°	53.43 ~~39,76~~	−90 to +90	station	No
longitude [c]	λ_w		-6.25 ~~−104,86~~	−180 to +180	station	No
time zone	*TZ*	h	0 ~~-7~~	−12 to +12	station	No
First day of time series (day of the year)	$n_{day;start}$	-	1	1 to 366	station	No
Last day of time series (day of the year)	$n_{day;end}$	-	365	1 to 366	station	No
Day of the week for January 1		-	Monday (day 1)	Monday to Sunday (day 1 to 7)	station	No
Daylight saving time? [c]	No					
Leap day included	No					
Specific other information						
Name	**Value**					
Reference to documentation on application range and type of data	ANSI/ASHRAE standard 140[10]					

Name	Value
a Practical range, informative. b "Varying": value may vary over time: different values per time interval, for instance: hourly values or monthly values (not constant values over the year). c If Yes: additional information to be added.	

A.4: Annex A of IS EN ISO 52010-1: 2017: Calculation method

Table A.3 — Method to assess direct (beam) irradiance if not available from weather station (See 6.4.2)

Method		Choice Yes/No[a]
1	Default method	~~Yes~~
2	Other method	~~No~~
In case of method 2:		
	Reference to procedure:	~~Not applicable~~
[a] Only one choice possible.		

Table A.4 — Solar reflectivity of the ground ($\rho_{sol;grnd}$) (See 6.4.3)

Name	Value[a]
Fixed value	YES
Dependent on ground condition, listed in climatic data file	NO
Dependent on local ground condition (near the inclined surface)	NO
Values available in climatic data file	NO
[a] Only one choice possible.	

If fixed value:

TableA.5 — Solar reflectivity of the ground; if fixed value

Name	Value
Solar reflectivity of the ground, $\rho_{sol;grnd}$ [-]	0,2

If dependent on ground condition: Not applicable and therefore no Table A.6 given.

Table A.7 — Choice between options and methods for calculation of shading by external objects (See 6.4.5.1)

Application[b]	All applications	
Description	**Choice**	
Effect of shading calculated in this document?	No	
If Yes:	Choice[a]	

Only method 1, Simplified method (shading of direct radiation)	Yes	
Only method 2, Detailed method (shading of direct and diffuse radiation)	No	
Both methods are allowed	No	

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

Table A.8 — Number of skyline segments, $n_{sh;segm}$ for input solar shading objects (See 6.4.5.2)

Application[b]	**All applications**	**….**
Description	**Value of $n_{sh;segm}$**[a]	**Value of $n_{sh;segm}$**[a]
Maximum number of segments over 360 degrees	~~15~~	
Fixed width (= 360 / $n_{sh;segm}$) [c]	~~No~~	

[a] Practical range, informative.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

[c] If not fixed, the width of each segment can be adapted to the width of the shading object, with limitation of maximum number of segments $n_{sh;segm}$.

Table A.9 — Choice between methods for calculation of illuminance (See 6.4.6)

Application[a]	**All applications**	**….**
Description	**Choice**	**Choice**
Method 1, Default method, or Method 2, Alternative method	Method 1	
If choice is method 2:	**Description**	**Description**
Describe method 2	~~Not applicable~~	

[a] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

4. Annex A of IS EN ISO 52016-1: 2017

Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 1: Calculation procedures

A.1: Annex A of IS EN ISO 52016-1: 2017: General

Annex A to this standard is used to specify the choices between methods, the required input data and references to other documents for buildings other than dwellings in Ireland.

It captures original text from the defaults in Annex B of the above overarching standard, with national choices differing from the Annex B defaults according to the following legend to facilitate comparison with other countries and to quickly identify national choices other than use of defaults outlined in the standards:

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It is intended that this section could be extracted to form the basis for a National Annex A to the above standard published by NSAI or a National Datasheet to the above standard published by SEAI.

Key references are:

- The overarching standards as published on www.standards.ie
  - EN ISO 52000-1; Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures
  - EN ISO 52003-1; Energy performance of buildings - Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance
  - EN ISO 52010-1, Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations
  - EN ISO 52016-1, Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 1: Calculation procedures[4]
  - EN ISO 52018-1 Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options
- Technical Guidance Document to Part L of Irish Building Regulations for buildings other than dwellings (2017) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Non Domestic Energy Assessment Procedure (NEAP) Methodology and associated tools/documents published by the Sustainable Energy Authority of Ireland www.seai.ie .

[4] A number of references in the tables below are to sections in this standard.

A.2: Annex A of IS EN ISO 52016-1: 2017: References

The references, identified by the EPB module code number, are given in Table A.1

Table A.1 — References

Reference	Number	Reference document a
		Title
M1-4	ISO 52003-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN 15217 Methods of expressing energy performance and for energy certification of buildings* ~~*Energy performance of buildings – Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance*~~
M1-6	ISO 17772-1 EN 16798-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings - Indoor environmental Quality - part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings*~~ ~~*Energy performance of buildings – Ventilation for buildings – Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics (Module M1-6)*~~
M1-8	ISO 52000-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings – Overarching EPB assessment – Part 1: General framework and procedures*~~
M1-13	ISO 52010-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations*~~
M2-4	ISO 52018-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN 15217 Methods of expressing energy performance and for energy certification of buildings* ~~*Energy performance of buildings — Indicators for partial EPB requirements related to thermal energy balance and fabric features — Part 1: Overview of options*~~

M2-5	~~ISO 13789~~ ~~ISO 13370~~ ~~ISO 6946~~ ~~ISO 10211~~ ~~ISO 14683~~ ~~ISO 10077-1~~ ~~ISO 10077-2~~	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of building components – Dynamic thermal characteristics – Calculation methods* ~~*Thermal performance of buildings - Transmission and ventilation heat transfer coefficients - Calculation method*~~ ~~*Thermal performance of buildings – Heat transfer via the ground – Calculation methods*~~ ~~*Building components and building elements – Thermal resistance and thermal transmittance – Calculation method*~~ ~~*Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations*~~ ~~*Thermal bridges in building construction – Linear thermal transmittance – Simplified methods and default values*~~ ~~*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 1: General*~~ ~~*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 2: Numerical method for frames*~~
M2-8	ISO 9050 ISO 15099 ISO 52022-3	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Glass in building – Determination of light transmittance, solar direct transmittance, total solar energy transmittance, ultraviolet transmittance and related glazing factors* [for non-scattered glazings]~~ ~~*Thermal performance of windows, doors and shading devices – Detailed calculations* [for windows with scattering glazing and/or solar shading devices]~~ ~~*Energy performance of buildings – Thermal, solar and daylight properties of building components and elements – Part 3: Detailed calculation method of the solar and daylight characteristics for solar protection devices combined with glazing* [for normal incidence angle]~~ ~~(or see Subjects 4, 5 and 6 in Table C.1)~~
M3-1	EN 15316-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 1: General and Energy performance expression, Module M3–1, M3–4, M3–9, M8–1, M8–4*~~
M3-4b	EN 15316-1	~~See M3-1~~
M3-5	EN 15316-2	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 2: Space emission systems (heating and cooling), Module M3–5, M4–5*~~

M4-1	EN 16798-9	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Ventilation for buildings — Part 9: Calculation methods for energy requirements of cooling systems (Modules M4-1, M4-4, M4-9) — General*~~
M4-4	EN 16798-9	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~See M4-1~~
M4-5	EN 15316-2	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~See M3-5~~
M5-1	EN 16798-3	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN 15242 Ventilation for buildings – Calculation of room temperatures and of load and energy for buildings with room conditioning systems* ~~*Energy performance of buildings — Ventilation for buildings — Part 3:For non-residential buildings – Performance requirements for ventilation and room-conditioning systems (Modules M5-1, M5-4)*~~
M5-5	EN 16798-7	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Ventilation for buildings — Part 7: Calculation methods for the determination of air flow rates in buildings including infiltration (Module M5-5)*~~
M5-6	EN 16798-5-1 EN 16798-5-2	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Ventilation for buildings – Part 5-1: Calculation methods for energy requirements of ventilation and air conditioning systems (Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8) — Method 1: Distribution and generation*~~ ~~*Energy performance of buildings — Ventilation for buildings — Part 5-2: Calculation methods for energy requirements of ventilation systems (Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8) — Method 2: Distribution and generation*~~
M6-1	EN 16798-3	See M5-1
M6-4b	EN 16798-3	See M5-1

M6-5	EN 16798-5-1 EN 16798-5-2	See M5-6
M7-1	EN 16798-3	See M5-1
M7-4b	EN 16798-3	See M5-1
M7-5	EN 16798-5-1 EN 16798-5-2	See M5-6
M9-1	EN 15193-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *Energy performance of buildings — Energy requirements for lighting – BS EN 15193:2007.* ~~*Energy performance of buildings - Energy requirements for lighting - Part 1: Specifications, Module M9*~~
M10-1	EN 15232-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings – Part 1: Impact of Building Automation, Controls and Building Management - Modules M10-4,5,6,7,8,9,10*~~

A.3: Annex A of IS EN ISO 52016-1: 2017: Selection of main method

Table A.2 — Choice between hourly or monthly calculation method (see 5.2)

Type of object and/or application	**All applications**	[b]
Description	Choice [a]	
Only hourly method allowed	No ~~Yes~~	
Only monthly method allowed	Yes ~~No~~	
Both methods are allowed	No	

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between type of object, type of building or space, type of application or type of assessment. Use the list of identifiers from ISO 52000-1:2017, Tables A.2 to A.7 (normative template, with informative default choices in Tables B.2 to B.7).

A.4: Annex A of IS EN ISO 52016-1: 2017: Zoning

Table A.3 — Thermal zoning rules (see 6.4.2.12)

	Application: ….. [a]	
Description [b]	**Apply the described method?**	**If "No": Alternative method** If the described method is not used, describe details of the alternative method or give reference to source document
Zoning step 1. Assessment of thermal envelope	Yes	Not applicable
Zoning step 2. Grouping according to space category	Yes	Not applicable
Zoning step 3. Grouping in case of large openings	Yes	Not applicable
Zoning step 4. Split to have same combination of services	Yes	Not applicable
Zoning step 5. Further grouping according to similar thermal conditions of use	Yes	Not applicable
Zoning step 6. Split according to specific system or subsystem properties	Yes	Not applicable
Zoning step 7. (Further) split to have sufficient homogeneity in thermal balance	Yes	Not applicable
Zoning step 8. (Further) grouping of thermally unconditioned zones	Yes	Not applicable
Zoning step 9. Simplification in case of small thermal zones	Yes	Not applicable
Zoning step 10. Simplification in case of very small thermal zones	Yes	Not applicable

[a] Add more columns to differentiate per application, if needed.
[b] Additional rows may be added for alternative steps.

Table A.4 — Choice of method for thermally unconditioned zones (see 6.4.5)

Situation	**Default value of $b_{ztu;m}$ in case of a thermally unconditioned zone, type: external** [a]	
Unconditioned adjoining space - partially conditioned by surrounding spaces	0.728	$b_{ztu;m}$=a_i. a_i is 0.728 for Unconditioned adjoining space - partially conditioned by surrounding spaces (pg 50 of SBEMie Technical Manual).
Unconditioned adjoining space	1.0	$b_{ztu;m}$=a_i. a_i is 1.0 for unconditioned adjoining spaces (pg 50 of SBEMie Technical Manual).

Internal thermally unconditioned zone type allowed?		
Choice	No ~~Yes~~	
If Yes: (optionally) specify default values for the adjustment factor (free text)		
Situation	**Default value of $b_{ztu;m}$ in case of a thermally unconditioned zone, type: internal** [a]	
Unconditioned adjoining space - partially conditioned by surrounding spaces	0.728	
Unconditioned adjoining space	1.0	
[a] Add more rows if needed.		

Table A.5 — Default contribution of ventilation in external construction of a thermally unconditioned zone (see 6.4.5.4)

Application	All applications [a]	
Description	**Choice**	
Default allowed?	No ~~Yes~~	
If Yes:		
Coefficient for default contribution of ventilation, $c_{ztu;ve}$	0,5	
[a] Add more columns if needed.		

Table A.6 — Choice of spatial temperature averaging in residential buildings (see 6.4.6)

Description		**Choice** [a]
Application of the given formula for spatial temperature averaging		No ~~Yes~~
If No:		
No application of the given formula for spatial temperature averaging	It is assumed that the same temperature set-point for heating applies also to partly or moderately thermally conditioned residential spaces.	Yes ~~Not applicable~~
	Calculate the fully and partly or moderately thermally conditioned residential spaces as separate, thermally uncoupled thermal zones.	Not applicable
	Calculate the fully and partly or moderately thermally conditioned residential spaces as separate, thermally coupled thermal zones.	Not applicable

[a] Only one Yes possible.	
In case of application of the formula	**Value**
$f_{mod;t}$	~~0,8~~
$f_{mod;sp}$	~~0,5~~
$H_{H;int;spec}$ (W/m².K)[5]	~~2,0~~

Table A.7 — Choice between calculations with thermally coupled or uncoupled thermal zones (see 6.4.7)

Application	**All applications**	
Description	Choice [a]	[b]
Thermally uncoupled calculations	Yes	
Thermally coupled calculations	No	
Both methods are allowed	No	

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.). Note the link with the choice in Table A.9.

Table A.8 — Default thermal coupling properties in case of thermally coupled zones (see 6.4.7)

		Choice	
Heat transfer part	**Quantity**	**Default value**	**Unit**
Transmission heat transfer between zones *z* and *y*	Not applicable	Not applicable	…
ventilation heat transfer from zone *z* to zone *y*	Not applicable	Not applicable	…
ventilation heat transfer from zone *y* to zone *z*	Not applicable	Not applicable	…[a]

[a] Add more rows if needed.

[5] Suspected erratum in (EN) ISO 52016-1:2017 here corrected.

A.5: Annex A of IS EN ISO 52016-1: 2017: Hourly calculation procedures

Table A.9 — Factor for consideration of internal heat gains in design heat load calculation (see 6.5.~~5.5~~4.5.2)[6]

Application	**All applications**	.... [a]
Description	**Choice**	**Choice**
Value for factor $f_{H;ig}$	~~0.5~~	Not applicable
[a] Add more rows if needed.		

Table A.10 — Alternative choices in modelling (see 6.5.5.2, 6.5.6.3.1 and 6.5.7.1)

Description	**Choice**	**If choice is No, describe or give reference to the applied alternative method**
Use the method in 6.5.5.2 to calculate the actual temperatures and loads	~~Yes~~	Not applicable
Use method in 6.5.6.3.1 for the calculation of the thermal (longwave) radiation exchange	~~Yes~~	Not applicable
Use method in 6.5.7.1 for the conversion of physical properties of building elements into properties per layer (node)	~~Yes~~	Not applicable
NOTE In case of one or more "No", the procedures are validated using the validation cases in 7.2, as described in that subclause.		

Table A.11 — Convective fractions (see 6.5.6.2)

$f_{int;c}$ [a]	$f_{sol;c}$	$f_{H;c}$	$f_{C;c}$
~~0,40 for all source types~~	~~0,10~~	~~0,40~~	~~0,40~~
[a] Can be differentiated per source type.			

Table A.12 — Specification of internal partitions (see 6.5.6.3.1)

	Choice
Internal partitions need to be specified?	No
If by default: specify the default thermal characteristics	
Default characteristics	**Specification** [a]
Not applicable	Not applicable
[a] Add more rows if needed.	

[6] Suspected erratum in (EN) ISO 52016-1:2017 here corrected.

Table A.13 — Distribution of mass of opaque and ground floor elements (see 6.5.7.2 and 6.5.7.3)

Class	Specification of the class
Class I (mass concentrated at internal side)	~~Construction with external thermal insulation (main mass component near inside surface) , or equivalent~~
Class E (mass concentrated at external side)	~~Construction with internal thermal insulation (main mass component near outside surface) , or equivalent~~
Class IE (mass divided over internal and external side)	~~Construction with thermal insulation in between two main mass components, or equivalent~~
Class D (mass equally distributed)	~~Uninsulated construction (e.g. solid or hollow bricks, heavy or lightweight concrete, or lightweight construction with negligible mass (e.g. steel sandwich panel), or equivalent~~

Table A.14 — Specific heat capacity of opaque and ground floor elements (see 6.5.7.2 and 6.5.7.3)

Class	$\kappa_{m;op;}$ J/(m^2·K)	Specification of the class
Very light	50 000	~~Construction containing no mass components, other than e.g. plastic board and/or wood siding, or equivalent~~
Light	75 000	~~Construction containing no mass components other than 5 to 10 cm lightweight brick or concrete, or equivalent~~
Medium	110 000	~~Construction containing no mass components other than 10 to 20 cm lightweight brick or concrete, or less than 7 cm solid brick or heavy weight concrete, or equivalent~~
Heavy	175 000	~~Construction containing 7 to 12 cm solid brick or heavy weight concrete, or equivalent~~
Very heavy	250 000	~~Construction containing more than 12 cm solid brick or heavy weight concrete, or equivalent~~

Table A.15 — Solar absorption coefficient of external opaque surfaces (see 6.5.7.2)

	Choice
Differentiation in solar absorption coefficient?	~~No~~
If Yes: specify the procedure to classify the three categories (free text)	
Category	**Specification**
Category 1 α_{sol} **= 0,3** **(light colour)**	Not applicable
Category 2 α_{sol} **= 0,6** **(intermediate colour)**	Not applicable
Category 3 α_{sol} **= 0,9** **(dark colour)**	Not applicable
	Choice
If No: choose the default category	~~2~~

Table A.16 — Coefficient to limit assumed temperature in adjacent thermally unconditioned zone (see 6.5.9)

Application	All applications	....[a]
	$c_{ztu,h;max}$	$c_{ztu,h;max}$
Value	~~1,0~~	~~Not applicable~~
a Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).		

Table A.17 — Specific heat capacity of air and furniture (see 6.5.11)

$\kappa_{m;int}$ J/(m^2·K)
~~10 000~~

Table A.18 — View factor to the sky (see 6.5.13.3)

	Unshaded horizontal roof	Unshaded vertical wall
F_{sky}	~~1,0~~	~~0,5~~

Table A.19 — Difference between external air temperature and sky temperature (see 6.5.13.3)

Climatic region[a]	Sub-polar areas	Tropics	Intermediate zones
$\Delta\vartheta_{sky;t}$ (K)	~~9 (fixed value)~~	~~13 (fixed value)~~	~~11 (fixed value)~~
[a] Add more columns if needed to differentiate between climatic regions.			

Table A.20 — Choice of method for moisture absorption and desorption in materials (see 6.5.14.1)

Application	All applications	....[a]
Description	**Choice**	**Choice**
Moisture absorption and desorption calculated?	~~No~~	Not applicable
If No:	$G_{abs;zt;t} = 0$	$G_{abs;zt;t} = 0$
If Yes: give reference to method	Not applicable	Not applicable
[a] Add more columns if needed.		

Table A.21 — Choice of glazing area or frame area fraction (see E.2.1)

Description	Choice[a]
For each window: free choice between glazing area or fixed frame fraction	~~Yes~~
For all windows the same choice: either glazing area or fixed frame fraction	~~No~~

For all windows: only glazing area allowed	~~No~~
For all windows: only fixed frame fraction	~~No~~
[a] Only one Yes per column possible.	
In case of frame fraction:	F_{fr}
Frame fraction fixed value	~~0.25~~

Table A.22 — Factors related to the solar energy transmittance (see E.2.2.1)

Correction and weighting factor for *g*-value non-scattering and scattering transparent glazings and blinds:		
F_w	a_g	alt_g°
~~0,90~~	~~0,75~~	~~45~~

Default values of the total solar energy transmittance at normal incidence, g_n, for typical types of glazing [a]	
Type	g_n
Single glazing	~~0,85~~
Double glazing	~~0,75~~
Double glazing with selective low-emissivity coating	~~0,67~~
Triple glazing	~~0,7~~
Triple glazing with two selective low-emissivity coatings	~~0,5~~
Double window	~~0,75~~
[a] Assuming a clean surface and normal, untainted and non-scattering glazing.	

Default values of the reduction factor, for typical types of blinds [a]				
Blind type	**Optical properties of blind**		**Reduction factor with**	
	absorption	**transmission**	**blind inside**	**blind outside**
White venetian blinds	~~0,1~~	~~0,05~~ ~~0,1~~ ~~0,3~~	~~0,25~~ ~~0,30~~ ~~0,45~~	~~0,10~~ ~~0,15~~ ~~0,35~~
White curtains	~~0,1~~	~~0,5~~ ~~0,7~~ ~~0,9~~	~~0,65~~ ~~0,80~~ ~~0,95~~	~~0,55~~ ~~0,75~~ ~~0,95~~
Coloured textiles	~~0,3~~	~~0,1~~ ~~0,3~~ ~~0,5~~	~~0,42~~ ~~0,57~~ ~~0,77~~	~~0,17~~ ~~0,37~~ ~~0,57~~
Aluminium-coated textiles	~~0,2~~	~~0,05~~	~~0,20~~	~~0,08~~
[a] Add more rows or columns if needed.				

Table A.23 — Rules for operation of shutters (see G.2.2.1.2)

Application	All applications [a]	.... [a]
Control level	**Rules**	**Rules**

0 Manual operation	~~Closed: after sunset, if occupied~~ ~~Open: after sunrise, if occupied, but not during sleeping hours~~	Not applicable
1 Motorized operation with manual control	~~Same~~	Not applicable
2 Motorized operation with automatic control	~~Closed: after sunset~~ ~~Open: after sunrise~~	Not applicable
3 Combined light/blind/HVAC control	~~Same~~ [b]	Not applicable
[a] Add more columns if needed.		
[b] Conservative rule; a level 3 combined control is not covered in this table.		

Table A.24 — Rules for operation of solar shading devices (see G.2.2.1.2)

Application	All applications [a]	.... [a]
Control level	**Rules**	**Rules**
0 Manual operation	~~Closed: if solar irradiance > 300 W/m²~~ ~~Open: if solar irradiance < 200 W/m²~~	Not applicable
1 Motorized operation with manual control	~~Same~~	Not applicable
2 Motorized operation with automatic control	~~Closed: if solar irradiance > 200 W/m²~~ ~~Open: if solar irradiance < 200 W/m² and ≥ 2 hours passed since closing~~	Not applicable
3 Combined light/blind/HVAC control	~~Same~~ [b]	Not applicable
[a] Add more columns if needed. [b] Conservative rule; a level 3 combined control is not covered in this table.		

Table A.25 — Choices between options and methods for calculation of shading by external objects (see F.1)

Application [b]	**All applications**			**Not applicable**		
Description	**Choice**			**Choice**		
Calculation of the effect of shading by distant objects included in this document?	~~Yes~~			n.a.		
When calculating solar shading on building elements: which types of distant shading objects (not on site) may or shall be taken into account or ignored NOTE For instance landscape (such as hills or dikes), vegetation (such as trees), other constructions (such as buildings)	Shall be taken into account:	May be taken into account:	Shall be ignored:	Shall be taken into account:	May be taken into account:	Shall be ignored:
	~~Landscape (such as hills or dikes), other constructions (such as buildings)~~	~~Vegetation (such as trees)~~	-	n.a.	n.a.	n.a.
When calculating solar shading on opaque building elements such as roofs or facades: which types of on site shading objects can or shall be ignored NOTE For instance rebates, overhangs or other shading objects from the own building(s) on site	Shall be taken into account:	May be taken into account:	Shall be ignored:	Shall be taken into account:	May be taken into account:	Shall be ignored:
	-	-	~~Rebates, overhangs or other shading objects from the own building(s) on site~~	n.a.	n.a.	-
When calculating solar shading on transparent building elements: NOTE For instance window rebates, overhangs and side fins	Shall be taken into account:	May be taken into account:	Shall be ignored:	Shall be taken into account:	May be taken into account:	Shall be ignored:
	~~Window rebates, overhangs and side fins if depth larger than 20% of window height resp. width~~	~~Other window rebates, overhangs and side fins~~	-	n.a.	n.a.	n.a.
Specific subdivision rules for the calculation of solar shading on building elements	~~None~~			n.a.		
Choice between the two methods for the solar shading calculation:	Choice [a]			Choice [a]		
Method 1, Shading of direct radiation	~~Yes~~			n.a.		
Method 2, Shading of direct and diffuse radiation	~~No~~			n.a.		
In case of method 2: give reference to calculation procedure	n.a.			n.a.		

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

Table A.26 — Number of skyline segments, $n_{sh;segm}$ for input solar shading objects (see F.3.3)

Application [b]	**All applications**	**….**
Description	Value of $n_{sh;segm}$ [a]	Value of $n_{sh;segm}$ [a]
Maximum number of segments over 360 degrees	~~15~~	
Fixed width (= 360 / $n_{sh;segm}$) [c]	~~No~~	

[a] Practical range, informative.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

[c] If not fixed, the width of each segment can be adapted to the width of the shading object, with limitation of maximum number of segments $n_{sh;segm}$.

A.6: Annex A of IS EN ISO 52016-1: 2017: Monthly calculation procedures

Table A.27 —Monthly ventilation heat transfer coefficient (see 6.6.6.2)

Application	All applications	....[b]
Description	Choice [a]	Choice [a]
Method A	Yes	Not applicable
Method B [c]	No	Not applicable
Both methods [c]	No	Not applicable

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

[c] Method B is only allowed outside the CEN area.

Table A.28 —Dynamics correction factor for ventilation (see 6.6.6.2)

Dynamics correction factor for monthly mean air flow	Value
$f_{ve;dyn;k}$	~~1,0~~

Table A.29 — Solar absorption coefficient of external opaque surfaces (see 6.6.8.2)

	Choice
Differentiation in solar absorption coefficient?	Yes. Referred to as $\alpha_{e,B}$ in SBEMie Technical Manual. The values are given on page 57 as 1- transmittance-reflectance. ~~No~~
If Yes: specify the procedure to classify the three categories (free text)	
Category	**Specification**
Category 1 α_{sol} ~~= 0,3~~ **(light colour)**	White: 0.3 or 0.2 ~~Not Applicable~~
Category 2 α_{sol} ~~= 0,6~~ **(intermediate colour)**	Pastel: 0.5, 0.4, or 0.3 ~~Not Applicable~~
Category 3 α_{sol} ~~= 0,9~~ **(dark colour)**	Dark: 0.7, 0.6, or 0.4 ~~Not Applicable~~
Category 4 (black)	Black: 0.9, 0.7, or 0.5 ~~Not Applicable~~
	Choice
If No: choose the default category	~~2~~

Table A.30 — View factor to the sky (see 6.6.8.3)

	Unshaded horizontal roof	Unshaded vertical wall
F_{sky}	~~1,0~~	~~0,5~~

Table A.31 — Difference between external air temperature and sky temperature (see 6.6.8.3)

Climatic region [a]	Sub-polar areas	Tropics	Intermediate zones
$\Delta\vartheta_{sky;m}$ (K)	~~$\Delta\vartheta_{sky;m}$ (K)~~	~~9 (fixed value)~~	~~13 (fixed value)~~
[a] Add more columns if needed to differentiate between climatic regions.			

Table A.32 — Choice between detailed or simple method to determine the internal effective heat capacity (monthly method; see 6.6.9)

Application	All applications	
Description	Choice [a]	[b]
Only detailed method allowed	Yes ~~No~~	
Only simple method allowed	No ~~Yes~~	
Both methods allowed	No	
[a] Only one Yes per column possible. [b] Add more columns if needed to differentiate between applications (e.g. construction types or building categories).		

Table A.33 — Simple method to determine the internal effective heat capacity. Specification of the classes (monthly method; see 6.6.9)

Class	Specification of the class
Very light	~~Construction type is dominated by very light constructions as specified in Table B.14~~
Light	~~Construction type is dominated by light constructions as specified in Table B.14~~
Medium	~~Construction type is dominated by medium constructions as specified in Table B.14~~
Heavy	~~Construction type is dominated by heavy constructions as specified in Table B.14~~
Very heavy	~~Construction type is dominated by very heavy constructions as specified in Table B.14~~

Table A.34 — Values of the reference numerical parameter $a_{H,0}$ and the reference time constant $\tau_{H,0}$ for the gain utilization factor (see 6.6.10.2)

$a_{H,0}$	$\tau_{H,0}$ h

1,0	15

Table A.35 — Values of the reference numerical parameter $a_{C,0}$ and the reference time constant $\tau_{C,0}$ for the loss utilization factor (see 6.6.10.3)

$a_{C,0}$	$\tau_{C,0}$ h
1,0	15

Table A.36 — Choice between methods A and B for heating intermittency (see 6.6.11.3)

Application	**All applications**	
Description	**Choice** [a]	[b]
Only Method A	No ~~Yes~~	
Only Method B	Yes ~~No~~	
Both methods are allowed	No	

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

Table A.37 — Choice between methods A and B for cooling intermittency (see 6.6.11.4)

Application	**All applications**	
Description	**Choice** [a]	[b]
Only method A	No ~~Yes~~	
Only method B	Yes ~~No~~	
Both methods are allowed	No	

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

If method A applies	
Correlation factor for method A for intermittent cooling	**Value**
$b_{C;red}$	~~0,3~~

Table A.38 — Choice between methods A and B for overheating indicator (see 6.6.12)

	[b]	[b] ....
Description	**Choice** [a]	**Choice** [a]
Method A	No	Yes/No
Method B	Yes	Yes/No

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.)

If Method B applies	
Provide details or reference to details	See NEAP table 16

Table A.39 — The monthly fraction of energy need for humidification (see 6.6.14)

	Monthly fraction of energy need for humidification $f_{HU;m}$

Formula?	N/A ~~Yes~~		
If Yes, give formula	~~for each month *m*:~~ ~~$F_{hu;m} = Q_{H;nd;m}/Q_{H;nd;an}$~~ ~~where $Q_{H;nd;m/an}$ is the monthly / annual energy need for heating, as determined in6.5.4.1, in kWh~~		
If No, give fraction for each month (total = 1)	**Monthly fraction of energy need for humidification $f_{HU;m}$**		
January	Not applicable	July	Not applicable
February	Not applicable	August	Not applicable
March	Not applicable	September	Not applicable
April	Not applicable	October	Not applicable
May	Not applicable	November	Not applicable
June	Not applicable	December	Not applicable

Table A.40 — Efficiency of latent heat recovery (see 6.6.14)

Type of heat recovery unit	Efficiency of latent heat recovery $\eta_{HU;rvd}$
Provisions specifically made for transporting moisture from exhaust to supply air (such as a heat recovery wheel with moisture absorbing surface)	~~0,55~~
Other provisions	~~0~~
-	-
- [a]	-
[a] Add more rows if needed to differentiate between types.	

Table A.41 — Annually accumulated amount of moisture to be supplied per kg dry air supply (monthly method; see 6.6.14)

Space category [a]	Annually accumulated amount of moisture to be supplied per kg dry air supply $\Delta x \cdot t_{a;sup}$ (kg h/kg)
SPACECAT_RES_LIV	~~0,17~~
SPACECAT_RES_INDIV_OTHER	~~0,17~~
SPACECAT _RES_COLL	~~0,17~~
SPACECAT_TH.UNCOND_OTHER	~~0~~
SPACECAT_TH.UNCOND_SUN	~~0~~
SPACECAT_TH.UNCOND_CORR	~~0~~
SPACECAT_OFF	~~4,2~~
SPACECAT_ EDUC	~~4,2~~
SPACECAT_HOSP_BED	~~4,2~~
SPACECAT_HOSP_OTHER	~~4,2~~

SPACECAT_HOTEL	~~0,17~~
SPACECAT_REST	~~0,17~~
SPACECAT_REST_KITCH	~~0~~
SPACECAT_MEET	~~0,17~~
SPACECAT_AUDIT	~~0,17~~
SPACECAT_THEAT	~~0,17~~
SPACECAT_SERVER	~~0~~
SPACECAT_SPORT_TH.COND	~~0,17~~
SPACECAT_SPORT_TH.UNCOND	~~0~~
SPACECAT_RETAIL	~~0,17~~
SPACECAT_NONRES_BATH	~~0~~
SPACECAT_STOR_HEAT	~~0~~
SPACECAT_STOR_COOL	~~0~~
SPACECAT ENGINE	~~0~~
SPACECAT_CAR	~~0~~
SPACECAT _BARN	~~0~~
[a] Add more rows if needed to differentiate between types.	

Table A.42 — Choice of glazing area or frame area fraction (see E.2.1)

Description	**Choice** [a]
For each window: free choice between glazing area or fixed frame fraction	No
For all windows the same choice: either glazing area or fixed frame fraction	No
For all windows: only glazing area allowed	No
For all windows: only fixed frame fraction	No
For each window: a frame fraction (not a fixed value)	Yes
[a] Only one Yes per column possible.	
In case of frame fraction:	F_{fr}
Frame fraction fixed value	~~0,25~~

Table A.43 — Factors related to the solar energy transmittance (see E.2.2.1)

Correction and weighting factor for *g*-value non-scattering and scattering transparent glazings and blinds:		
F_w	a_g	alt_g °
~~0,90~~	~~0,75~~	~~45~~

Default values of the total solar energy transmittance at normal incidence, g_n, for typical types of glazing [a]	
Type	**G_n**
Single glazing	~~0,85~~
Double glazing	~~0,75~~
Double glazing with selective low-emissivity coating	~~0,67~~
Triple glazing	~~0,7~~
Triple glazing with two selective low-emissivity coatings	~~0,5~~
Double window	~~0,75~~

[a] Assuming a clean surface and normal, untainted and non-scattering glazing.

SBEMie pg 55 g = F_w*$g_\perp$ This is where F_w does not have a single default value and is instead obtained from a table of values for each orientation and tilt. The method for calculating $g_\perp$ is given in ISO 9050 or EN 410.

Default values of the reduction factor, for typical types of blinds [b]				
Blind type	**Optical properties of blind**		**Reduction factor with**	
	absorption	**transmission**	**blind inside**	**blind outside**
White venetian blinds	~~0,1~~	~~0,05~~ ~~0,1~~ ~~0,3~~	~~0,25~~ ~~0,30~~ ~~0,45~~	~~0,10~~ ~~0,15~~ ~~0,35~~
White curtains	~~0,1~~	~~0,5~~ ~~0,7~~ ~~0,9~~	~~0,65~~ ~~0,80~~ ~~0,95~~	~~0,55~~ ~~0,75~~ ~~0,95~~
Coloured textiles	~~0,3~~	~~0,1~~ ~~0,3~~ ~~0,5~~	~~0,42~~ ~~0,57~~ ~~0,77~~	~~0,17~~ ~~0,37~~ ~~0,57~~
Aluminium-coated textiles	~~0,2~~	~~0,05~~	~~0,20~~	~~0,08~~

SBEMie pg56-57 contain the calculations for g when solar protection devices (described by their colour and opacity) are in use.

[b] Add more rows or columns if needed.

Table A.44a — Movable shutter reduction factor, $f_{sht;with}$, and movable solar shading reduction factor $f_{sh;with}$ (see G.2.2.2.2)

Month	Dublin (Ireland) ~~Paris (France)~~								
	$f_{sht;with}$ [a]	$f_{sh;with}$ [a]							
		S	SE	E	NE	N	NW	W	SW
1	0,5	0.237666	0.100717	0	0	0	0	0.036167	0.056369

2		0,5	0.454871	0.356693	0.034552	0	0	0.072775	0.155421	0.394378
3		0,5	0.253907	0.286523	0.126789	0	0	0	0.010569	0.194436
4		0,5	0.277548	0.258609	0.170812	0.00708	0.009028	0.040889	0.209245	0.276882
5		0,5	0.273138	0.292985	0.233496	0.088606	0.024264	0.080779	0.222601	0.240324
6		0,5	0.206626	0.224311	0.178231	0.081246	0.006978	0.06172	0.16647	0.220165
7		0,5	0.16453	0.225195	0.193877	0.076428	0	0.014811	0.127949	0.170244
8		0,5	0.256115	0.280578	0.180601	0.039335	0	0.006749	0.084848	0.168679
9		0,5	0.300086	0.290477	0.144052	0	0	0.025905	0.126341	0.267519
10		0,5	0.43056	0.370177	0.149412	0	0	0	0.046035	0.317569
11		0,5	0.32832	0.224232	0.054147	0	0	0	0.055339	0.277475
12		0,5	0.313862	0.281719	0	0	0	0	0	0.137765
Annual		0,5								
			$F_{sht;with}$ is not used. Annual values are also not used.							
			[a] Add more columns or rows if needed to differentiate between e.g. applications (e.g. building categories, new or existing buildings, etc.), space categories, orientations or climates.							

Table A.45 — Choices between options and methods for calculation of shading by external objects (see F.1)

Application [b]	All applications			Not applicable		
Description	**Choice**			**Choice**		
Calculation of the effect of shading by distant objects included in this document?	No ~~Yes~~			n.a.		
When calculating solar shading on building elements: which types of distant shading objects (not on site) may or shall be taken into account or ignored NOTE For instance landscape (such as hills or dikes), vegetation (such as trees), other constructions (such as buildings)	Shall be taken into account:	May be taken into account:	Shall be ignored:	Shall be taken into account:	May be taken into account:	Shall be ignored:
	-	-	Landscape, other constructions, and vegetation.	n.a.	n.a.	n.a.
When calculating solar shading on opaque building elements such as roofs or facades: which types of on site shading objects can or shall be ignored NOTE For instance rebates, overhangs or other shading objects from the own building(s) on site	Shall be taken into account:	May be taken into account:	Shall be ignored:	Shall be taken into account:	May be taken into account:	Shall be ignored:
	-	-	Rebates, overhangs or other shading objects from the own building(s) on site	n.a.	n.a.	n.a.
When calculating solar shading on transparent building elements: NOTE For instance window rebates, overhangs and side fins	Shall be taken into account:	May be taken into account:	Shall be ignored:	Shall be taken into account:	May be taken into account:	Shall be ignored:
	Overhangs, fins, and other external solar protection devices	-	-	n.a.	n.a.	n.a.
Specific subdivision rules for the calculation of solar shading on building elements	None			n.a.		
Choice between the two methods for the solar shading calculation:	Choice [a]			Choice [a]		
Method 1, Shading of direct radiation	No ~~Yes~~			n.a.		

Method 2, Shading of direct and diffuse radiation	Yes ~~No~~	n.a.
In case of method 2: give reference to calculation procedure	SBEMie 4.1.12.2 contains the details on how shading affects the solar radiation on the plane. This is where solar radiation is utilised as a single total value – it is not divided into direct and diffuse.	n.a.

[a] Only one Yes per column possible.

[b] Add more columns if needed to differentiate between applications (e.g. building categories, new or existing buildings, etc.).

Table A.46 — Parameters for monthly solar shading due to overhangs (See F.3.5.1.2)

Period:		summer: June - September			
Orientation		A_1	B_1	A_2	B_2
North hemisphere	**South hemisphere**				
S	N	~~-3,023~~	~~0,045~~	~~1,285~~	~~-0,006~~
SE-SW	NE-NW	~~-1,255~~	~~0,015~~	~~0,905~~	~~-0,008~~
E-W	E-W	~~-0,684~~	~~0,005~~	~~0,610~~	~~-0,004~~
NE-NW	SE-SW	~~-0,654~~	~~0,006~~	~~0,616~~	~~-0,006~~
N	S	~~-0,726~~	~~0,007~~	~~0,616~~	~~-0,007~~

Table A.47 — Parameters for monthly solar shading due to fins (See F.3.5.1.2)

Period:		summer: June - September			
Orientation		A_1	B_1	A_2	B_2
North hemisphere	**South hemisphere**				
S	N	~~-1,175~~	~~0,012~~	~~0,860~~	~~-0,008~~
SE-SW	NE-NW	~~-0,799~~	~~0,009~~	~~0,684~~	~~-0,006~~
E-W	E-W	~~0,118~~	~~-0,014~~	~~0,005~~	~~0,010~~
NE-NW	SE-SW	~~0,155~~	~~-0,041~~	~~-0,680~~	~~0,009~~
N	S	~~0,275~~	~~-0,133~~	~~0,641~~	~~0,039~~

Table A.48a — Parameters for monthly solar shading by obstacles; more detailed method (See F.3.1.2 and F.3.5.2.2)

Location:	~~40º north latitude~~		
Period:	~~winter: October - May~~		
Orientation	**Weight, $w_{obst;m;i}$ per sector**	**Solar altitude, $\alpha_{sol;m;i}$ per sector**	**Fraction direct solar**

									irradiation $f_{sol;dir;m}$
	1	2	3	4	1	2	3	4	
N	0	0	0	0	-	-	-	-	0
NE	0	0	0	1,00	-	-	-	7,6	0,10
E	0	0	0,31	0,69	-	-	9,0	20,8	0,50
SE	0	0,14	0,58	0,28	-	9,2	22,2	24,0	0,70
S	0,06	0,40	0,47	0,07	9,4	22,8	22,6	9,7	0,75
SW	0,22	0,63	0,15	0	24,2	22,0	9,6	-	0,70
W	0,70	0,30	0	0	20,6	9,5	-	-	0,50
NW	1,00	0	0	0	8,7	-	-	-	0,10

Table A.48b — Parameters for monthly solar shading by obstacles; more detailed method (See F.3.1.2 and F.3.5.2.2)

Location:	40º north latitude								
Period:	summer: June - September								
Orientation	**Weight, $w_{obst;m;i}$ per sector**				**Solar altitude, $\alpha_{sol;m;i}$ per sector**				**Fraction direct solar irradiation $f_{sol;dir;m}$**
	1	2	3	4	1	2	3	4	
N	0	0	0	1,00	-	-	-	17,4	0,10
NE	0	0	0,62	0,38	-	-	20,9	50,2	0,30
E	0	0,48	0,48	0,04	-	21,8	52,5	74,4	0,45
SE	0,33	0,53	0,10	0,03	23,2	54,0	74,4	74,4	0,55
S	0,30	0,20	0,21	0,29	60,5	74,4	74,4	60,7	0,50
SW	0,03	0,11	0,52	0,34	74,4	74,4	54,2	23,1	0,55
W	0,04	0,47	0,49	0	74,4	52,7	21,8	-	0,45
NW	0,37	0,63	0	0	50,3	20,9	-	-	0,30

5. Annex A of IS EN ISO 52018-1: 2017

Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options

A.1: Annex A of IS EN ISO 52018-1: General

Annex A to this standard is used to specify the choices between methods, the required input data and references to other documents for buildings other than dwellings in Ireland.

It captures original text from the defaults in Annex B of the above overarching standard, with national choices differing from the Annex B defaults according to the following legend to facilitate comparison with other countries and to quickly identify national choices other than use of defaults outlined in the standards:

- Black font = from Annex A (in the tables these elements are usually grey shaded)
- Black font = National data/choices that are following the data/choices of Annex B
- ~~Grey Highlighted Text~~ = Data/choices of Annex B that are not used as national data/choices
- Green Highlighted Text == National data/choices that are not found as data/choices in Annex B, but that are in agreement with Annex A (the template; so: in agreement with the standard).

It is intended that this section could be extracted to form the basis for a National Annex A to the above standard published by NSAI or a National Datasheet to the above standard published by SEAI.

Key references are:

- The overarching standards as published on www.standards.ie
  - EN ISO 52000-1; Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures
  - EN ISO 52003-1; Energy performance of buildings - Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance
  - EN ISO 52010-1, Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations
  - EN ISO 52016-1, Energy performance of buildings - Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads - Part 1: Calculation procedures
  - EN ISO 52018-1 Energy performance of buildings - Indicators for partial EPB requirements related to thermal energy balance and fabric features - Part 1: Overview of options[7]
- Technical Guidance Document to Part L of Irish Building Regulations for Building Other than dwellings (2017) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Non Domestic Energy Assessment Procedure (NEAP) Methodology and associated tools/documents published by the Sustainable Energy Authority of Ireland www.seai.ie .

[7] A number of references in the tables below are to sections in this standard.

A.2: Annex A of IS EN ISO 52018-1: References

The references, identified by the EPB module code number, are given in Table B.1.

Table A.1 — References

Reference	Number	Reference document
		Title
M1-4	ISO 52003-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN 15217 Methods of expressing energy performance and for energy certification of buildings* ~~*Energy performance of buildings — Indicators, requirements, ratings and certificates — Part 1: General aspects and application to the overall energy performance*~~
M1-6	ISO 17772-1 EN 16798-1 (under preparation)	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Indoor environmental quality — Part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings*~~ ~~*Energy performance of buildings – Ventilation of buildings – Part 1: Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics* (Module M1–6)~~
M1-13	ISO 52010-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — External climatic conditions — Part 1: Conversion of climatic data for energy calculations*~~
M2-2	ISO 52016-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads — Part 1: Calculation procedures*~~
M2-5.1	ISO 13789	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *EN ISO 13786:2005 Review of standards dealing with calculation of heat transmission in buildings – Thermal performance of*

		building components – Dynamic thermal characteristics – Calculation methods ~~*Thermal performance of buildings — Transmission and ventilation heat transfer coefficients — Calculation method*~~
M2-8.1	ISO 52022-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Thermal, solar and daylight properties of building components and elements — Part 1: Simplified calculation method of the solar and daylight characteristics for solar protection devices combined with glazing*~~
M5-8	EN 16798-5-1 EN 16798-5-2	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* ~~*Energy performance of buildings — Modules M5-6, M5-8, M6-5, M6-8, M7-5, M7-8 — Ventilation for buildings — Calculation methods for energy requirements of ventilation and air conditioning systems — Part 5-1: Distribution and generation (revision of EN 15241) — Method 1*~~ ~~*Energy performance of buildings — Modules M5-6.2, M5-8.2 — Ventilation for buildings — Calculation methods for energy requirements of ventilation systems — Part 5-2: Distribution and generation— Method 2*~~
M9-1	EN 15193-1	*SEAI, A Technical Manual for SBEMie, 30 Nov 2018* *SEAI, Non-Domestic Energy Assessment Procedure – Modelling Guide, Q2 2019* *Energy performance of buildings — Energy requirements for lighting – BS EN 15193:2007.* ~~*Energy performance of buildings — Module M9 — Energy requirements for lighting — Part 1: Specifications*~~

A.3: Annex A of IS EN ISO 52018-1: Mix of partial energy performance requirements

A.3.1: General

See Clause 6.

The table based on the template of Table A.2 shall be filled out as follows.

— The first column lists the partial EPB features that can be considered for setting requirements. The motivation for the mix that is chosen shall be reported below the table. If needed, still other partial EPB features can be added at the bottom of the table. By means of a numbered reference, a precise description of each additional EPB feature will then be given below the table. If possible, the description of the extra feature shall be taken from an EPB standard. Also, for each extra partial EPB feature, the motivation shall be described in a clear manner.

— In the second column, an X-mark is placed at each of the features that is chosen to set a requirement.

— In the third column, for each exception, a numbered reference is made to a full, detailed and clear explanation below the table, including the motivation for the exception. For some types of (detailed) requirements (e.g. on element level, such as thermal insulation), it may be easier to explain the exceptions in conjunction with the detailed description of the actual requirements. In

these instances, it suffices to give here the general synthesis, the motivation and a precise reference to the regulatory texts where the requirements and exceptions are described.

A.3.2: Application: new buildings

Four different requirement mixes are distinguished depending on typical conditioning habits (i.e. commonly heated and/or cooled or not). The mix that is most appropriate for a certain building category (e.g. dwelling or office) obviously varies strongly with the local climate, typical internal gains, etc. It is clear that for a given geographical location, different building categories can best be served by different requirement mixes. For instance, in moderate summer climates, mix A may be best for dwellings, but for offices, mix D may be most appropriate.

Table A.2a — Choices with respect to the mix of partial EPB requirements related to thermal energy balance and fabric features (see Clause 6)

Application: New constructions						
Partial EPB feature	**Requirement?**				**Exceptions*?**	**Details in**
	Mix A	**Mix B**	**Mix C**	**Mix D**		
Summer thermal comfort	X	X	—	—	—	Table A.3/B.3
Winter thermal comfort	—	—	—	—	—	Table A.4/B.4
Energy "need" for heating: give further specifications*	X (1)	—	—	X (1)	—	Table A.5/B.5
Energy "need" for cooling: give further specifications*	—	—	X (2)	X (2)	—	Table A.6/B.6
Combined energy "need" for heating and cooling (and possibly still other quantities): define precisely*	—	—	—	—	—	Table A.7/B.7
Overall thermal insulation of the envelope	—	—	—	—	—	Table A.8/B.8
Thermal insulation of individual elements of the thermal envelope	X	X	X	X	X (3)	Table A.9/B.9
Thermal bridges	X	X	X	X	—	Table A.10/B.10
Window energy performance	X	X	X	X	—	Table A.11/B.11
Airtightness of the thermal envelope: mandatory measurement: give further specifications*	—	—	—	—	—	~~Table A.12/B.12~~[8]
Airtightness of the thermal envelope: quantitative requirement: give further specifications*	X (4)	X (4)	X (4)	X (4)	—	Table A.12/B.12
Solar control	—	—	—	—	—	Table A.13/B.13
<free text> (Other requirement 1): define*)	—	—	—	—	—	Table A.14/B.14
<free text> (Other requirement 2): define*)	—	—	—	—	—	Table A.14/B.14

[8] Suspected erratum in (EN) ISO 52018-1:2017 here corrected.

…	—	—	—	—	—	Table A.14/B.14

* The columns or cells that are marked with an asterisk (i.e. any cell involving a specific national/regional element) shall be marked with a numbered reference. A clear explanation and motivation shall be given for each of these new elements below the table.

Explanation:

(a) If applicable, specify for the energy "need" for heating:

— with the real or with a predefined fictitious ventilation system;

— including/excluding the amount of heat needed for active preheating of the incoming hygienic ventilation air (if present);

— including/excluding the latent heat need (i.e. the sensible heat need only or not);

— still other aspects.

(b) If applicable, specify for the energy "need" for cooling:

— with the real or with a predefined fictitious ventilation system;

— including/excluding the amount of cold needed for active precooling of the incoming hygienic ventilation air (if present);

— including/excluding the latent cold need (i.e. the sensible cold need only or not);

— still other aspects.

Airtightness of the thermal envelope: quantitative requirement:

— The procedure for testing air tightness is given in EN ISO 9972: 2015 "Thermal performance of buildings: determination of air permeability of buildings: fan pressurization method".

— The maximum specific leakage rate per thermal envelope area is $5 m^3/h/m^2$.

Specifications according to each of the numbered references:

The following types of requirement mixes are distinguished.

— Type Mix A: building categories that do NOT generally have active space cooling (in the region where the regulation applies). For example, dwellings in cold climates.

— Type Mix B: building categories that generally have NEITHER active space cooling NOR active space heating (in the region where th4ee regulation applies). For example, many building categories in regions with a mild winter and mild summer climate.

— Type Mix C: building categories that do NOT generally have active space heating (in the region where the regulation applies). For example, most building categories in tropical climates.

— Type Mix D: building categories that commonly have BOTH active space cooling and active space heating (in the region where the regulation applies). For example, office buildings in moderate climates.

Numbered references:

(1) The energy need for heating is determined with the real ventilation system and includes, if applicable, the amount of heat needed for active preheating of the incoming hygienic ventilation air. Any latent heat need (on space level or for the incoming hygienic ventilation air) is not included in the heating need.

(2) The energy need for cooling is determined with the real ventilation system and includes, if applicable, the amount of cold needed for active precooling of the incoming hygienic ventilation air. Any latent cold need (on space level or for the incoming hygienic ventilation air) is not included in the cooling need.

(3) Exception is allowed for 1 % of the envelope area that is subject to the requirements. (Note that this exception with respect to the Umax values does not imply that these thermal envelope elements may be neglected in the further EPB assessments. All thermal envelope elements shall still be taken into account in all further EPB assessments.) Designers also should heed the possible impact on indoor environment of any lesser insulated elements (notably the possible consequences of low internal surface temperatures).

(4) The air tightness measurement shall be performed according to ISO 9972 and its method 3, with specifications consistent with the treatment of infiltration/exfiltration in the EPB assessment method, e.g. open combustion devices shall be sealed if the air flow through them is already separately taken into account in the EPB assessment method. The final result shall be reported as the mean of the pressurization and depressurization regression curves at the reference pressure needed for the EPB assessments.

Motivation for the chosen requirement mix:

(in bottom-up order):

— The mandatory measurement of the airtightness of the thermal envelope (upon sufficient completion of the works) creates a strong regulatory stimulus that due attention be paid to this aspect by all actors in the construction process (designers and contractors alike). The stimulus is all the stronger if the result of the measurement is properly valued in the EPB assessment methods. Not setting an actual, quantitative requirement avoids a too strict or too lax requirement for a given project. (It may be difficult to determine in a general manner in a regulation a differentiated, cost-optimal requirement, which depends upon the construction type, the state of know-how and the experience of the specific project team, etc.). It also avoids much contentious public discussion on the actual strictness of the requirement.

— The requirement on the thermal insulation of all individual elements of the thermal envelope (apart from the possible odd exception, corresponding to no more than 1 % of the thermal envelope area) ensures, first of all, that sufficiently high internal surface temperatures are achieved under winter conditions. Any minor area(s) that fall(s) within the exception rule does not waive the design team of its responsibility with respect to the potential issues related to low internal surface temperatures in these areas.

Further, it guarantees that the thermal envelope, executed immediately at the time of the initial construction, conforms to the full technical requirements and is, economically speaking, state-of-the-art. (The thermal envelope is, generally speaking, practically and economically difficult to upgrade later on and it thus largely predestines the energy performance of the building over its entire lifetime.)

— For the more integral requirements, a differentiation between four situations is made. The combination of separate winter and summer requirements (instead of a combined “needs” requirement) provides a certain assurance that a balanced design between both situations is achieved. Solar gains (influenced by window area and orientation, choice of glazing and solar protection devices, etc.) are a crucial point of attention in this respect, in particular for the summer situation. Each type of requirement mix has been chosen such that it corresponds to the actual situation of the majority of new projects in a certain building category. For instance, no heating and/or cooling need requirement is set if there is usually no such active conditioning, thus avoiding the potential misunderstanding that such active conditioning is considered standard. And no summer or winter thermal comfort requirement is set if reasonable comfort levels cannot be achieved under free floating conditions anyway.

— Mix A. For building categories for which active space cooling is not standard (for instance in cold climates), a requirement on the summer thermal comfort seems appropriate. As explained in Clause 7, it is advised to complement it with the concept of (probability weighted) fictitious cooling above a strict threshold, so that a further stimulus for good summer design (better than the requirement) is integrated in the overall EPB assessment. The winter situation can be dealt with by means of a requirement on the heating “need”.

— Mix B. In situations where reasonable year round thermal comfort can be obtained with neither active space heating nor active space cooling, a requirement on the summer comfort and another on the winter thermal comfort seem advised, in combination with (probability weighted) fictitious cooling and heating in the overall EPB assessment.

— Mix C. In situations where active space heating is not standard (e.g. in relatively warm climates), a requirement on the winter thermal comfort combined with (probability weighted) fictitious heating above a strict threshold appears a good approach. The summer situation can then be covered by a requirement on the cooling “need”.

— Mix D. For building categories for which both active space heating and active space cooling are common in new construction, separate heating and cooling need requirements may be appropriate.

A.3.3: Application: existing buildings

Table A.2b — Choices with respect to the partial EPB requirements related to thermal energy balance and fabric features (see Clause 6)

Application: Works on existing buildings			
Partial energy performance feature	**Requirement?**	**Exceptions*?**	**Details in**
Summer thermal comfort	—	—	Table A.3/B.3
Winter thermal comfort	—	—	Table A.4/B.4
Energy "need" for heating: give further specifications (a)*	—	—	Table A.5/B.5
Energy "need" for cooling: give further specifications (b)*	—	—	Table A.6/B.6
Combined energy "need" for heating and cooling (and possibly still other quantities): define precisely*	—	—	Table A.7/B.7
Overall thermal insulation of the envelope	—	—	Table A.8/B.8
Thermal insulation of individual elements of the thermal envelope	X (1)	X (2)	Table A.9/B.9
Thermal bridges	X	—	Table A.10/B.10
Window energy performance	X	—	Table A.11/B.11
Airtightness of the thermal envelope: mandatory measurement: give further specifications*	—	—	Table A.12/B.12
Airtightness of the thermal envelope: quantitative requirement: give further specifications*	—	—	Table A.12/B.12
Solar control	—	—	Table A.13/B.13

* The columns or cells that are marked with an asterisk (i.e. any cell involving a specific national/regional element) shall be marked with a numbered reference. A clear explanation and motivation shall be given for each of these new elements below the table.

Specifications and motivations:

Explanation:

(a) If applicable, specify for the energy "need" for heating:

— with the real or with a predefined fictitious ventilation system;

— including/excluding the amount of heat needed for active preheating of the incoming hygienic ventilation air (if present);

— including/excluding the latent heat need (i.e. the sensible heat need only or not);

— still other aspects.

(b) If applicable, specify for the energy "need" for cooling:

— with the real or with a predefined fictitious ventilation system;

— including/excluding the amount of cold needed for active precooling of the incoming hygienic ventilation air (if present);

— including/excluding the latent cold need (i.e. the sensible cold need only or not);

— still other aspects.

Specifications according to each of the numbered references:

(1) Where fabric upgrades result in changes to areas greater than 25% of the surface area of the building, maximum U-values apply.

(2) From "Limiting Thermal Bridging and Air Infiltration – Acceptable Construction Details"

Motivation for the chosen requirement mix:

A.4: Annex A of IS EN ISO 52018-1: Partial energy performance requirements

A.4.1: Application: new buildings

Table A.3a is applicable for requirement mixes A and B:

Table A.3a — Numeric indicator used for the requirement on the summer thermal comfort (see Clause 7)

Application: New constructions	
Numeric indicator	**Choice**
Time above a fixed reference temperate [h]	
Temperature weighted time above a fixed reference temperature [K·h]	
Ratio (R_k) of cooling demand with temperature of 27°C to that with cooling set-point from the NEAP Activity Database	X
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method: **Description in case of other indicator:**	
Not applicable.	

Table A.4a is applicable for requirement mixes B and C:

Table A.4a — Numeric indicator used for the requirement on the winter thermal comfort (see Clause 8)

Application: New constructions	
Numeric indicator	**Choice**
Time below a fixed reference temperate [h]	
Temperature weighted time below a fixed reference temperature [K·h]	~~N/A~~
<free text> Other indicator; define*)	~~Not applicable~~
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method: **Description in case of other indicator:**	
Not applicable.	

Table A.5a is applicable for requirement mixes A and D:

Table A.5a — Numeric indicator used for the requirement on the energy "need" for heating (see Clause 9)

Application: New constructions	
Numeric indicator	**Choice**

Total “need” [kWh]	
“Need” per useful floor area [kWh/m^2]	
Ratio (define*)	X
<free text> Other indicator; define*)	
...	

* If a ratio or another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:

Description in case of ratio or other indicator:

Table A.6a is applicable for requirement mixes C and D:

Table A.6a — Numeric indicator used for the requirement on the energy “need” for cooling (see Clause 10)

Application: New constructions	
Numeric indicator	**Choice**
Total “need” [kWh]	
“Need” per useful floor area [kWh/m^2]	X
Ratio (define*)	
<free text> Other indicator; define*)	
...	

* If a ratio or another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:

Description in case of ratio or other indicator:

Table A.7a is not applicable for any of the requirement mixes A to D.

Table A.7 — Numeric indicator used for the requirement on the combined energy "need" for heating and cooling (and possibly still other quantities) (see Clause 11)

Application: …	
Numeric indicator	**Choice**
Total "need" [kWh]	
"Need" per useful floor area [kWh/m^2]	
Ratio (define*)	
<free text> Other indicator; define*)	
...	
* If a ratio or another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of ratio or other indicator:	
n/a for NEAP so this table is not used.	

Table A.8a is not applicable for any of the requirement mixes A to D.

Table A.8 — Numeric indicator used for the requirement on the overall thermal insulation of the thermal envelope (see Clause 12)

Application: …	
Numeric indicator	**Choice**
Overall transmission heat transfer coefficient H_{tr} [W/K]	
Mean thermal transmittance U_{mn} [W/(m^2·K)]	
Ratio; define*)	
<free text> Other indicator; define*)	
...	
* If a ratio or another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of a ratio or other indicator:	
n/a for NEAP so this table is not used.	

Table A.9a is applicable for all requirement mixes A to D:

Table A.9a — Numeric indicator used for the requirement on the thermal insulation of individual elements of the thermal envelope (see Clause 13)

Application: New constructions	
Numeric indicator	**Choice**
Minimum temperature factor f_{Rsi} [-]	

Thermal transmittance U [W/(m²·K)]	X
Total thermal resistance R_{tot} [m²K/W]	
Intrinsic element thermal resistance $R_{c;op}$ [m²K/W]	
<free text> Other indicator; define*)	
...	

* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:

Description in case of other indicator:

Not applicable.

But note the specific details provided in Table B.2a for exceptions for this requirement:

Exception is allowed for 1 % of the envelope area that is subject to the requirements. (Note that this exception with respect to the U_{max} values does not imply that these thermal envelope elements may be neglected in the further EPB assessments. All thermal envelope elements shall still be taken into account in all further EPB assessments.) Designers also should heed the possible impact on indoor environment of any lesser insulated elements (notably the possible consequences of low internal surface temperatures).

Concerning Table B.10a, Thermal bridges: no explicit requirement, but integrated into the EPB assessments in a practical manner that stimulates "good solutions", as discussed in ISO/TR 52018-2[7].

Table A.10 — Numeric indicator used for the requirement on the thermal bridges (see Clause 14)

Application: Existing buildings and New buildings	
Numeric indicator	**Choice**
Minimum temperature factor f_{Rsi} [-]	X
Linear thermal transmittance Ψ [W/(m·K)], possibly differentiated per type of junction	
Point thermal transmittance χ [W/K], possibly differentiated per type of three dimensional thermal bridge	
Relative importance of thermal bridges compared to the overall heat transfer coefficient [-] $(\Sigma\Psi\, l + \Sigma\chi)/H_{tr}$	

* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:

Description in case of other indicator:

<free text>

Table A.11a is not applicable for any of the requirement mixes A to D.

Table A.11 — Numeric indicator used for the requirement on the window energy performance (see Clause 15)

Application: Existing buildings and New buildings

Numeric indicator	Choice
Heating energy performance $P_{E;H;w}$ [kWh/m^2]	
Cooling energy performance $P_{E;C;w}$ [kWh/m^2]	
Combination of heating and cooling energy performance $P_{E;H^+C;w}$ [kWh/m^2]	
For glazing only: energy balance value E [W/(m^2·K)]	
Minimal window area in certain types of rooms: specify*	
Maximum elemental U-value (W/m^{2}K)	X
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of other indicator:	
Maximum U-values of elements are given on pg 25 table 1 column 3 of TGD part L.	

Table A.12a is not applicable for ~~all~~ any of the requirement mixes, A to D~~:~~. [9]

~~Table A.12a — Numeric indicator used for the requirement on the thermal envelope air tightness (see Clause 16)~~[1]

~~**Application: New constructions**~~	
~~**Numeric indicator**~~	~~**Choice**~~
~~Specific leakage rate per thermal envelope area q_{Epr} [m^3/h/m^2]~~	~~—~~
~~Air change rate n_{pr} [h^{-1}]~~	~~—~~
~~Specific leakage rate per useful floor area q_{Fpr} [m^3/h/m^2]~~	~~X~~
~~<free text> Other indicator; define*)~~	~~—~~
~~…~~	~~—~~
~~Specify for the chosen method of the air tightness measurement:~~ ~~— the precise definition of the reference area or volume for the indicator used;~~ ~~— the reference pressure, pr;~~ ~~— result of pressurization, depressurization or mean;~~ ~~— other, if needed.~~	
~~**Specification (if method 1, 2 or 3):**~~	
~~The reference pressure difference is 50 Pascal.~~ ~~The leakage rate is assessed as the mean of pressurization and depressurization. The useful floor area is specified as for the whole set of EPB standards.~~ ~~Note the specific details provided in Table B.2a for this requirement:~~ ~~The air tightness measurement shall be performed according to ISO 9972 and its method 3, with specifications consistent with the treatment of infiltration/exfiltration in the EPB assessment method, e.g. open combustion devices shall be sealed if the air flow through them is already separately taken into account in the EPB assessment method. The final result shall be reported as the mean of the pressurization and depressurization regression curves at the reference pressure needed for the EPB assessments.~~	
~~* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:~~	
~~**Description in case of other indicator:**~~	
~~<free text>~~	

[9] ~~Suspected erratum in (EN) ISO 52018-1:2017 here corrected.~~

Table A.12 — Numeric indicator used for the requirement on the thermal envelope air tightness (see Clause 16)

Application: New buildings	
Numeric indicator	**Choice**
Specific leakage rate per thermal envelope area q_{Epr} [$m^3/h/m^2$]	X
Air change rate n_{pr} [h^{-1}]	
Specific leakage rate per useful floor area q_{Fpr} [$m^3/h/m^2$]	
…	
Specify for the chosen method of the air tightness measurement: — the precise definition of the reference area or volume for the indicator used; — the reference pressure, pr; — result of pressurization, depressurization or mean; — others, if needed.	
Specification (if method 1, 2 or 3):	
The procedure for testing air tightness is given in EN ISO 9972: 2015 "Thermal performance of buildings: determination of air permeability of buildings: fan pressurization method".	
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of other indicator:	
<free text>	

Tables A.13a to A.14a are not applicable for any of the requirement mixes A to D.

Table A.13 — Numeric indicator used for the requirement on the solar control (see Clause 17)

Application: …	
Numeric indicator	**Choice**
Solar factor g or g_{tot} or F_{npss} [–]	X
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of other indicator:	
<free text>	

Table A.14 — Numeric indicator used for other requirements (see Table A.2/B.2)

Application: …	
EPB feature	**Numeric indicator**
<free text> Other requirement 1; define*)	<free text>
<free text> Other requirement 2; define*)	…

...	
* All EPB features and their corresponding indicator shall be clearly described and precise reference shall be made to their definition and their assessment method. The numbers (1), (2), ... refer to the numbers of other requirements in Table A.2/B.2.	
Specification:	
Other requirement 1: ... <free text> Other requirement 2: ... <free text>	

A.4.2: Application: existing buildings

Tables A.3b to A.8b are not applicable because there are no requirements set in Table A.2b for these EPB features.

Table A.9b — Numeric indicator used for the requirement on the thermal insulation of individual elements of the thermal envelope (see Clause 13)

Application: Works on existing buildings	
Numeric indicator	**Choice**
Minimum temperature factor f_{Rsi} [-]	
Thermal transmittance U [W/(m^2·K)]	X
Total thermal resistance R_{tot} [m^{2}K/W]	
Intrinsic element thermal resistance $R_{c;op}$ [m^{2}K/W]	
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of other indicator:	
Not applicable.	
But note the specific details provided in Table B.2b for this requirement:	
When elements of the thermal envelope (e.g. window, roof, wall, etc.) are completely replaced or when new elements are added to the thermal envelope (e.g. in an extension), maximum U-values apply.	
Note also the specific details provided in Table B.2a for the exceptions for this requirement:	
Exception is allowed for 1 % of the envelope area that is subject to the requirements.	
NOTE 1 This exception with respect to the U_{max} values does not imply that these thermal envelope elements may be neglected in the further EPB assessments. All thermal envelope elements shall still be taken into account in all further EPB assessments.	
Designers also should heed the possible impact on indoor environment of any lesser insulated elements (notably the possible consequences of low internal surface temperatures).	
NOTE 2 For regulators, as in the case of some renovations, very small areas may be involved, the 1 % exception rule does not give much leeway for these cases. So, the requirements should be set such that in principle they are feasible for all possible cases, unless other explicit exceptions are defined.	

Table A.13b — Numeric indicator used for the requirement on the solar control (see Clause 17)

Application: Works on existing buildings	
Numeric indicator	**Choice**
Solar factor g or g_{tot} or F_{npss} [-]	X
<free text> Other indicator; define*)	Not applicable
...	
* If another indicator is used, it shall be clearly described below. And precise reference shall be made to its definition and its assessment method:	
Description in case of other indicator:	
Not applicable. But note the specific details provided in Table B.2a for this requirement: Before active cooling is installed in a room of an existing building, all transparent elements shall comply with solar control requirements.	

Table A.14b is not applicable because there are no requirements set in Table A.2b for other EPB features.