SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Ireland National Annex/ Datasheet to overarching EPB standards for Dwellings

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

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

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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 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
- Blue font, strike through = Data/choices of Annex B that are not used as national data/choices
- Blue font = 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 dwellings (2019) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Dwelling Energy Assessment Procedure (DEAP) 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	Reference document	
	Number	Title
M1–1	ISO 52000-1	This document
M1–2	See M1-1	See M1–1
M1–3	See M1-1	See M1–1
M1–4	ISO 52003-1	*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	See M1–1
M1–8, M1–9	See M1-1	See M1–1
M1–10	n/a for dwellings as Ireland uses a calculated rather than measured rating.	
M1–6, M2–7	SAP (2005-2018) ~~ISO 17772-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings – Indoor environmental quality – Part 1: Indoor environmental input parameters for the design and assessment of energy performance of buildings*~~
	~~EN 16798-1~~ ~~(Under preparation)~~	~~*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)~~
M1–11	n/a for dwellings assessment methodology	~~See M1–6~~
M1–13	ISO 52010-1	*Energy performance of buildings – External climatic conditions – Part 1: Conversion of climatic data for energy calculations*
M1–14	n/a not used in DEAP/TGD L. ~~EN 15459-1~~	Energy cost calculation is not part of the DEAP methodology. ~~*Energy performance of buildings – Economic evaluation procedure for energy systems in buildings – Part 1: Calculation procedures, Module M1–14*~~
M2–2	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*
M2–3	ISO 52016-1 ~~ISO 52017-1~~	*Energy performance of buildings – Energy needs for heating and cooling, internal temperatures and sensible and latent heat loads – Part 1: Calculation procedures* ~~*Energy performance of buildings – Sensible and latent heat loads and internal temperatures – Part 1: Generic calculation procedures*~~
M2–4	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*
M2–5.1	ISO 13789	*Thermal performance of buildings – Transmission and ventilation heat transfer coefficients – Calculation method*

Reference	Reference document	
	Number	Title
M2–5.2	ISO 13370	*Thermal performance of buildings – Heat transfer via the ground – Calculation methods*
M2–5.3	ISO 6946	*Building components and building elements – Thermal resistance and thermal transmittance – Calculation methods*
M2–5.4	ISO 10211	*Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations*
M2–5.5	DEAP Manual TGD L ~~ISO 14683~~	DEAP Manual Appendix K (default Y factors) TGD L Appendix D (default Y factors) ~~*Thermal bridges in building construction – Linear thermal transmittance – Simplified methods and default values*~~
M2–5.6	ISO 10077-1	*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 1: General*
M2–5.7	ISO 10077-2	*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 2: Numerical method for frames*
M2–5.8	ISO 12631	*Thermal performance of curtain walling – Calculation of thermal transmittance*
M2-6	SAP (2005-2018) I.S. ISO EN 9972	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* Thermal performance of buildings: determination of air permeability of buildings: fan pressurization method
M2–9	ISO 13786	*Thermal performance of building components – Dynamic thermal characteristics – Calculation methods*
M2–7	See M1-6, M2-7 above	~~See M2–5~~
M2–8	SAP (2005-2018) CIBSE TM37 CIBSE TM59 ~~ISO 52022-3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* TM 37: Designing for improved solar shading control, CIBSE 2006 TM 59: Design Methodology for the assessment of overheating risk in homes, CIBSE 2017 ~~*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*~~
	~~ISO 52022-1~~	~~*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*~~
M3–1	SAP (2005-2018) ~~EN 15316–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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*~~

Reference	Reference document	
	Number	Title
M3–2	SAP (2005-2018)	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*
M3–3	SAP (2005-2018) ~~EN 12831–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings – Method for calculation of the design heat load – Part 1: Space heating load, Module M3–3*~~
M3–4	SAP (2005-2018) ~~EN 15316–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M3–1~~
M3–5	SAP (2005-2018) ~~EN 15316–2~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	SAP (2005-2018) ~~EN 15316–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	SAP (2005-2018) ~~EN 15316–5~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 5: Space heating and DHW storage systems (not cooling), Module M3–7, M8–7*~~
M3–8	BOILERS AND BIOMASS SEDBUK 2005 (PCDB) 92/42/EEC IS EN 303-5 ~~EN 15316–4-1~~	BOILER AND BIOMASS UK Product Characteristics Database Boiler Efficiency Directive *Heating boilers – part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500kW –. Terminology, requirements, testing and marking* ~~*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*~~
	HEAT PUMPS EN 15316–4-2 EN14825 EN16147	HEAT PUMPS *Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4–2: Space heating generation systems, heat pump systems, Module M3–8-2, M8–8-2* *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors, for space heating and cooling - Testing and rating at part load conditions and calculation of seasonal performance* *Heat pumps with electrically driven compressors – testing, performance rating and requirements for marking of domestic water units*

Reference	Reference document	
	Number	Title
	SOLAR THERMAL/PV	SOLAR THERMAL/PV
	SAP (2005-2018)	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*
	IS EN 12975-2	*Thermal solar systems and components – Solar collectors – Part 2: Test methods*
	IS EN 9806:2017	*Solar energy – solar thermal collectors – Test methods*
	IS EN 61215/IEC 61215	*Terrestrial Photovoltaic (PV) modules with Crystalline Solar Cells – Design Qualification and Type Approval*
	BS EN 61646/IEC 61646	*Thin-film terrestrial photovoltaic (PV) modules – Design Qualification and Type Approval*
	~~EN 15316-4-3~~	~~"Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4-3: Heat generation systems, thermal solar and photovoltaic systems, Module M3-8-3, M8-8-3, M11-8-3~~
	IS EN 50465:2015	*Gas appliances – Combined Heat and Power Appliance of Nominal Heat Input Inferior or Equal to 70kW*
	~~EN 15316-4-4~~	~~Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4-4: Heat generation systems, building-integrated cogeneration systems, Module M8-3-4, M8-8-4, M8-11-4~~
	DISTRICT/GROUP HEATING	DISTRICT/GROUP HEATING
	SAP (2005-2018)	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*
	~~EN 15316-4-5~~	~~Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4-5: District heating and cooling, Module M3-8-5, M4-8-5, M8-8-5, M11-8-5~~
	ROOM HEATERS	ROOM HEATERS
	IS EN 613:2000	*Independent gas-fired convection heaters*
	IS EN 13278:2013	*Open-fronted gas-fired independent space heaters*
	IS EN 1266:2002	*Independent gas-fired convection heaters incorporating a fan to assist transportation of combustion air and/or flue gases*
	BS 7977-1:2009	*Specification for safety and rational use of energy of gas domestic appliances. Part 1: Radiant/Convectors*
	BS 7977-2:2003	

Reference	Reference document	
	Number	Title
		Specification for safety and rational use of energy of gas domestic appliances. Part 2: Combined appliances: Gas fire/back boiler
	OFS A102:2004	*Oil fired room heaters with atomising or vaporising burners with or without boilers, heat output up to 25 kW*
	IS EN 16510-1:2018	*Residential solid fuel burning appliances – Part 1: general requirements and test methods*
	IS EN 14785:2006 ~~EN 15316–4-8~~	*Inset appliances Residential space heating appliances fired by wood pellets. Requirements and test methods* ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4-8: Space heating generation systems, air heating and overhead radiant heating systems, including stoves (local), Module M3–8-8*~~
M3–9	n/a for DEAP	
M3–10	n/a for DEAP (as it is an asset rating tool) ~~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	n/a for dwellings assessment methodology ~~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	n/a for dwellings assessment methodology	
M4–1	DEAP doesn't account for cooling systems ~~EN 16798–9~~	~~*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	DEAP doesn't account for cooling systems	
M4–3	DEAP doesn't account for cooling systems ~~ISO 52016–1~~	~~See M2-2~~
M4–4	DEAP doesn't account for cooling systems ~~EN 16798–9~~	~~See M4–1~~
M4–5	DEAP doesn't account for cooling systems ~~EN 15316–2~~	~~See M3–5~~
M4–6	DEAP doesn't account for cooling systems ~~EN 15316–3~~	~~See M3–6~~

Reference	Reference document	
	Number	Title
M4–7	DEAP doesn't account for cooling systems ~~EN 16798–15~~	~~*Energy performance of buildings – Ventilation for buildings – Part 15: Calculation of cooling systems (Module M4–7) – Storage*~~
M4–8	DEAP doesn't account for cooling systems ~~EN 16798–13~~	~~*Energy performance of buildings – Ventilation for buildings – Part 13: Calculation of cooling systems (Module M4–8) – Generation*~~
	DEAP doesn't account for cooling systems ~~EN 15316–4–5~~	~~See M3–8~~
M4–9	DEAP doesn't account for cooling systems	
M4–10	DEAP doesn't account for cooling systems	
M4–11	DEAP doesn't account for cooling systems ~~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	DEAP doesn't account for cooling systems	
M5–1	SAP (2005-2018) ~~EN 16798–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	n/a for DEAP	
M5–3	n/a for DEAP	
M5–4	SAP (2005-2018) ~~EN 16798–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M5–1~~
M5–5	SAP (2005-2018) ~~EN 16798–7~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	SAP PCDB EN 13142 EN 13141-8; -6; -7 ~~EN 16798–5–1 and EN 16798–5–2~~	SAP Product Characteristics Database Ventilation for buildings. Components/products for residential ventilation. Required and optional performance characteristics Ventilation for buildings. Performance testing of components/products for residential ventilation. ~~*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	Reference document	
	Number	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	n/a for DEAP	
M5–8	See M5-6 ~~EN 16798–5–1 and EN 16798–5–2~~	See M5–6
M5–9	n/a for DEAP	
M5–10	n/a for DEAP	
M5–11	n/a for DEAP ~~EN 16798–17~~	~~See M4–11~~
M6–1	DEAP doesn't account for humidification	~~See M5–1~~
M6–2	DEAP doesn't account for humidification	~~See M5–2~~
M6–3	DEAP doesn't account for humidification	~~See M5–3~~
M6–4	DEAP doesn't account for humidification	~~See M5–4~~
M6–5	DEAP doesn't account for humidification ~~EN 16798–5–1 and EN 16798–5–2~~	~~See M5–6~~
M6–6	DEAP doesn't account for humidification	~~See M5–6~~
M6–7	DEAP doesn't account for humidification	~~See M5–7~~
M6–8	DEAP doesn't account for humidification ~~EN 16798–5–1 and EN 16798–5–2~~	~~See M5–6~~
M6–9	DEAP doesn't account for humidification	~~See M5–9~~
M6–10	DEAP doesn't account for humidification	~~See M5–10~~
M6–11	DEAP doesn't account for humidification ~~EN 16798–17~~	~~See M5–11~~
M7–1	DEAP doesn't account for dehumidification	~~See M5–1~~
M7–2	DEAP doesn't account for dehumidification	~~See M5–2~~

Reference	Reference document	
	Number	Title
M7–3	DEAP doesn't account for dehumidification	~~See M5–3~~
M7–4	DEAP doesn't account for dehumidification	~~See M5–4~~
M7–5	DEAP doesn't account for dehumidification ~~EN 16798–5–1 and EN 16798–5–2~~	~~See M5–6~~
M7–6	DEAP doesn't account for dehumidification	~~See M5–6~~
M7–7	DEAP doesn't account for dehumidification	~~See M5–7~~
M7–8	DEAP doesn't account for dehumidification ~~EN 16798–5–1 and EN 16798–5–2~~	~~See M5–6~~
M7–9	DEAP doesn't account for dehumidification	~~See M5–9~~
M7–10	DEAP doesn't account for dehumidification	~~See M5–10~~
M7–11	DEAP doesn't account for dehumidification ~~EN 16798–17~~	~~See M5–11~~
M8–1	SAP (2005-2018) ~~EN 15316–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*~~See M3–1~~
M8–2	SAP (2005-2018) ~~EN 12831–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	SAP (2005-2018) ~~EN 12831–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M8–2~~
M8–4	SAP (2005-2018)~~EN 15316–1~~	See M3-1 ~~See M8–1~~
M8–5	SAP (2005-2018)	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*
M8–6	SAP (2005-2018) ~~EN 15316–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M3–6~~
M8–7	SAP (2005-2018) ~~EN 15316–5~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M3–7~~

Reference	Reference document	
	Number	Title
M8–8	BOILERS AND BIOMASS	BOILER AND BIOMASS
	SEDBUK 2005 (PCDB)	UK Product Characteristics Database
	92/42/EEC	Boiler Efficiency Directive
	IS EN 303-5 ~~EN 15316–4-1~~	*Heating boilers – part 5: Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500kW –. Terminology, requirements, testing and marking* ~~See M3–8~~
	HEAT PUMPS	HEAT PUMPS
	EN 15316–4-2	*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4–2: Space heating generation systems, heat pump systems, Module M3–8-2, M8–8-2*
	EN 14825	*Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors, for space heating and cooling - Testing and rating at part load conditions and calculation of seasonal performance*
	EN 16147 ~~EN 15316–4-3~~	*Heat pumps with electrically driven compressors – testing, performance rating and requirements for marking of domestic water units* ~~See M3–8~~
	SOLAR THERMAL	SOLAR THERMAL/PV
	SAP (2005-2018)	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*
	IS EN 12975-2	Thermal *solar systems and components – Solar collectors – Part 2: Test methods*
	IS EN 9806:2017 ~~EN 15316–4-4~~	*Solar energy – solar thermal collectors – Test methods* ~~See M3–8~~
	IS EN 50465:2015 ~~EN 15316–4-5~~	*Gas appliances – Combined Heat and Power Appliance of Nominal Heat Input Inferior or Equal to 70kW* ~~See M3–8~~
	DISTRICT/GROUP HEATING	DISTRICT/GROUP HEATING
	SAP (2005-2018) ~~EN 15316–4-8~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M3–8~~
M8–9	n/a for DEAP	

Reference	Reference document	
	Number	Title
M8–10	n/a for DEAP (as it is an asset rating tool) ~~EN 15378–3~~	~~See M3–10~~
M8–11	n/a for DEAP ~~EN 15378–1~~	~~See M3–11~~
M9–1	SAP (2005-2018)~~EN 15193–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings – Energy requirements for lighting – Part 1: Specifications, Module M9*~~
M9–2	SAP (2005-2018) ~~EN 15193–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M9–1~~
M9–3	n/a for DEAP	
M9–4	SAP (2005-2018) ~~EN 15193–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M9–1~~
M9–5	n/a for DEAP	
M9–6	n/a for DEAP	
M9–8	n/a for DEAP	
M9–10	n/a for DEAP ~~EN 15193–1~~	~~See M9–1~~
M9–11	n/a for DEAP ~~EN 15193–1~~	~~See M9–1~~
M10–1	SAP (2005-2018) ~~EN 15232–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	n/a for DEAP	
M10–3	n/a for DEAP	
M10–4	n/a for DEAP	~~See M10–1~~
M10–5	SAP (2005-2018) ~~EN 15232–1~~	See M10-1 ~~See M10–1~~
M10–6	SAP (2005-2018) ~~EN 15232–1~~	See M10-1 ~~See M10–1~~
M10–7	SAP (2005-2018) ~~EN 15232–1~~	See M10-1 ~~See M10–1~~
M10–8	SAP (2005-2018) ~~**EN 15232–1**~~	See M10-1 ~~*Energy Performance of Buildings – Inspection of Automation, Controls and Technical Building Management – Part 1: Module M10–11*~~
M10-9	n/a for DEAP	

Reference	Reference document	
	Number	Title
M10-10	SAP (2005-2018)	See M10-1
M10–11	n/a for DEAP ~~EN 16946-1~~	~~*Energy Performance of Buildings – Building Management System – Part 1: Module M10–12*~~
~~M10–12~~	~~EN 16947-1~~	
M11–1	n/a for DEAP	
M11–4	n/a for DEAP	
M11–8	PV SAP (2005-2018) IS EN 61215/IEC 61215 BS EN 61646/IEC 61646 ~~EN 15316–4-3~~	PV *The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* *Terrestrial Photovoltaic (PV) modules with Crystalline Solar Cells – Design Qualification and Type Approval* *Thin-film terrestrial photovoltaic (PV) modules – Design Qualification and Type Approval* ~~See M3–8~~
	IS EN 50465:2015 ~~EN 15316–4-4~~	*Gas appliances – Combined Heat and Power Appliance of Nominal Heat Input Inferior or Equal to 70kW* ~~*See M3–8*~~
	n/a for DEAP ~~EN 15316–4-5~~	~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4–10: Wind power generation systems, Module M11–8-3*~~
	MICRO-WIND SAP (2005-2018) Greenspec MIS3003 ~~EN 15316–4-10~~	*MICRO-WIND* *The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* *http://www.greenspec.co.uk/building-design/small-wind-turbines/* *Requirements for contractors undertaking the supply, design, installation, set to work commissioning and handover of micro and small wind turbine systems, BRE Certification Ltd, 2007* ~~*Energy performance of buildings – Method for calculation of system energy requirements and system efficiencies – Part 4–10: Wind power generation systems, Module M11–8-3*~~

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	Residential ~~All categories~~	As built (for already constructed	-

		dwellings) or based on design (for dwellings yet to be constructed) ~~As built type~~	
Building permit	Residential ~~All categories~~	Design type	-
Permit to use	Residential ~~All categories~~	As built type	-
Energy audit	n/a for residential ~~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 check. Apartments assessed individually
EPB_OBJECT_BLDNG_UNIT	Building unit	1	For EPC and Part L check. Apartments assessed individually
EPB_OBJECT_BLDNG_PART	Part of a building (lacking one or more features of a complete building or building unit)	n/a in DEAP ~~1~~	
EPB_OBJECT_ LCYCLE_NEW.DESIGN	New building design	1 ~~2~~	Provisional assessment from plans for EPC and for Part L compliance
EPB_OBJECT_ LCYCLE_AS.BUILT	Existing building as built (without long term use data)	1~~2~~	Assessment of dwelling as built for sale or rent for EPC and, for new dwelling for Part L compliance
EPB_OBJECT_ LCYCLE_EXIST.RENOV	Existing building after renovation (without long term use data)	1~~2~~	Assessment of actual dwelling for sale or rent for EPC. Check major renovation achieves B2 EPC for Part L
EPB_OBJECT_ LCYCLE_EXIST.EXTENS	Existing building extension (without long term use data)	n/a in DEAP ~~2~~	
EPB_OBJECT_ LCYCLE_EXIST.IN.USE	Existing building in use	1~~2~~	Assessment of actual dwelling for sale or rent for EPC

EPB_OBJECT_CAT_RES	Residential building	1~~3~~	As per comments above depending on new / existing / renovation etc
EPB_OBJECT_CAT_NRES	Non-residential building	n/a in DEAP 3	
EPB_OBJECT_USER_L.PUBL	Large public building	n/a in DEAP 4	
EPB_OBJECT_USER_OTHER	Other	n/a in DEAP 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] Accounted for in DEAP
BLDNGCAT_RES_APPBLOCK	Apartment blocks	Accounted for in DEAP as individual dwellings
BLDNGCAT_RES_ELDER	Homes for elderly and disabled people	Accounted for in DEAP
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	Not accounted for in DEAP
BLDNGCAT_RES_HOL	Holiday home	Accounted for in DEAP
BLDNGCAT_OFF	Offices	Not accounted for in DEAP
BLDNGCAT_EDUC	Educational buildings	Not accounted for in DEAP
BLDNGCAT_HOSP	Hospitals	Not accounted for in DEAP
BLDNGCAT_HOTEL	Hotels and restaurants	Not accounted for in DEAP
BLDNGCAT_SPORT	Sports facilities	Not accounted for in DEAP

BLDNGCAT_RETAIL	Wholesale and retail trade services buildings	Not accounted for in DEAP
BLDNGCAT_DATA_CENTER	Data centre	Not accounted for in DEAP
BLDNGCAT_INDUS	Industrial sites	Not accounted for in DEAP
BLDNGCAT_WORKS	Workshops	Not accounted for in DEAP
BLDNGCAT_AGRIC	Non-residential agricultural buildings	Not accounted for in DEAP

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 (up to 8 bedrooms)*
Mobile home	*BLDNGCAT_RES_MOBIL*	~~*YES*~~*NO*
Holiday home	*BLDNGCAT_RES_HOL*	*YES*
Non-residential buildings:		
Office buildings	*BLDNGCAT_OFF*	*NO*~~*YES*~~
Educational buildings	*BLDNGCAT_EDUC*	*NO*~~*YES*~~
Hospitals	*BLDNGCAT_HOSP*	*NO*~~*YES*~~
Hotels and restaurants	*BLDNGCAT_HOTEL*	*NO*~~*YES*~~
Sport facilities	*BLDNGCAT_SPORT*	*NO*~~*YES*~~
Wholesale and retail trade services buildings	*BLDNGCAT_RETAIL*	*NO*~~*YES*~~
Industrial sites	*BLDNGCAT_INDUS*	*NO*
Workshops	*BLDNGCAT_WORKS*	*NO*
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	Living room treated as higher temperature. See Table A.7

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 room ~~Residential living space, kitchen, bed room, study, bath room or toilet~~	Heated to 21 degC during heating periods
SPACECAT_RES_INDIV_OTHER	Residential individual: all areas in heated non-thermally separated dwelling envelope other than living room. Includes halls, bedrooms, dining rooms, kitchens, utility/stores etc ~~Residential individual: hall, corridor, staircase inside thermal envelope, attic inside thermal envelope~~	Heated to 18 deg C during heated periods
SPACECAT _RES_COLL	n/a for DEAP ~~Residential collective or non-residential: hall, corridor, staircase inside thermal envelope~~	Covered in non-residential methodology
SPACECAT_TH.UNCOND_OTHER	Thermally unconditioned adjacent space, such as storage room or unconditioned attic	Assumed unheated but can reduce heat losses in adjoining heated dwelling
SPACECAT_TH.UNCOND_SUN	Thermally unconditioned sunspace or atrium	May or may not be thermally separated in DEAP
SPACECAT_HALL	Entrance hall/foyer	Heated to 18 deg C during heated periods
SPACECAT_CORR	Corridor	Heated to 18 deg C during heated periods
SPACECAT_TH.UNCOND_CORR	Hall, corridor outside thermal envelope	n/a for DEAP. Covered in non-residential methodology

SPACECAT_OFF	Office space	n/a for DEAP. Covered in non-residential methodology
SPACECAT_EDUC	Educational space	n/a for DEAP. Covered in non-residential methodology
SPACECAT_HOSP_BED	Hospital bed room	n/a for DEAP. Covered in non-residential methodology
SPACECAT_HOSP_OTHER	Hospital other room	n/a for DEAP. Covered in non-residential methodology
SPACECAT_HOTEL	Hotels room	n/a for DEAP. Covered in non-residential methodology
SPACECAT_REST	Restaurant space	n/a for DEAP. Covered in non-residential methodology
SPACECAT_REST_KITCH	Restaurant kitchen	n/a for DEAP. Covered in non-residential methodology
SPACECAT_MEET	Meeting or seminar space	n/a for DEAP. Covered in non-residential methodology
SPACECAT_AUDIT	Auditorium, lecture room	n/a for DEAP. Covered in non-residential methodology
SPACECAT_THEAT	Theatre or cinema space	n/a for DEAP. Covered in non-residential methodology
SPACECAT_SERVER	Server or computer room	n/a for DEAP. Covered in non-residential methodology
SPACECAT_SPORT_TH.COND	Sport facilities, thermally conditioned	n/a for DEAP. Covered in non-residential methodology
SPACECAT_SPORT_TH.UNCOND	Sport facilities, thermally unconditioned	n/a for DEAP. Covered in non-residential methodology
SPACECAT_RETAIL	Wholesale and retail trade services space (shop)	n/a for DEAP. Covered in non-residential methodology
SPACECAT_NONRES_BATH	Non-residential bath room, shower, toilet, if inside thermal envelope	n/a for DEAP. Covered in non-residential methodology
SPACECAT_SPA	Spa area with sauna shower and/or relaxing area	n/a for DEAP. Covered in non-residential methodology
SPACECAT_SWIMM	Space with indoor swimming pool	n/a for DEAP. Covered in non-residential methodology
SPACECAT_STOR_HEAT	Heated storage space	Heated to 18 deg C during heated periods
SPACECAT_STOR_COOL	Cooled storage space	n/a for DEAP. Covered in non-residential methodology
SPACECAT_STOR_NOCON	Non conditioned storage space	Assumed unheated but can reduce heat losses in adjoining heated dwelling
SPACECAT ENGINE	Engine room	n/a for DEAP. Covered in non-residential methodology

SPACECAT_CAR	Individual garage or collective indoor car park	n/a for DEAP. Covered in non-residential methodology
SPACECAT _BARN	Barn	Covered in non-residential methodology
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	1) Requirement to comply with building regulations 2) Requirement to have a BER cert for new dwellings 3) Requirement to have a BER cert for all dwellings for sale/rent
EPB_APPLIC_PERMIT_USE	To obtain permit to use	1) Requirement to comply with building regulations 2) Requirement to have a BER cert for new dwellings 3) Requirement to have a BER cert for all dwellings for sale/rent
EPB_APPLIC_AUDIT	Energy audit (tailored)	n/a for DEAP
EPB_APPLIC_INSP	Energy performance inspection	n/a for DEAP
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 dwellings in design phase (provisional assessments)
EPB_ASSESS_CALC_ASBUILT	Calculated, as built	For newly constructed and existing dwellings

EPB_ASSESS_CALC_ACTUAL	Calculated, actual	n/a for DEAP
EPB_ASSESS_CALC_TAILORED	Calculated, tailored	n/a for DEAP
EPB_ASSESS_MEAS_ACTUAL	Measured, actual	n/a for DEAP
EPB_ASSESS_MEAS_ CORR_CLIM	Measured, corrected for climate	n/a for DEAP
EPB_ASSESS_MEAS_ CORR_USE	Measured, corrected for use	n/a for DEAP
EPB_ASSESS_MEAS_STAND	Measured, standard (corrected for climate and use)	n/a for DEAP
NOTE 1 The type may be different for different object types, building or space categories. NOTE 2 The type of assessment 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.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	Includes energy for space heating, ventilation, water heating and lighting, less savings from energy generation technologies
EPB_LISTSERVICES_NRES	Services included for the EPB assessment of non-residential buildings	n/a for DEAP
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.		

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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~~ Not relevant in DEAP

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	n/a in DEAP ~~8,9 – 9,7~~
Bituminous coal	n/a in DEAP ~~4,7–6,9~~
Charcoal	n/a in DEAP ~~8,22~~
Coke	n/a in DEAP ~~7,8 – 8,6~~
Lignite	n/a in DEAP ~~4,2 – 8,3~~
Peat	n/a in DEAP ~~3,6 – 5,6~~
Wood (dry)	n/a in DEAP ~~3,9 – 4,7~~
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	n/a in DEAP ~~0,84 – 0,85~~	n/a in DEAP ~~12,44~~
Heating oil, heavy	n/a in DEAP ~~0,96~~	n/a in DEAP ~~13,94 – 11,75~~
Liquid gas		
80 propane:20 butane	n/a in DEAP ~~0,52~~	n/a in DEAP ~~13,83~~
70 propane:30 butane	n/a in DEAP ~~0,53~~	n/a in DEAP ~~13,83~~
60 propane:40 butane	n/a in DEAP ~~0,53~~	n/a in DEAP ~~13,81~~
50 propane:50 butane	n/a in DEAP ~~0,55~~	n/a in DEAP ~~13,78~~

Commercial propane	n/a in DEAP ~~0,51~~	n/a in DEAP ~~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	n/a in DEAP ~~0,64~~	n/a in DEAP ~~9,75 – 9,78~~
Natural gas H	n/a in DEAP ~~0,61~~	n/a in DEAP ~~11,41 – 11,47~~
Methane	n/a in DEAP ~~0,55~~	n/a in DEAP ~~11,06 – 11,08~~
Propane	n/a in DEAP ~~1,56~~	n/a in DEAP ~~28,03~~
Butane	n/a in DEAP ~~2,09~~	n/a in DEAP ~~37,19~~
Hydrogen	n/a in DEAP ~~0,09~~	n/a in DEAP ~~39~~
Biogas	n/a in DEAP ~~1,2~~	n/a in DEAP ~~4 to 8~~ [a]
n/a in DEAP ~~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		**fPnren**	**fPren**	**fPtot**	**K_{CO2e} (g/kW h)**
1	Fossil fuels	Solid	1.1 in all cases barring manuf. smokeless fuel = 1.2) ~~1,1~~	0	1.1 in all cases barring manuf. smokeless fuel = 1.2~~1,1~~	Avg = 373 ~~360~~
2		Liquid	~~1,1~~1.1	0	1.1~~1,1~~	LPG = 232 Oil = 272 ~~290~~
3		Gaseous	1.1~~1,1~~	0	1.1~~1,1~~	203 ~~220~~
4	Bio fuels	Solid	~~0,2~~0.1	1	~~1,2~~1.1	~~40~~25
5		Liquid	Biodiesel = 0.3 Bioethanol = 0.34 ~~0,5~~	1	Biodiesel = 1.3 Bioethanol = 1.34~~1,5~~	Biodiesel = 0.47 Bioethanol = 0.64~~70~~
6		Gaseous	n/a in DEAP~~0,4~~	n/a in DEAP~~1~~	n/a in DEAP~~1,4~~	~~100~~
7	Electricity c		2.08~~2,3~~	0~~0,2~~	2.08~~2,5~~	409~~420~~
	Delivered from nearby					
8	District heating [a]		d~~1,3~~	d~~0~~	Heat from boilers - waste	Heat from boilers -

					combustion = 1.1 Waste heat from power stations = 1.05~~1,3~~	waste combustion = 57 Waste heat from power stations = 18~~260~~
9	District cooling			n/a in DEAP ~~1,3~~	n/a in DEAP ~~0~~	n/a in DEAP ~~1,3~~	~~260~~
	Delivered from on-site					
10	Solar	PV electricity	0	2.08~~1~~	2.08~~1~~	40~~90~~
11		Thermal	0	1	1	0
12	Wind		0	2.08~~1~~	2.08~~1~~	40~~90~~
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	0~~2,3~~	2.08~~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.

d District heating can be defined as renewable / non renewable by the operator

NOTE 1 Add a column in case of other requirements, e.g., CO2 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 A.10 >**	
Building service [a]	**EPB_LISTSERVICES_RES**	**EPB_LISTSERVICES_NRES**
Heating	YES	n/a in DEAP. See non-residential Annex A~~Yes~~

Cooling	NO~~Yes~~	n/a in DEAP. See non-residential Annex A~~Yes~~
Ventilation	YES	n/a in DEAP. See non-residential Annex A~~Yes~~
Humidification	NO~~Yes~~	n/a in DEAP. See non-residential Annex A~~Yes~~
Dehumidification	NO~~Yes~~	n/a in DEAP. See non-residential Annex A~~Yes~~
Domestic hot water	YES	n/a in DEAP. See non-residential Annex A~~Yes~~
Lighting	YES~~No~~	n/a in DEAP. See non-residential Annex A~~Yes~~
External lighting	NO	n/a in DEAP. See non-residential Annex A~~No~~
People transport (e.g., elevators, escalators)	NO	n/a in DEAP. See non-residential Annex A~~No~~
Other services consuming electricity (e.g., appliances)	NO	n/a in DEAP. See non-residential Annex A~~No~~
Others	NO	n/a in DEAP. See non-residential Annex A~~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"	YES
2	Principle "Presence of system"	NO
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
Floor dimensions are obtained by measuring between the inner surfaces of the external or party walls, disregarding the presence of any internal walls. Porches, conservatories, garages are generally included if not thermally separated from the dwelling. Basements are included if consisting of heated and habitable rooms. Utility/storage is included if directly accessible via a doorway from the remainder of the dwelling. Full details in DEAP Section 1. ~~The useful floor area is equal to the area of the floor with the following specific rules:~~ ~~Excluded:~~ ~~The floor area under a load bearing construction is excluded.~~ ~~The open floor area in vides (no floor) is excluded.~~ ~~The floor area with height under the ceiling of less than 1,5 m (except for incidental beams).~~ ~~Included:~~

~~The floor area under a non-load bearing construction at the boundary of the considered space or spaces: measured to the centre.~~

~~The floor area under a non-load bearing construction inside the considered space or spaces.~~

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 detailed in DEAP Manual Section 1 ~~Useful floor area as in Table A.20 of this document, with fractions according to Table A.22~~
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 (fref;cat,). Default value = 1 [a]
Residential living space, kitchen, bed room, study, bath room or toilet	YES	1.0~~1,0~~
Residential individual: hall, corridor, staircase inside thermal envelope, attic inside thermal envelope	YES	1.0~~1,0~~
Residential collective or non-residential: hall, corridor, staircase inside thermal envelope	n/a. See non-residential methodology~~YES~~	~~1,00~~
Thermally unconditioned adjacent space, such as storage room or unconditioned attic	NO	0
Thermally unconditioned sunspace or atrium	~~NO~~YES	1.0
Hall, corridor outside thermal envelope	NO	0
Office space	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Educational space	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Hospital bed room	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Hospital other room	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Hotels room	n/a. See non-residential methodology~~YES~~	0~~1,0~~

Restaurant space	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Restaurant kitchen	n/a. See non-residential methodology~~NO~~	0
Meeting or seminar space	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Auditorium, lecture room	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Theatre or cinema space	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Server or computer room	n/a. See non-residential methodology~~NO~~	0
Sport facilities, thermally conditioned	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Sport facilities, thermally unconditioned	n/a. See non-residential methodology~~YES~~	0~~0,5~~
Wholesale and retail trade services space (shop)	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Non-residential bath room, shower, toilet, if inside thermal envelope	n/a. See non-residential methodology~~YES~~	0~~1,0~~
Heated storage space	~~NO~~YES (depending on access)	1.0 (depending on access)
Cooled storage space	n/a. See non-residential methodology~~NO~~	0
Engine room	n/a. See non-residential methodology~~NO~~	0
individual garage or collective indoor car park	n/a. See non-residential methodology~~NO~~	0
Barn	n/a. See non-residential methodology~~NO~~	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	Not specified further ~~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	Not specified further

		~~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		Not specified further ~~Connected to the same branch of the distribution network, meaning medium voltage or lower~~
District heating		Always nearby provided it is providing heat to the dwelling Always nearby
District cooling		Not specified further ~~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~~oil~~	1.11~~1,06~~
LPG (propane or butane)~~gas~~	1.09~~1,11~~
Oil (kerosene or gas oil)~~LPG~~	1.07~~1,09~~
Biodiesel or bioethanol~~coal~~	1.07~~1,04~~
Coal~~lignite~~	1.03~~1,08~~
Anthracite or manufactured smokeless fuels~~wood~~	1.02~~1,08~~
Wood fuels	1.10
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	Yes	Yes

	delivery to the building (e.g., storage)		
	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]		Non~~.a.~~	No~~Yes~~
Applicable for ratings based on		~~net~~ Gross calorific value	Gross~~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 ~~nren~~ for all systems barring certain renewable systems (i.e. heat pumps, PV, wind, solar thermal only have EPnren included)	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**
None~~Priority level 1 (highest)~~	None~~EL_EXP_PRIO_LEVEL_1~~	EL_PROD_PV
None~~Priority level 2~~	None~~EL_EXP_PRIO_LEVEL_2~~	EL_PROD_WIND
None~~Priority level 3 (lowest)~~	None~~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	Total floor area ~~Useful floor area weighted~~	Split into living area and remainder of useful floor area as per DEAP Section1 ~~See ISO 52016-1~~
Heating system service area	Service areas included in total floor area ~~Useful floor area weighted~~	Subject to rules in DEAP Section 1
Cooling system service area	Service areas included in total floor area	Subject to rules in DEAP Section 1

	~~Useful floor area weighted~~	
Ventilation service area	Service areas included in total floor area ~~Useful floor area weighted~~	Subject to rules in DEAP Section 1
DHW service area	Service areas included in total floor area ~~Useful floor area weighted~~	Subject to rules in DEAP Section 1
Lighting service area	Service areas included in total floor area ~~Useful floor area weighted~~	Subject to rules in DEAP Section 1
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	Yes
Solar energy captured by thermal solar panels	Yes	Yes
Free cooling as renewable energy	~~Yes~~No	Not applicable
Free heating as renewable energy	Yes	Not applicable
Heat from environment captured by heat pumps	Yes	Yes
Electricity produced by wind power	Yes	~~No~~Yes
Nearby	[c]	
District heating	Yes	No
District cooling	~~Yes~~No	~~No~~Not applicable
Heat produced by biomass	Yes	No
Distant	[d]	
Electricity production from renewable sources	~~Yes~~No	Not applicable~~No~~
a A "No" in the second column implies "not applicable" in the third column. b Only relevant if kexp > 0, see Table A.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)

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
~~Hourly~~Monthly	Dwellings: Space heating ~~All building categories~~	fmatch = 1
~~Monthly~~Annual	Dwellings: Water heating, lighting, ventilation, pumps, fans ~~All building categories~~	fmatch = 1 $f_{\text{match}} = \frac{x^n + \frac{1}{x^n} - k}{x^n + \frac{1}{x^n}}$ ~~with~~ ~~x = Epr;el/EEPus;el,~~ ~~k = carrier = 1 and n = subsystem = 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 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[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 dwellings (2019) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Dwelling Energy Assessment Procedure (DEAP) 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	Reference document [a]	
	Number	Title
M1–6[b]	SAP (2005-2018) ~~ISO 17772-1~~ ~~EN 16798–1~~[c]	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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)*~~
M1–14[b]	n/a not used in DEAP/TGD L. ~~EN 15459-1~~	Energy cost calculation is not part of the DEAP methodology. ~~*Energy performance of buildings — Economic evaluation procedure for energy systems in buildings — Part 1: Calculation procedures, Module M1-14*~~
M2–4[b]	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*
M3–4[b]	SAP (2005-2018) ~~EN 15316–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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*~~
M4–4[b]	DEAP doesn't account for cooling systems ~~EN 16798–9~~	~~*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*~~
M5–4[b]	SAP (2005-2018) ~~EN 16798–3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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)*~~
M6–4[b]	DEAP doesn't account for dehumidification/humidification ~~EN 16798-3~~	~~See M5–4~~
M7–4[b]	DEAP doesn't account for dehumidification/humidification ~~EN 16798-3~~	~~See M5–4~~
M8–4[b]	SAP (2005-2018) ~~EN 15316-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M3–4~~

Reference	Reference document [a]	
	Number	Title
M9–4[b]	SAP (2005-2018) ~~EN 15193–1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings — Energy requirements for lighting — Part 1: Specifications, Module M9*~~
M10–4[b]	SAP (2005-2018) ~~EN 15232-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings — Part 1: Impact of Building Automation, Controls and Building Management - Modules M10-4,5,6,7,8,9,10*~~

[a] If a reference comprises more than one document, the references may be differentiated.

[b] Informative.

[c] Under preparation.

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	YES~~X~~ (1)	~~1)~~
Non-renewable primary energy use	~~X~~	~~1)~~
Renewable primary energy use		
Renewable energy ratio	YES (1)	
Greenhouse gas emissions	YES (2)	
Annual energy costs		
Energy policy factors (define*)	YES (3)	

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:

1) DEAP calculation demonstrates use of total primary energy for all dwellings. Energy saving and renewable technologies are accounted for in derivation of primary energy. The Renewable Energy Ratio and EPC (Energy Performance Coefficient) are also accounted for in new dwellings compliance checking (but not in existing dwellings)

2) DEAP calculation demonstrates CO2 emissions arising from usage of delivered energy for all dwellings. This is also accounted for in the CPC (Carbon Performance Coefficient) for new dwellings (but not existing dwellings)

3) CO2 and Primary Energy Factors for all new and existing dwellings defined in DEAP Table 8

~~1) 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	YES(1)	
Non-renewable primary energy use		
Renewable primary energy use		
Renewable energy ratio		
Greenhouse gas emissions	YES(2)	
Annual energy costs		
Energy policy factors (define*)	YES(3)	
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:		
1) DEAP calculation demonstrates use of total primary energy for all dwellings. Energy saving and renewable technologies are accounted for in derivation of primary energy. 2) DEAP calculation demonstrates CO2 emissions arising from usage of delivered energy for all dwellings. 3) CO2 and Primary Energy Factors for all new and existing dwellings defined in DEAP Table 8		

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 default choice in this annex~~Yes
Total primary energy use E_{Ptot} [kWh]	No default choice in this annex
Ratio (define)	Yes (Ratio of total primary energy to that of a reference building (EPC) for new dwelling compliance~~No default choice in this annex~~
<free text> (Other: define*)	~~No default choice in this annex~~
…	~~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 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~~See table A.3	

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
Renewable primary energy use per useful floor area [kWh/m2]~~No default choice in this annex~~	Yes. Renewable Energy Ratio
Renewable primary energy use EPren [kWh]-	Yes
Ratio (define)-	Yes (1)
~~If another indicator is used, it shall be clearly described and precise reference shall be made to the determination method:~~ ~~(1) ...<free text>~~ ~~(2) ...~~ 1) Ratio of renewable energy to Total primary energy (including renewable energy). Checked for new dwelling compliance.	

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	n/a ~~A+~~
Position of the energy performance regulation reference, R_r,	n/a ~~Between class B and C~~
Position of the building stock reference, R_s,	n/a ~~Between class D and E~~
Measure for the building stock reference	n/a ~~median (50 %)~~
Position of $EP = 0$	n/a ~~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 etc. See S.I. 243 A+ (EP < 0)
Boundary for the reference position, n_{ref}	Part L reference dwelling will be B3-C grade. New dwellings 70% better than this ~~4 (D)~~
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 dwellings in Ireland.

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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.

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  - 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 dwellings (2019) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Dwelling Energy Assessment Procedure (DEAP) 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	(1) For heat pump detailed calculation: ASHRAE IWEC2 V2.0 (2) For all other purposes: Met Eireann Long Term Avges ~~DRYCOLD.TMY~~					
Station and/or name of data set	(1) & (2): Dublin airport ~~Denver, Colorado, USA~~ ~~File: DRYCOLD.TMY~~					
	Symbol	**Unit**	**Value**	**Validity interval[a]**	**Origin**	**Varying[b]**
Latitude	φ_w	°	53°25'35.21"N ~~39,76~~	−90 to +90	Origin = ASHRAE and Met Eireann; ~~station~~	No
longitude [c]	λ_w	° -	6°14'59.68"W ~~−104,86~~	−180 to +180	Origin = ASHRAE and Met Eireann; ~~station~~	No
time zone	TZ	h	~~−7~~ 0 (GMT)	−12 to +12	Origin = ASHRAE and Met Eireann; ~~station~~	No
First day of time series (day of the year)	$n_{day;start}$	-	1	1 to 366	Origin = Ash ASHRAE and Met Eireann; ~~Station~~	No
Last day of time series (day of the year)	$n_{day;end}$	-	365	1 to 366	Origin = ASHRAE and Met Eireann; ~~Station~~	No
Day of the week for January 1		-	Monday (day 1)	Monday to Sunday (day 1 to 7)	Origin = ASHRAE and Met Eireann; ~~station~~	No
Daylight saving time? [c]	No					
Leap day included	No					
Specific other information	Time at this station: Winter: MST = UTC ~~−7~~					

Name	Value
	Summer: MDT = UTC +1 ~~−6~~
Name	**Value**
Reference to documentation on application range and type of data	ASHRAE IWEC2 and Met Eireann ~~ANSI/ASHRAE standard 140[10]~~

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	NO ~~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	4 ~~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~~ Method 2	
If choice is method 2:	**Description**	**Description**
Describe method 2	Full detail in DEAP Manual Section 6.1 ~~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 dwellings in Ireland.

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  - 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 dwellings (2019) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Dwelling Energy Assessment Procedure (DEAP) 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	Reference document [a]	
	Number	Title
M1-4	ISO 52003-1	*Energy performance of buildings – Indicators, requirements, ratings and certificates – Part 1: General aspects and application to the overall energy performance*
M1-6	SAP (2005-2018) ~~ISO 17772-1~~ ~~EN 16798-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	*Energy performance of buildings – Overarching EPB assessment – Part 1: General framework and procedures*
M1-13	ISO 52010-1	*Energy performance of buildings - External climatic conditions - Part 1: Conversion of climatic data for energy calculations*
M2-4	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*
M2-5.1	ISO 13789	*Thermal performance of buildings - Transmission and ventilation heat transfer coefficients - Calculation method*
M2-5.2	ISO 13370	*Thermal performance of buildings – Heat transfer via the ground – Calculation methods*
M2-5.3	ISO 6946	*Building components and building elements – Thermal resistance and thermal transmittance – Calculation method*
M2-5.4	ISO 10211	*Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations*
M2-5.5	DEAP Manual TGD L ~~ISO 14683~~	DEAP Manual Appendix K (default Y factors) TGD L Appendix D (default y factors) ~~*Thermal bridges in building construction – Linear thermal transmittance – Simplified methods and default values*~~
M2-5.6	ISO 10077-1	*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 1: General*
M2-5.7	ISO 10077-2	*Thermal performance of windows, doors and shutters – Calculation of thermal transmittance – Part 2: Numerical method for frames*
M2-8	SAP (2005-2018) CIBSE TM37 CIBSE TM59	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* *TM 37: Designing for improved solar shading control, CIBSE 2006* *TM 59: Design Methodology for the assessment of overheating risk in homes, CIBSE 2017*

Reference	Reference document [a]	
	Number	Title
	~~ISO 9050~~ ~~ISO 15099~~ ~~ISO 52022-3~~	~~*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	SAP (2005-2018) ~~EN 15316-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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*~~
M3-4[b]	SAP (2005-2018) ~~EN 15316-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~See M3-1~~
M3-5	SAP (2005-2018) ~~EN 15316-2~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	DEAP doesn't account for cooling systems ~~EN 16798-9~~	~~*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[b]	DEAP doesn't account for cooling systems ~~EN 16798-9~~	~~See M4-1~~
M4-5	DEAP doesn't account for cooling systems ~~EN 15316-2~~	~~See M3-5~~
M5-1	SAP (2005-2018) ~~EN 16798-3~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	SAP (2005-2018)	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings*

Reference	Reference document [a]	
	Number	Title
	~~EN 16798-7~~	~~*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	SAP PCDB EN 13142 EN 13141-8; -6; -7 ~~EN 16798-5-1~~ ~~EN 16798-5-2~~	SAP Product Characteristics Database *Ventilation for buildings. Components/products for residential ventilation. Required and optional performance characteristics* *Ventilation for buildings. Performance testing of components/products for residential ventilation.* ~~*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	DEAP doesn't account for humidification / dehumidification ~~EN 16798-3~~	~~See M5-1~~
M6-4[b]	DEAP doesn't account for humidification / dehumidification ~~EN 16798-3~~	~~See M5-1~~
M6-5	DEAP doesn't account for humidification / dehumidification ~~EN 16798-5-1~~ ~~EN 16798-5-2~~	~~See M5-6~~
M7-1	DEAP doesn't account for humidification / dehumidification ~~EN 16798-3~~	~~See M5-1~~
M7-4[b]	DEAP doesn't account for humidification / dehumidification ~~EN 16798-3~~	~~See M5-1~~
M7-5	DEAP doesn't account for humidification / dehumidification ~~EN 16798-5-1~~	~~See M5-6~~

Reference	Reference document [a]	
	Number	Title
	~~EN 16798-5-2~~	
M9-1	SAP (2005-2018) ~~EN 15193-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings - Energy requirements for lighting - Part 1: Specifications, Module M9*~~
M10-1	SAP (2005-2018) ~~EN 15232-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*Energy performance of buildings – Part 1: Impact of Building Automation, Controls and Building Management - Modules M10-4,5,6,7,8,9,10*~~

a If a reference comprises more than one document, the references can be differentiated.

b Informative.

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	~~Yes~~No	
Only monthly method allowed	~~No~~Yes	
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 6.4.2.2)

	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~~No	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 2. Grouping according to space category	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 3. Grouping in case of large openings	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 4. Split to have same combination of services	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~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	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 7. (Further) split to have sufficient homogeneity in thermal balance	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 8. (Further) grouping of thermally unconditioned zones	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 9. Simplification in case of small thermal zones	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~Not applicable~~
Zoning step 10. Simplification in case of very small thermal zones	No~~Yes~~	Split based on "living area" and remainder of dwelling (within dwelling conditioned envelope). See DEAP Manual Section 1 and 7 ~~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 and default values (see 6.4.5)

Situation	**Default value of $b_{ztu;m}$ in case of a thermally unconditioned zone, type: external** [a]
External unheated area (excluded from floor area)	No $b_{ztu;m}$ values provided. Derivation of Ru defaults and non defaults detailed in DEAP Section 3.3. Unheated external zone assumed to be at external temperature with U value adjusted as per BR443 and Ru value derived as per DEAP rules.~~No default values provided~~
Internal thermally unconditioned zone type allowed?	
Choice	Yes
If Yes: Detailed defaults for Ru in TGD L Appendix A. Also, from DEAP appendix S (existing dwellings): 0.25 m^2K/W if the dwelling is a house. 0.4 m^2K/W if the dwelling is an apartment~~(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]
	No default values provided
[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?	Yes	
If Yes:		
Coefficient for default contribution of ventilation, $c_{ztu;ve}$	If deriving Ru according to BR443 appendix A based on external U values of unheated space, then see BR443 for default ac/h of unheated spaces. ~~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		~~Yes~~No
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.	~~Not applicable~~Yes
	Calculate the fully and partly or moderately thermally conditioned residential spaces as separate, thermally uncoupled thermal zones.	~~Not applicable~~No
	Calculate the fully and partly or moderately thermally conditioned residential spaces as separate, thermally coupled thermal zones.	~~Not applicable~~No

[a] Only one Yes possible.	
In case of application of the formula	**Value**
$f_{mod;t}$	n/a for DEAP~~0,8~~
$f_{mod;sp}$	n/a for DEAP~~0,5~~
$H_{H;int;spec}$ (W/m^2.K)[5]	n/a for DEAP~~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 $f_{H;ig}$	n/a as DEAP doesn't use hourly procedures~~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	n/a as DEAP doesn't use hourly procedures~~Yes~~	Not applicable
Use method in 6.5.6.3.1 for the calculation of the thermal (longwave) radiation exchange	n/a as DEAP doesn't use hourly procedures~~Yes~~	Not applicable
Use method in 6.5.7.1 for the conversion of physical properties of building elements into properties per layer (node)	n/a as DEAP doesn't use hourly procedures~~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]	$f_{sol;c}$	$f_{H;c}$	$f_{C;c}$
n/a ~~0,40 for all source types~~	n/a ~~0,10~~	n/a ~~0,40~~	n/a ~~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?	n/a as DEAP doesn't use hourly procedures ~~No~~
If by default: specify the default thermal characteristics	
Default characteristics	**Specification** [a]
n/a as DEAP doesn't use hourly procedures ~~Not applicable~~	n/a as DEAP doesn't use hourly procedures ~~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)	n/a as DEAP doesn't use hourly procedures ~~Construction with external thermal insulation (main mass component near inside surface), or equivalent~~
Class E (mass concentrated at external side)	n/a as DEAP doesn't use hourly procedures ~~Construction with internal thermal insulation (main mass component near outside surface), or equivalent~~
Class IE (mass divided over internal and external side)	n/a as DEAP doesn't use hourly procedures ~~Construction with thermal insulation in between two main mass components, or equivalent~~
Class D (mass equally distributed)	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~Construction containing no mass components, other than e.g. plastic board and/or wood siding, or equivalent~~
Light	75 000	n/a as DEAP doesn't use hourly procedures ~~Construction containing no mass components other than 5 to 10 cm lightweight brick or concrete, or equivalent~~
Medium	110 000	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~Construction containing 7 to 12 cm solid brick or heavy weight concrete, or equivalent~~
Very heavy	250 000	n/a as DEAP doesn't use hourly procedures ~~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?	n/a as DEAP doesn't use hourly procedures ~~No~~
If Yes: specify the procedure to classify the three categories (free text)	
Category	**Specification**
Category 1 α_{sol} **= 0,3** **(light colour)**	n/a as DEAP doesn't use hourly procedures ~~Not applicable~~

Category 2 α_{sol} **= 0,6** **(intermediate colour)**	n/a as DEAP doesn't use hourly procedures ~~Not applicable~~
Category 3 α_{sol} **= 0,9** **(dark colour)**	n/a as DEAP doesn't use hourly procedures ~~Not applicable~~
	Choice
If No: choose the default category	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~1,0~~	n/a as DEAP doesn't use hourly procedures ~~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)**
n/a as DEAP doesn't use hourly procedures ~~10 000~~

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

	Unshaded horizontal roof	**Unshaded vertical wall**
F_{sky}	n/a as DEAP doesn't use hourly procedures ~~1,0~~	n/a as DEAP doesn't use hourly procedures ~~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)	n/a as DEAP doesn't use hourly procedures ~~9 (fixed value)~~	n/a as DEAP doesn't use hourly procedures ~~13 (fixed value)~~	n/a as DEAP doesn't use hourly procedures ~~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?	n/a as DEAP doesn't use hourly procedures ~~No~~	Not applicable
If No:	*G*abs;*zt*;*t* = 0	*G*abs;*zt*;*t* = 0
If Yes: give reference to method	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~No~~
For all windows the same choice: either glazing area or fixed frame fraction	n/a as DEAP doesn't use hourly procedures ~~Yes~~
For all windows: only glazing area allowed	n/a as DEAP doesn't use hourly procedures ~~No~~
For all windows: only fixed frame fraction	n/a as DEAP doesn't use hourly procedures ~~No~~
[a] Only one Yes per column possible.	
In case of frame fraction:	**F_{fr}**
Frame fraction fixed value	n/a as DEAP doesn't use hourly procedures ~~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°**
n/a as DEAP doesn't use hourly procedures ~~0,90~~	n/a as DEAP doesn't use hourly procedures ~~0,75~~	n/a as DEAP doesn't use hourly procedures ~~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		n/a as DEAP doesn't use hourly procedures ~~0,85~~
Double glazing		n/a as DEAP doesn't use hourly procedures ~~0,75~~

Double glazing with selective low-emissivity coating	n/a as DEAP doesn't use hourly procedures ~~0,67~~
Triple glazing	n/a as DEAP doesn't use hourly procedures ~~0,7~~
Triple glazing with two selective low-emissivity coatings	n/a as DEAP doesn't use hourly procedures ~~0,5~~
Double window	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~0,1~~	n/a as DEAP doesn't use hourly procedures ~~0,05~~ ~~0,1~~ ~~0,3~~	n/a as DEAP doesn't use hourly procedures ~~0,25~~ ~~0,30~~ ~~0,45~~	n/a as DEAP doesn't use hourly procedures ~~0,10~~ ~~0,15~~ ~~0,35~~
White curtains	n/a as DEAP doesn't use hourly procedures ~~0,1~~	n/a as DEAP doesn't use hourly procedures ~~0,5~~ ~~0,7~~ ~~0,9~~	n/a as DEAP doesn't use hourly procedures ~~0,65~~ ~~0,80~~ ~~0,95~~	n/a as DEAP doesn't use hourly procedures ~~0,55~~ ~~0,75~~ ~~0,95~~
Coloured textiles	n/a as DEAP doesn't use hourly procedures ~~0,3~~	n/a as DEAP doesn't use hourly procedures ~~0,1~~ ~~0,3~~ ~~0,5~~	n/a as DEAP doesn't use hourly procedures ~~0,42~~ ~~0,57~~ ~~0,77~~	n/a as DEAP doesn't use hourly procedures ~~0,17~~ ~~0,37~~ ~~0,57~~
Aluminium-coated textiles	n/a as DEAP doesn't use hourly procedures ~~0,2~~	n/a as DEAP doesn't use hourly procedures ~~0,05~~	n/a as DEAP doesn't use hourly procedures ~~0,20~~	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~Closed: after sunset, if occupied~~ ~~Open: after sunrise, if occupied, but not during sleeping hours~~	Not applicable
1 Motorized operation with manual control	n/a as DEAP doesn't use hourly procedures ~~Same~~	Not applicable
2 Motorized operation with automatic control	n/a as DEAP doesn't use hourly procedures ~~Closed: after sunset~~ ~~Open: after sunrise~~	Not applicable
3 Combined light/blind/HVAC control	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~Closed: if solar irradiance > 300 W/m²~~ ~~Open: if solar irradiance < 200 W/m²~~	Not applicable
1 Motorized operation with manual control	n/a as DEAP doesn't use hourly procedures ~~Same~~	Not applicable
2 Motorized operation with automatic control	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~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?	n/a as DEAP doesn't use hourly procedures ~~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.	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	n/a as DEAP doesn't use hourly procedures ~~Yes~~			n.a.		
Method 2, Shading of direct and diffuse radiation	n/a as DEAP doesn't use hourly procedures ~~No~~			n.a.		
In case of method 2: give reference to calculation procedure	n/a as DEAP doesn't use hourly procedures ~~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	n/a as DEAP doesn't use hourly procedures ~~15~~	
Fixed width (= 360 / $n_{sh;segm}$) [c]	n/a as DEAP doesn't use hourly procedures ~~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?	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	Same approach as SAP 2005-2018. DEAP does not assume any solar gain through opaque elements ~~2~~

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

	Unshaded horizontal roof	Unshaded vertical wall
F_{sky}	1.0~~1,0~~	~~0,5~~0.9

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)	~~9 (fixed value)~~ Not used in DEAP	Not used in DEAP ~~13 (fixed value)~~	Not used in DEAP ~~11 (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	No	
Only simple method allowed	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	"Very light" not used in DEAP~~Construction type is dominated by very light constructions as specified in Table A.14~~
Light	Suspended timber floor; Suspended steel frame floor; Timber/steel frame wall; Masonry internally insulated wall; Curtain walling; Aerated concrete blockwork with plasterboard on dabs wall; Timber/steel frame separating wall; Plasterboard on timber/steel stud internal partition ~~Construction type is dominated by light constructions as specified in Table A.14~~
Medium	Solid floor; Suspended beam and block floor; Suspended concrete beam floor; Suspended concrete plank floor; Masonry cavity fill with plasterboard on dabs wall; Masonry externally insulated with plasterboard on dabs wall; Masonry with plasterboard on dabs separating wall; Masonry with plasterboard on dabs internal partition ~~Construction type is dominated by medium constructions as specified in Table A.14~~
Heavy	Masonry cavity fill with dense plaster external wall; Masonry externally insulated with dense plaster wall; Masonry with dense plaster separating wall; Masonry with dense plaster internal partition ~~Construction type is dominated by heavy constructions as specified in Table A.14~~

Class	Specification of the class
Very heavy	"Very heavy" not used in DEAP ~~Construction type is dominated by very heavy constructions as specified in Table A.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
Cooling not calculated in DEAP ~~1,0~~	Cooling not calculated in DEAP ~~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	~~Yes~~No	
Only Method B	Yes (Temp reduction factor has same relationship with standard, but derivation of the factor differs. See DEAP net space heat demand calculation for details) ~~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	~~Yes~~Cooling not calculated in DEAP	
Only method B	Cooling not calculated in DEAP~~No~~	
Both methods are allowed	Cooling not calculated in DEAP~~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**
$b_{C;red}$	Cooling not calculated in DEAP~~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	~~Yes/~~No	Yes/No
Method B	Yes~~/No~~	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	~~<free text>~~Full detail in DEAP Appendix P

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?	~~Yes~~No		
If Yes, give formula	Humidification not accounted for in DEAP ~~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~~ (not used in DEAP)
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 (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)**
No moisture supplied per kg dry air in DEAP ~~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.	
~~NOTE The space categories are inherited from ISO 52000-1:2017, Annex B.~~ ~~The values are based on NEN 7120 (The Netherlands).~~	

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	Yes~~/No~~
For all windows the same choice: either glazing area or fixed frame fraction	~~Yes/~~No
For all windows: only glazing area allowed	~~Yes/~~No
For all windows: only fixed frame fraction	~~Yes/~~No
[a] Only one Yes per column possible.	
In case of frame fraction:	**F_{fr}**
Frame fraction fixed value	0.7 default proportion of opening that is glazed for wood and PVC-U framed windows 0.8 for metal framed windows ~~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~~ n/a in DEAP	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,~~0.85
Double glazing	~~0,75~~0.76
Double glazing with selective low-emissivity coating	0.72 hard coat, 0.63 soft coat~~0,67~~
Triple glazing	~~0,7~~0.68
Triple glazing with two selective low-emissivity coatings	0.64 hard coat; 0.57 soft coat~~0,5~~
Double window	0.76~~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 [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~~
Net curtain (covering whole window)	n/a in DEAP	n/a in DEAP	0.2	n/a in DEAP
Net curtain (covering half window)	n/a in DEAP	n/a in DEAP	0.1	n/a in DEAP
Dark-coloured curtain or roller blind	n/a in DEAP	n/a in DEAP	0.15	n/a in DEAP
Light-coloured curtain or roller blind	n/a in DEAP	n/a in DEAP	0.4	n/a in DEAP
Dark-coloured venetian blind	n/a in DEAP	n/a in DEAP	0.12	n/a in DEAP
Light-coloured venetian blind	n/a in DEAP	n/a in DEAP	0.3	n/a in DEAP
Dark-coloured external shutter, window closed	n/a in DEAP	n/a in DEAP	n/a in DEAP	0.76
White external shutter, window closed	n/a in DEAP	n/a in DEAP	n/a in DEAP	0.73
Dark-coloured external shutter, window fully open	n/a in DEAP	n/a in DEAP	n/a in DEAP	0.15
White external shutter, window fully open	n/a in DEAP	n/a in DEAP	n/a in DEAP	0.35
NB further notes for the blinds above in DEAP Appendix P Table P4. Reduction factor is (1-ShadingFactor)				

[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)

Shading factor for blinds is adjusted by an equation f x Zblind + (1 – f) in DEAP table P4 footnotes based on closed/open duration but not based on direction/month in DEAP. Therefore the tables (a, b, c) below are not used.

Month	Paris (France)				
	$f_{sht;with}$ [a]	$f_{sh;with}$ [a]			
		N	E	S	W
1	~~0,5~~	~~0,00~~	~~0,15~~	~~0,58~~	~~0,09~~
2	~~0,5~~	~~0,00~~	~~0,19~~	~~0,52~~	~~0,13~~
3	~~0,5~~	~~0,00~~	~~0,53~~	~~0,76~~	~~0,44~~
4	~~0,5~~	~~0,00~~	~~0,32~~	~~0,50~~	~~0,26~~
5	~~0,5~~	~~0,00~~	~~0,31~~	~~0,44~~	~~0,27~~
6	~~0,5~~	~~0,00~~	~~0,42~~	~~0,47~~	~~0,38~~
7	~~0,5~~	~~0,00~~	~~0,51~~	~~0,59~~	~~0,40~~
8	~~0,5~~	~~0,00~~	~~0,37~~	~~0,54~~	~~0,31~~
9	~~0,5~~	~~0,00~~	~~0,28~~	~~0,52~~	~~0,20~~
10	~~0,5~~	~~0,00~~	~~0,13~~	~~0,53~~	~~0,16~~
11	~~0,5~~	~~0,00~~	~~0,08~~	~~0,47~~	~~0,09~~
12	~~0,5~~	~~0,00~~	~~0,07~~	~~0,46~~	~~0,08~~
Annual	~~0,5~~	~~0,00~~	~~0,36~~	~~0,55~~	~~0,30~~

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

Month	Rome (Italy)				
	$f_{sht;with}$ [a]	$f_{sh;with}$ [a]			
		N	E	S	W
1	~~0,5~~	~~0,00~~	~~0,52~~	~~0,81~~	~~0,39~~
2	~~0,5~~	~~0,00~~	~~0,48~~	~~0,82~~	~~0,55~~
3	~~0,5~~	~~0,00~~	~~0,66~~	~~0,81~~	~~0,63~~
4	~~0,5~~	~~0,00~~	~~0,71~~	~~0,74~~	~~0,62~~
5	~~0,5~~	~~0,00~~	~~0,71~~	~~0,62~~	~~0,64~~
6	~~0,5~~	~~0,00~~	~~0,75~~	~~0,56~~	~~0,68~~
7	~~0,5~~	~~0,00~~	~~0,74~~	~~0,62~~	~~0,73~~
8	~~0,5~~	~~0,00~~	~~0,75~~	~~0,76~~	~~0,72~~
9	~~0,5~~	~~0,00~~	~~0,73~~	~~0,82~~	~~0,67~~
10	~~0,5~~	~~0,00~~	~~0,72~~	~~0,86~~	~~0,60~~

11	~~0,5~~	~~0,00~~	~~0,62~~	~~0,84~~	~~0,30~~
12	~~0,5~~	~~0,00~~	~~0,50~~	~~0,86~~	~~0,42~~
Annual	~~0,5~~	~~0,00~~	~~0,69~~	~~0,77~~	~~0,63~~

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

Month	Stockholm (Sweden)				
	$f_{sht;with}$ [a]	$f_{sh;with}$ [a]			
		N	E	S	W
1	~~0,5~~	~~0,00~~	~~0,10~~	~~0,71~~	~~0,00~~
2	~~0,5~~	~~0,00~~	~~0,42~~	~~0,76~~	~~0,18~~
3	~~0,5~~	~~0,00~~	~~0,56~~	~~0,77~~	~~0,47~~
4	~~0,5~~	~~0,00~~	~~0,74~~	~~0,80~~	~~0,59~~
5	~~0,5~~	~~0,02~~	~~0,70~~	~~0,71~~	~~0,59~~
6	~~0,5~~	~~0,05~~	~~0,69~~	~~0,66~~	~~0,56~~
7	~~0,5~~	~~0,03~~	~~0,67~~	~~0,65~~	~~0,53~~
8	~~0,5~~	~~0,00~~	~~0,61~~	~~0,70~~	~~0,54~~
9	~~0,5~~	~~0,00~~	~~0,58~~	~~0,70~~	~~0,44~~
10	~~0,5~~	~~0,00~~	~~0,47~~	~~0,74~~	~~0,24~~
11	~~0,5~~	~~0,00~~	~~0,19~~	~~0,62~~	~~0,00~~
12	~~0,5~~	~~0,00~~	~~0,00~~	~~0,59~~	~~0,00~~
Annual	~~0,5~~	~~0,02~~	~~0,62~~	~~0,71~~	~~0,50~~

[a] Add more columns or rows if needed to differentiate between e.g. applications (e.g. building categories, new or existing buildings, etc.), 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?	Yes - Calculation of shading effect only applies to glazing, solar PV and solar thermal in DEAP.			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:
	Assessment is of any objects blocking the sky in front of and above the window/solar collector (i.e. quadrant of the sky). ~~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~~ Calculation of shading effect does not apply to opaque elements in DEAP.	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:
	Assessment is of any objects blocking the sky in front of and above	~~Other window rebates, overhangs~~	-	n.a.	n.a.	n.a.

	the window/solar collector (i.e. quadrant of the sky). ~~Window rebates, overhangs and side fins if depth larger than 20% of window height resp. width~~	~~and side fins~~				
Specific subdivision rules for the calculation of solar shading on building elements	Assessment is of any objects blocking the sky in front of and above the window/solar collector (i.e. quadrant of the sky). ~~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.46 — Parameters for monthly solar shading due to overhangs (See F.3.5.1.2)

This table is amended to reflect the range of overhangs depth allowed for in DEAP Appendix P

~~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~~

$Z_{overhangs}$ for wide overhangs in DEAP (DEAP Appendix P Table P5). Use of this parameter is detailed in DEAP Appendix P.

Depth/H	Orientation of window				
	N	NE/NW	E/W	SE/SW	S
0.0	1.00	1.00	1.00	1.00	1.00
0.2	0.92	0.89	0.88	0.83	0.77
0.4	0.85	0.80	0.76	0.67	0.55
0.6	0.79	0.72	0.66	0.54	0.38
0.8	0.73	0.65	0.58	0.43	0.32
1	0.69	0.59	0.51	0.36	0.30
1.2 or more	0.66	0.55	0.46	0.31	0.29
This table is to be used where the overhang is at least twice as wide as the window					

$Z_{overhangs}$ for normal overhangs in DEAP (DEAP Appendix P Table P5). Use of this parameter is detailed in DEAP Appendix P.

Depth/H	Orientation of window				
	N	NE/NW	E/W	SE/SW	S
0.0	1.00	1.00	1.00	1.00	1.00
0.2	0.94	0.91	0.89	0.84	0.79
0.4	0.90	0.85	0.79	0.72	0.64
0.6	0.88	0.81	0.72	0.62	0.53
0.8	0.86	0.79	0.66	0.55	0.50
1	0.85	0.77	0.61	0.52	0.49
1.2 or more	0.84	0.76	0.57	0.50	0.48
This table is to be used where the overhang is less than twice as wide as the window					

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

Solar shading due to fins is not calculated in DEAP. Therefore this table is n/a in DEAP.

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)

This table is n/a in DEAP

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)

This table is n/a in DEAP

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 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
- Blue font, strike through = Data/choices of Annex B that are not used as national data/choices
- Blue font = 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 dwellings (2019) as published by Department of Housing, Planning and Local Government www.housing.gov.ie .
- The Dwelling Energy Assessment Procedure (DEAP) 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	Reference document	
	Number	**Title**
M1-4	ISO 52003-1	*Energy performance of buildings — Indicators, requirements, ratings and certificates — Part 1: General aspects and application to the overall energy performance*
M1-6	SAP (2005-2018) ~~ISO 17772-1~~ ~~EN 16798-1 (under preparation)~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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	*Energy performance of buildings — External climatic conditions — Part 1: Conversion of climatic data for energy calculations*
M2-2	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*
M2-5.1	ISO 13789	*Thermal performance of buildings — Transmission and ventilation heat transfer coefficients — Calculation method*
M2-5.2	ISO 10211	*Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations*
M2-5.3	DEAP Manual TGD L ~~ISO 14683~~	DEAP Manual Appendix K (default Y factors) TGD L Appendix D (default y factors) ~~*Thermal bridges in building construction — Linear thermal transmittance — Simplified methods and default values*~~
M2-8.1	SAP (2005-2018) CIBSE TM37 CIBSE TM59 ~~ISO 52022-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* *TM 37: Designing for improved solar shading control, CIBSE 2006* *TM 59: Design Methodology for the assessment of overheating risk in homes, CIBSE 2017* ~~*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*~~
M2-8.2	SAP (2005-2018) CIBSE TM37 CIBSE TM59	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* *TM 37: Designing for improved solar shading control, CIBSE 2006* *TM 59: Design Methodology for the assessment of overheating risk in homes, CIBSE 2017*

Reference	Reference document	
	Number	**Title**
	~~ISO 52022-3~~	~~*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*~~
M5-8	SAP PCDB	SAP Product Characteristics Database
	EN 13142	*Ventilation for buildings. Components/products for residential ventilation. Required and optional performance characteristics* *Ventilation for buildings. Performance testing of components/products for residential ventilation.*
	EN 13141-8; -6; -7 ~~EN 16798-5-1~~	~~*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*~~
	~~EN 16798-5-2~~	~~*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	SAP (2005-2018) ~~EN 15193-1~~	*The UK Government's Standard Assessment Procedure for Energy Rating of Dwellings* ~~*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 and existing dwellings~~buildings~~

While ~~Four d~~different requirement mixes can be~~are~~ distinguished depending on typical conditioning habits (i.e. commonly heated and/or cooled or not), a single mix (A) applies for dwelling assessment in this document. ~~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.~~ A common methodology between new and existing dwellings is largely applicable in Ireland, with some exceptions noted in the footnotes below.

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 (1)	—~~X~~	—	—	—	Table A.3/B.3
Winter thermal comfort	—	—~~X~~	—~~X~~	—	—	Table A.4/B.4
Energy “need” for heating: give further specifications*	X (~~2~~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 (3)	—X	—X	—X	—X (3)	Table A.9/B.9
Thermal bridges	X (4)—	—	—	—	—	Table A.10/B.10
Window energy performance	X (5)—	—	—	—	—	Table A.11/B.11
Airtightness of the thermal envelope: mandatory measurement: give further specifications*	X (64)	—X (4)	—X (4)	—X (4)	—	Table A.12/B.12[8]
Airtightness of the thermal envelope: quantitative requirement: give further specifications*	—X(7)	—	—	—	—	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
...	—	—	—	—	—	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.

Specifications according to each of the numbered references:

The following types of requirement mixes are distinguished.

— Type Mix A: Dwellings. Accounts for heating, lighting, pumps, fans, hot water but not cooling. ~~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 the 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.~~

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

Numbered references:

1) Optional assessment of Summer Overheating in DEAP
2) Standardised temperatures and heating schedules to be maintained in all dwelling types
3) Part L requirements on U-value backstops for new dwellings only within EPB calculator (DEAP). Performance results usable in all dwelling EPB assessments, defaults often used in existing dwellings.
4) Thermal bridge minimum requirements for new dwellings only. Performance results usable in all dwelling EPB assessments, although almost always defaulted in existing dwellings.
5) Window U value performance new dwellings only within EPB calculator. Performance results usable in all dwelling EPB assessments, defaults often used in existing dwellings.
6) Mandatory in all new dwellings. Performance results usable in all dwelling EPB assessments, defaults often used in existing dwellings.
~~1)~~7) Without an airtightness test, an airtightness level is estimated based on dwelling structural characteristics. As per DEAP Ventilation guidance.

~~(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 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).~~

~~(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 general terms, heating is a requirement in the Irish climate for 8 months of the year, while cooling has minimal market penetration in the Irish climate. Therefore, the summer thermal comfort assessment is provided but is not mandatory and cooling energy demand is not calculated.

Regarding winter thermal comfort, a standard level of heat and schedule is assumed so dwellings can be assessed on a like for like basis.

A detailed assessment of individual thermal envelope elements and openings is carried out as well as repeating and linear/spot thermal bridges. While airtightness measurement is important in new, energy efficient dwellings, particularly due to the relatively large impact leaks can have in such cases, a broader estimate based on structure information suffices for older, less efficient dwellings.

As a general rule, actual, non default parameters are used as far as possible. Where not available (e.g. can be a frequent occurrence in existing dwellings), default values are provided in the DEAP methodology.

~~(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~~	~~—~~	~~—~~	~~Table A.10/B.10~~
~~Window energy performance~~	~~—~~	~~—~~	~~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~~	~~X (3)~~	~~—~~	~~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~~
~~…~~	~~—~~	~~—~~	~~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.~~

~~**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) 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.

(2) 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.

(3) Before active cooling is installed in a room of an existing building, all transparent elements shall comply with solar control requirements.

Motivation for the chosen requirement mix:

For reasons of practicality in the context of renovations, requirements are only set on element level and not on combinations of elements (which may involve existing elements).

For extensive renovations (e.g. full stripping of, a large part of, the building), further reaching requirements may be appropriate.

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

A.4.1: Application: ~~new buildings~~new and existing dwellings

Table A.3a is applicable for requirement mix~~es~~ 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]	~~X~~
Threshold internal temperature ~~<free text> Other indicator; define*)~~	Used to derive likelihood of high internal temperature during hot weather ~~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.~~Full detail in DEAP Manual Appendix P	

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]	~~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.~~Winter Thermal Comfort n/a for DEAP so this table is not used.	

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 (1)~~
<free text> Other indicator; define*)	X (1)
...	

* 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:

(1) Temperature level maintained at specific times for 8 months of the year. See DEAP Section 7.1

~~(1) The ratio is called H-level, symbol *H*, and is defined as:~~

$$H = 100 \times \frac{Q_{\mathrm{H;nd;tot}}}{Q_{\mathrm{H;nd;tot;ref}}} \qquad \text{(B.1)}$$

~~Where~~

~~H is the ratio called H-level;~~

~~$Q_{\mathrm{H;nd;tot}}$ is the total heat need, in kWh;~~

~~$Q_{\mathrm{H;nd;tot;ref}}$ is the reference value for the total heat need, in kWh.~~

~~The result is rounded upwards to the nearest integer value.~~

~~NOTE 1 The factor 100 ensures that the H-level has a sufficiently fine scale without the need for a decimal point.~~

~~The reference value is determined by means of either a formula or a notional reference building and shall for each building category closely reflect the cost optimal value (at the time of its definition and for a given scenario of the future energy price), making allowance for a reasonable amount of window area. The requirement is then initially 100 and may be lowered in a stepwise manner over time.~~

~~NOTE 2 The advantages and drawbacks of such ratio approach are discussed in a general manner in ISO 52003-1 and ISO/TR 52003-2[6].~~

~~Note also the specific details provided in Table B.2a for this requirement:~~

~~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.~~

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]	
Ratio (define*)	~~X (1)~~
<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:
Cooling is n/a for DEAP so this table is not used.

~~(1) The ratio is called C-level, symbol C, and is defined as:~~

$$~~C = 100 \times \frac{Q_{C;nd;tot}}{Q_{C;nd;tot;ref}}~~ \quad ~~(B.2)~~$$

~~Where~~

~~C is the ratio called C-level;~~

~~$Q_{C;nd;tot}$ is the total cooling need, in kWh;~~

~~$Q_{C;nd;tot;ref}$ is the reference value for the total cooling need, in kWh.~~

~~The result is rounded upwards to the nearest integer value.~~

~~Further, the same considerations as for heating (above) apply.~~

~~Note also the specific details provided in Table B.2a for this requirement:~~

~~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.~~

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 DEAP so this table is not used. ~~<free text>~~	

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/(m²·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 DEAP so this table is not used.

~~<free text>~~

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} [-]	X(1)
Thermal transmittance U [W/(m²·K)]	X(2)
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:

(1) Not checked in EPB methodology, but details of requirement in TGD L Appendix D for new dwellings

(2) Full details in TGD L Section 1 (new dwellings only checked in EPB methodology for Part L compliance)

~~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: …	
Numeric indicator	**Choice**
Minimum temperature factor f_{Rsi} [-]	X(1)
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 [-] $(\Sigma\Psi l + \Sigma\chi)/H_{tr}$	X(2)
<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:**	
~~<free text>~~ 1) not checked in EPB methodology, but details of requirement in TGD L Appendix D for new dwellings 2) Overall "Y" factor, either defaulted to onerous value, defaulted based on availability of standard "acceptable construction details" or else detailed certified models of dwelling junctions. New dwellings can use non-defaults. Non defaults unlikely for existing dwellings.	

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: …	
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*	
<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:**	
~~<free text>~~n/a in DEAP/Part L	

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

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

~~Application: New constructions~~	
~~Numeric indicator~~	**~~Choice~~**

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

~~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>~~	

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

Application: …	
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} [$m^3/h/m^2$]	
<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; — others, if needed.	
Specification (if method 1, 2 or 3):	
~~<free text>~~Full detail of this requirement for q50 (air permeability at 50Pa) is in TGD to Part L. (new dwellings only)	
* 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} [–]	
<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:	
n/a for DEAP/Part L~~<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: …~~	
n/a for DEAP/Part L~~<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.~~Checks in TGD L (as carried out in DEAP) are applicable to new dwellings rather than existing dwellings. Tables therefore not included below.

~~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/(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.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.~~

~~Tables A.10b, A.11b and A.12b are not applicable because there are no requirements set in Table A.2b for these EPB features.~~

~~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.~~