Overview of amendments to technical regulations MB EPB-EPC 2026

CONTENTS

1 ANNEX 2: QUALITY REQUIREMENTS AND CONTENT OF RESCERT TRAINING COURSES

Subtitle d) Biomass boilers

The current text in part d)

d) Biomass boilers

The instructor has the following materials at a minimum during the training course:

1° Classroom with a sufficient number of lecterns, a video projector and a board or flip chart;
2° Practice room of sufficient size with a water supply, drain and power supply, as well as desks for taking notes;
3° At least two different and fully operational wood-burning units, each capable of accommodating four participants, which meet the following conditions:
    a. Representative of the current market;
    b. At least one boiler must use standardised wood pellets as fuel;
    c. The boilers must differ in make and type;
    d. The boilers must differ in combustion efficiency;
    e. At least one unit must be an air-intake model;
    f. At least one unit is a model with a modulating burner or combustion air intake fan;
    g. At least one unit must have the possibility to adjust the draught in the combustion chamber with varying speed control;
    h. The units must be fitted with control panels that allow for technical adjustments, including adjustments based on weather conditions;
    i. The following components must be present:
        i. An internal storage tank within the unit or an external small buffer tank for pellets with a minimum capacity of two hours (the duration of the practical exercise);
        ii. Burner;
        iii. Boiler;
        iv. Water circuit with at a minimum a three-way mixing valve, circulation pump, buffer tank and distribution system;
        v. Flue gas extraction system;
        vi. Electrical connection;
        vii. Flue gas discharge, chimney;
4° An overview panel of the combustion chamber on which the instructor can simulate the combustion and correct conditions;
5° Sections of boilers and combustion chambers;
6° At least one electronic measuring device for measuring flue gas and particulate matter emissions that can be operated by four participants at a time;
7° Images of a pellet silo;
8° Images of a pellet cellar;
9° Images of a coupling system for a tanker lorry carrying pellets for delivery.

Replaced in its entirety by:

d) Biomass boilers

The instructor has the following materials at a minimum during the training course:

1° Two fully operational biomass boilers, connected and in perfect condition:

a) One manual wood-burning boiler or mixed-fuel boiler connected to a suitable flue with an adjustable draught regulator;

b) One pellet boiler or mixed-fuel boiler connected to a suitable flue- or concentric flue, compatible with the fuel used and fitted with an adjustable draught regulator.
2° A water storage tank of at least 500 litres, equipped with at least three probes or thermometers for visualisation of stratification.
3° Optional:
c) Wood chip boiler;
d) Second water storage tank, connected in series or in parallel.
4° The boilers must have a free space of at least one metre around and be fitted with pipe sections with openings for combustion measurements.
5° Technical manuals (use, installation, maintenance) for all units must be available and accessible.
6° The training platform has the following measurement- and analysis tools:
a) Moisture meter;
b) Combustion analyser (underpressure, CO content, flue gas temperature);
c) Vacuum meter.
7° Samples of different fuels are present:
a) Pellets certified to DINplus, ENplus A1 or NF;
b) Compressed logs;
c) Traditional logs;
d) Upgraded logs;
e) Wood shavings;
f) Kindling.
8° Inspection- and maintenance equipment for chimney safety, including:
a) Metal chimney sweeping brush;
b) Plastic brush;
c) Compatible sweeping rod;
d) Optional: inspection camera.
9° Various demonstration elements for flue gas extraction, including:
a) Nameplates and labels;
b) Double-walled insulated metal pipe element;
c) Concrete and terracotta tubular elements;
d) Single-walled rigid metal tubes;
e) Flexible tubes (double-walled, insulated, smooth inner wall);
f) Oval tube element;
g) Concentric channel elements;
h) Single-walled metal junction box;
i) Connection piece for flue duct–connection channel;
j) Insulation shell and safety spacer plate.
10° Safety materials for participants, including:
a) 12 pairs of heat-resistant gloves;
b) Lighter with long handle;
c) Optional: rolling platform or special trolley.
11° The centre has relevant normative and technical documentation, including:
a) Standards NBN 61-001 and NBN 61-002;
b) Documentation on silo implementation;
c) Technical documentation on storage tanks.
12° The boilers installed comply with standard EN 303-5:2022 and are connected according to good engineering practice, including recycling system and three-way mixing tap on the hydraulic connections.
13° Classroom with a sufficient number of lecterns, a video projector and a board or flip chart;

New subtitle g)

In Annex 2, the following Section g) is added:

g) Photovoltaic solar energy systems, including energy storage – such as storage in home batteries – and charging points that enable demand response

The instructor must have the following materials at a minimum during the training course:

1° A fully functional system in which a PV inverter, home battery system, smart charging point and energy management system are integrated;

2° At least one operational home battery system (e.g. lithium iron phosphate – LFP) with a corresponding battery inverter or hybrid inverter. Both high-voltage and low-voltage batteries;

3° At least one smart charge point that can be controlled. The charging point must support functions such as dynamic load balancing (adjusting power output to match household consumption) and control via an EMS (energy management system);

4° A physical or sophisticated simulated EMS capable of monitoring energy flows (from PV, battery, grid, charging point) and actively controlling the components (at least charging the battery with surplus solar energy, adjusting the car's charging rate and optimising energy costs using dynamic pricing and capacity pricing);

5° Battery components: examples of a Battery Management System (BMS), DC fuses, load separators and specific high and low voltage connectors for batteries;

6° Charging pile components: charging cable and plugs (minimum type 2) and components for the electrical connection in the meter cabinet;

7° Communication interfaces: examples of the hardware required for communication protocols that are essential for integration, such as Modbus (RTU/TCP), CAN bus and Ethernet (UTP), for the connection between the inverter, battery, EMS and charging point;

8° Charging point tester: a device that can test a charging point to ensure it is working properly and that the residual current device is functioning correctly;

9° Network tester/Protocol Analyser: Tools to control and debug data connectivity (e.g. UTP cables) and communication between the different components;

10° Design software: Access to various software packages in order to be able to carry out the design of systems with inverters, batteries and an EMS.

11° Configuration software: Access to different software packages for the configuration of inverters, batteries and the EMS.

12° Simulation software: Programmes for correctly dimensioning battery storage and charging infrastructure, taking into account the consumption profile, PV production and customer requirements.

13° Classroom with a sufficient number of lecterns, a video projector and a board or flip chart;

New subtitle h)

In Annex 2, the following Section h) is added:

h) Biomass stoves

The instructor must have the following materials at a minimum during the training course:

1° Three fully operational biomass stoves, connected and in perfect condition:

a) One wood-burning stove or combination unit;

b) One pellet stove or combination unit;

c) One built-in fireplace, equipped with a pedagogic hood and a decompression cabinet.

2° Each unit must have at least one metre of free space around it and be equipped with ducts with measuring openings.

3° A functional hot-air distribution system connected to the built-in fireplace.

4° The installation manuals for all units are available and can be consulted.

5° The necessary equipment for measuring and analysing combustion parameters (vacuum, CO, flue gas temperature).

6° A range of biofuels (pellets, wood logs, compressed blocks, kindling wood).

7° Complete inspection and maintenance materials for chimney channels.
8° A set of flue demonstration components, including at a minimum:
a) Nameplates;
b) Concentric and single-walled elements;
c) Insulated and flexible elements;
d) Educational roof outlet;
e) Safety spacer plate and insulating shell.
9° Safety equipment and PPE:
a) 12 pairs of heat-resistant gloves;
b) Lighter with long handle;
c) Optional rolling platform or hand truck.
10° The wood-burning stove complies with EN 16510 2 1, the pellet stove with EN 16510 2 6, the built-in fireplace with EN 16510 2 2, and all units have been properly installed.
11° Classroom with a sufficient number of lecterns, a video projector and a board or flip chart;

2 ANNEX 3: QUALITY REQUIREMENTS AND CONTENT OF THE RESCERT EXAMS

Subtitle d) Biomass boilers

The current text in part d)

d) Biomass boilers

The members of the jury and participants must be able to use the following materials during the examination:
1° Practice room of sufficient size with a water supply, drain and power supply, as well as desks for taking notes;
2° At least two different and fully operational wood-burning units, each capable of accommodating four participants, which meet the following conditions:
a. Representative of the current market;
b. At least one boiler must use standardised wood pellets as fuel;
c. The boilers must differ in make and type;
d. The boilers must differ in combustion efficiency;
e. At least one unit must be an air-intake model;
f. At least one unit is a model with a modulating burner or combustion air intake fan;
g. At least one unit must have the possibility to adjust the draught in the combustion chamber with varying speed control;
h. The units must be fitted with control panels that allow for technical adjustments, including adjustments based on weather conditions;
i. The following components must be present:
    i. An internal storage tank within the unit or an external small buffer tank for pellets with a minimum capacity of two hours (the duration of the practical exercise);
    ii. Burner;
    iii. Boiler;
    iv. Water circuit with at a minimum a three-way mixing valve, circulation pump, buffer tank and distribution system;
    v. Flue gas extraction system;
    vi. Electrical connection;
    vii. Flue gas discharge, chimney;
3° An overview panel of the combustion chamber on which the instructor can simulate the combustion and correct conditions;
4° Sections of boilers and combustion chambers;
5° At least one electronic measuring device for measuring flue gas and particulate matter emissions that can be operated by four participants at a time;

6° Images of a pellet silo;
7° Images of a pellet cellar;
Images of a coupling system for a tanker lorry carrying pellets for delivery.

Replaced in its entirety by:

The members of the jury and participants must be able to use the following materials during the examination:
1° Two fully operational biomass boilers (wood boiler and pellet boiler), connected and equipped with measuring openings.
2° A water storage tank with a capacity of at least 500 litres fitted with stratification gauges.
3° The necessary measurement and analysis equipment (moisture meter, combustion analyser, negative pressure meter).
4° Certified fuels (DINplus/ENplus A1 pellets, wood and logs).
5° Inspection materials for flues.
6° Relevant technical manuals are available for participants and the jury to consult.
7° The boilers comply with EN 303 5:2022.

New subtitle g)

In Annex 3, the following Section g) is added:

g) Photovoltaic solar energy systems, including energy storage – such as storage in home batteries – and charging points that enable demand response

The members of the jury and the participants must be able to use the material as defined in Annex 2.g) during the examination.

New subtitle h)

In Annex 3, the following Section h) is added:

h) Biomass stoves

The examination centre must have the following available at a minimum during the examination:
1° A wood-burning stove, a pellet stove and a built-in fireplace, all fully operational and fitted with monitoring points.
2° A flue gas extraction system with draught control, suitable and safe for practical testing.
3° The necessary analytical and safety equipment (flue gas monitoring, negative pressure, CO).
4° Certified fuels.
5° Technical manuals available and accessible.
6° The devices comply with the relevant standards EN 16510-2-1, EN 16510-2-6 and EN 16510-2-2.

3 ANNEX 4: TRANSMISSION REFERENCE DOCUMENT

The following normative references are added to Chapter 3:

NBN EN 442:2015	Radiators and convectors - Part 1: Technical specifications and requirements
NBN EN 1264-2:2013	Water based surface embedded heating and cooling systems - Part 2: Floor heating: Prove methods for the determination of the thermal output using calculation and test methods
NBN EN 12831	Energy performance of buildings - Method for calculation of the design heat load
NBN EN 13779	Ventilation for non-residential buildings - Performance requirements for ventilation and room-conditioning systems
NBN EN 13829:2001	Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method

NBN EN 15377-1:2008	Heating systems in buildings - Design of embedded water based surface heating and cooling systems - Part 1: Determination of the design heating and cooling capacity
NBN EN 15603	Energy performance of buildings - Overall energy use and definition of energy ratings
NBN EN 15879-1:2011	Testing and rating of direct exchange ground coupled heat pumps with electrically driven compressors for space heating and/or cooling - Part 1: Direct exchange-to-water heat pumps
NBN EN 16430-3:2015	Fan assisted radiators, convectors and trench convectors - Part 3: Test method and rating for cooling capacity
NBN EN ISO 9488	Solar energy - Vocabulary (ISO 9488:1999)

4 ANNEX 11: DETERMINATION OF REDUCTION FACTORS FOR VENTILATION IN EPW

In the first part of Section 3.3.1.2, the following bullet point is added between the first and second bullet points:

- Detection of the CO_2 concentration in the room itself or in an exhaust duct that is only connected to that room;

5 ANNEX 13. DETERMINATION OF FURTHER SPECIFICATIONS RELATING TO HEATING AND VENTILATION SYSTEMS

Amendments to Part I: Determination of the design return temperature and requirements regarding the burden of proof to substantiate the chosen temperature regime for hydraulic heating systems

The words:
dimensioning calculation
are replaced in every instance by:
dimensioning calculation for the distribution system

The title:
2.1.2 Summary of the design calculation report
is replaced by the title:
2.1.2. Summary of the dimensioning calculation of the distribution system

The last paragraph of Chapter 3.1:
If both local heating and heat emitters from a central heating system are used in a room, the output of the central heating emitters in that room must not be greater than or equal to the heat demand. A condition here is that local heating must be included in the calculation of the E-level.
is replaced by:
If a room is equipped with both local heating and heat emitters from a central heating system, the total output of the central heating emitters and the local heating system in that room must be greater than or equal to the heat demand.

Amendments to Part II. Determination of the requirements regarding the burden of proof to support the design specification and hydraulic balancing report for heating systems and the aerodynamic balancing report for heating and/or ventilation systems

The words:
dimensioning note
are replaced in every instance by:
dimensioning note for the capacity of the generator
except in the phrase 'Dimensioning note for heating systems (see Section 5.3.1)'

The phrase:
Dimensioning note for heating systems (see Section 5.3.1)
is replaced by:
Dimensioning note for heating systems (see Section 5.3.1), in the form of a dimensioning note for the capacity of the generator

6 ANNEX 18: CALCULATION METHOD FOR SUPPORT NOTE (EXTERNAL HEAT SUPPLY)

Text below the title

The third paragraph below the title with the following text:
This text also contains provisions for the limitation of an external heat supply system and provisions for minimum insulation requirements for heat exchangers and buffer vessels to be complied with in the Annex XII to the Energy Decision of 19 November 2010:

- Determine the limitation of an external heat supply system in accordance with Chapter 1 of this text.
- Determine the minimum insulation requirements of heat exchangers and buffer vessels according to the Section 3.3.11 of this text.

is replaced by:
This text also contains provisions for the minimum insulation requirements for heat exchangers and buffer vessels to be complied with in the Annex XII to the Energy Decision of 19 November 2010:

- Determine the minimum insulation requirements of heat exchangers and buffer vessels according to the Section 3.3.11 of this text.

Chapter 1

The first paragraph with the following text:

All boundaries of the unique external heat supply system are clearly defined and documented on a project basis for each heat consumer. The boundaries are defined as follows:

- If there is a heat meter, the heat meter forms the boundary. If several heat meters are installed in a series, the boundary is be the heat meter used by the operator of the external heat supply system for the heat cost calculation;
- If there is no heat meter, the connection point of the substation or heat exchanger constitutes the boundary from the district heating network side. In the absence of a substation or heat exchanger, the entrance to the building forms the boundary.

is replaced in its entirety by the following:
The entrance to the building forms the boundary for a unique external heat supply system. This is the point where the external heat supply system enters the heat consumer's building.

Only in the case in which an overhead system of external heat supply provides heat to a unique system of external heat supply does the boundary constitute the heat meter; or if there is no heat meter, the connection of the substation or heat exchanger.

Chapter 2

In the introduction to Chapter 2, the phrase:
This depends on the defined boundaries as described in Chapter 1.
is removed.

Throughout Chapter 2, the word 'equiv.' is removed in all instances from the index of generation efficiency.

In Section 2.1, the phrase:

- the heat exchanger or substation is included in the external heat supply system;

is removed.

In Section 2.1, the phrase:
the heat exchanger or substation lies outside the boundaries of the district heating system and is insulated in accordance with the minimum requirements set out in 3.3.11.
is replaced by:
all heat exchangers and substations connected to the pipe segments directly connecting the energy sector to the boundary of the unique external heat supply system are insulated in accordance with the minimum requirements described in 3.3.11.

In Section 2.1, footnote 1 reads:
1. In cases in which the date of the licence application or the date of notification is on or after 1 January 2014, the symbol '$\eta_{heat,dh}$' is used in Annex V to the Energy Decree of 19 November 2010.
is removed.

In Section 2.2, footnote 2:
2. In cases in which the date of the licence application or the date of notification is on or after 1 January 2014, the symbol '$\eta_{heat,dh}$' is used in Annex V to the Energy Decree of 19 November 2010.
is removed.

Chapter 3

The text under Section 3.1.1. :

For the purpose of external heat supply for space heating, hot tap water and humidification, the monthly equivalent primary energy factor is determined as follows:

$$f_{p,dh,m} = max\left(\frac{E_{p,dh,m}}{Q_{del,dh,m}}; 0{,}7\right)$$

In which:

$f_{p,dh,m}$	(-)	The monthly equivalent primary energy factor of the external heat supply system;
$E_{p,dh,m}$	MJ	The monthly primary energy consumption of the external heat supply system, as determined by the methodology described in 3.3:
$Q_{del,dh,m}$	MJ	The amount of heat delivered monthly to the heat users in the external heat supply system, as determined by the methodology described in 3.2.

The value in the absence is $f_{p,dh,m}$ = 2.0 (–).

is replaced by the following:

For the purpose of external heat supply for space heating, hot tap water and humidification, the monthly equivalent primary energy factor is determined as follows:

$$f_{p,dh,m} = max\left(\frac{E_{p,dh,m}}{Q_{del,dh,m}}; \frac{f_{p,elec}}{5.4}\right)$$

In which:

$f_{p,dh,m}$	(-)	The monthly equivalent primary energy factor of the external heat supply system;
$E_{p,dh,m}$	MJ	The monthly primary energy consumption of the external heat supply system, as determined by the methodology described in 3.3:
$Q_{del,dh,m}$	MJ	The amount of heat delivered monthly to the heat users in the external heat supply system, as determined by the methodology described in 3.2.
$f_{p,elec}$	(-)	the conventional conversion factor to primary energy for electricity, as laid down in the main text of the Energy Decree of 19 November 2010, (-);

The value in the absence is $f_{p,dh,m}$ = 2.0 (–).

The text under Section 3.1.2. :

For the application of external heat supply for cooling by means of a thermally driven cooling machine, the monthly equivalent primary energy factor is determined as follows:

$$f_{p,dh,m} = max\left(\frac{E_{p,dh,m}}{Q_{del,dh,m}}; 0{,}35\right)$$

In which:

$f_{p,dh,m}$	(-)	The monthly equivalent primary energy factor of the external heat supply system;
$E_{p,dh,m}$	MJ	The monthly primary energy consumption of the external heat supply system, as determined by the methodology described in 3.3:
$Q_{del,dh,m}$	MJ	The amount of heat delivered monthly to the heat users in the external heat supply system, as determined by the methodology described in 3.2.

The value in the absence is $f_{p,dh,m}$ = 2.0 (–).

is replaced by the following:

3.1.2 Equivalent primary energy factor of the external heat supply system for cooling by means of a thermally driven cooling machine

For the application of external heat supply for cooling by means of a thermally driven cooling machine, the monthly equivalent primary energy factor is determined as follows:

$$f_{p,dh,m} = max\left(\frac{E_{p,dh,m}}{Q_{del,dh,m}}; \frac{f_{p,elec}}{10.8}\right)$$

In which:

$f_{p,dh,m}$	(-)	The monthly equivalent primary energy factor of the external heat supply system;
$E_{p,dh,m}$	MJ	The monthly primary energy consumption of the external heat supply system, as determined by the methodology described in 3.3:
$Q_{del,dh,m}$	MJ	The amount of heat delivered monthly to the heat users in the external heat supply system, as

determined by the methodology described in 3.2.

$f_{p,elec}$ (-) The conventional conversion factor to primary energy for electricity, as laid down in the main text of the Energy Decree of 19 November 2010, (-);

The value in the absence is $f_{p,dh,m}$ = 2.0 (−).

In Section 3.3, the words:
where the lower limit of 0.7 does not apply
are replaced by the words:
where the lower limit of fp,elec/5.4 does not apply.

7 ANNEX 18/3: FORMULA STRUCTURE EPC RES, KNR, GD

General comment

Following the addition of various sections (see below), the table and page numbering have been amended.

2.3 Total primary energy consumption

This table:

Table 1: Conversion factor to primary energy

Energy carrier	**$F_{prim,fuel}$ (-)**
electricity (not generated by CHP)	0.40
'detailed calculation' heating network	$F_{prim,wn}$
heating network 'energy-efficient'	1
heating network 'non-energy-efficient'	0.77
electricity (generated by CHP)	0.56
other energy carriers (= gas, fuel oil, wood (other), pellets, coal)	1

is replaced by:

Table 2: Conversion factor to primary energy

Energy carrier	**$F_{prim,fuel}$ (-)**
electricity (not generated by CHP)	0.526
'detailed calculation' heating network	$F_{prim,wn}$
heating network 'energy-efficient'	1
heating network 'non-energy-efficient'	0.770
electricity (generated by CHP)	0.560
other energy carriers (= gas, fuel oil, wood (other), pellets, coal)	1

2.5.1.1 heat transfer coefficient calculations

This table:

Table 4: Thickness of insulation if insulation is present, but the insulation thickness is unknown, at outdoor limit, adjacent unheated space, basement or ground

Reference year for construction or renovation	Thickness (mm)						
	Floors	Façades	Panel	Door	Sloping roof	Flat roof	Ceiling
… - 1970	20	20	20	20	20	20	20
1971-1985	20	20	20	20	50	50	40
1986-1992	20	40	20	20	60	70	60
1993- 2005	20	50	20	20	90	70	60
2006 - …	30	60	20	20	100	90	90

is replaced by:

Table 4: Thickness of insulation if insulation is present, but the insulation thickness is unknown, at outdoor limit, adjacent unheated space, basement or ground

Reference year for construction or renovation	Thickness (mm)						
	Floors	Façades, yes or no at the plot boundary	Panel	Door	Sloping roof	Flat roof	Ceiling
… - 1970	20	20	20	20	20	20	20
1971-1985	20	20	20	20	50	50	40
1986-1992	20	40	20	20	60	70	60
1993- 2005	20	50	20	20	90	70	60
2006 - …	30	60	20	20	100	90	90

This table:

Table 5: Thickness of insulation if insulation is present, but the insulation thickness is unknown, at adjacent heated space boundary

Reference year for construction or renovation	Thickness (mm)				
	Floors	Façades	Panel	Door	Ceiling
… - 2005	20	20	20	20	20
2006 - …	20	20	20	20	20

is replaced by:

Table 5: Thickness of insulation if insulation is present, but the insulation thickness is unknown, at adjacent heated space boundary

Reference year for construction or renovation	Thickness (mm)				
	Floors	Façades, yes or no at the plot boundary	Panel	Door	Ceiling
… - 2005	20	20	20	20	20
2006 - …	20	20	20	20	20

This table:

Table 6: Thickness of insulation if the presence of insulation is unknown, at outdoor limit, adjacent unheated space, basement or ground

Reference year for construction or renovation	**Thickness (mm)**						
	Floors	Façades	Panel	Door	Sloping roof	Flat roof	Ceiling
… - 1970	0	0	0	0	0	0	0
1971-1985	10	10	0	0	30	30	20
1986-1992	10	30	0	0	50	60	40
1993- 2005	10	40	0	0	80	70	40
2006 - …	30	60	20	20	100	90	90

is replaced by:

Table 6: Thickness of insulation if the presence of insulation is unknown, at outdoor limit, adjacent unheated space, basement or ground

Reference year for construction or renovation	**Thickness (mm)**							
	Floors	Façades not on the plot boundary	Façades on the plot boundary	Panel	Door	Sloping roof	Flat roof	Ceiling
… - 1970	0	0	0	0	0	0	0	0
1971-1985	10	10	0	0	0	30	30	20
1986-1992	10	30	0	0	0	50	60	40
1993- 2005	10	40	0	0	0	80	70	40
2006 - …	30	60	0	20	20	100	90	90

This table:

Table 7: Thickness of insulation if presence of insulation is unknown, at boundary adjacent heated space

Reference year for construction or renovation	**Thickness (mm)**				
	Floors	Façades	Panel	Door	Ceiling
… - 2005	0	0	0	0	0
2006 - …	20	20	20	20	20

is replaced by:

Table 7: Thickness of insulation if presence of insulation is unknown, at boundary adjacent heated space

Reference year for construction or renovation	**Thickness (mm)**					
	Floors	Façades not on the plot boundary	Façades on the plot boundary	Panel	Door	Ceiling
… - 2005	0	0	0	0	0	0
2006 - …	20	20	0	20	20	20

The second-to-last sentence under Table 7:

The following order of priority is retained: Thickness > lambda > material (with default lambda from Table 3).

is replaced by:

The following order of priority is retained: Thickness > lambda > material (with default lambda from Table 3 reduced by 0.015 if default lambda is less than or equal to 0.05 and reduced by 0.02 in all other cases).

The last sentence under Table 7:

If no additional parameters are entered in addition to the R-value of the insulation, a default lambda of 0.03 W/mK is calculated.

is replaced by:

If no additional parameters are entered in addition to the R-value of the insulation, a default lambda of 0.02 W/mK is calculated.

2.9 PV cells

This table:

Table 88: Output of PV panels per m2

Type of PV	**$P_{pv,type}$ (Wp/m^2)**
Amorphous	62
Crystalline	125
Unknown	125
Recommendation	150

is replaced by:

Table 87: Output of PV panels per m2

Type of PV	**$P_{pv,type}$ (Wp/m^2)**
Amorphous	62
Crystalline	125
Unknown	125
Recommendation	200
Solar energy indicator in the absence of imported surface collector	250

2.12 Energy label of apartment building

This chapter is added:

2.12 ENERGY LABEL OF APARTMENT BUILDING

The EPC of the Common Parts of an apartment building contains an energy label. This energy label (2.12.4) depends on three different indicators: insulation indicator (2.12.1), installations indicator (2.12.2) and solar energy indicator (2.12.3).

2.12.1 Insulation indicator

The insulation indicator is the letter corresponding to the scale in Table 94 based on the average U-value of the building envelope as defined in 2.5.1.2 (V. 37). Only collective elements are taken into account according to their specific U-values. For private windows, doors and panels, the entered area is used with a U-value of 1.5 W/(m²K) (including glazing and frames).

Average U-value of the building envelope [W/(m²K)]	Insulation indicator
<= 0.6	A
> 0.6 and <= 0.9	B
> 0.9 and <= 1.1	C
> 1.1 and <= 1.5	D
> 1.5 and ≤ 2.0	E
> 2.0	F

Table 94: Insulation indicator for apartment buildings based on the average U-value of the building envelope.

2.12.2 Installations indicator

The installations indicator takes into account only the collective generators for space heating and the collective generators for sanitary hot water. Collective cooling and collective ventilation are not taken into account.

All collective generators for space heating and sanitary hot water are first classified separately according to Table 95, with A as the best score and D as the worst score:

Type of collective generator	Score
- Electric heat pumps - Electric heat generation - Generator using the district heating network as an energy source	A
- Gas-powered heat pump - Hybrid heat pump*	B
- Condensing boiler - Combined heat and power generation	C
- Non-condensing boiler - Any generator that cannot be classified under one of the above categories	D
* A hybrid heat pump may only be designated as such when there is a	

combined system comprising heat generators with a C rating and heat generators with an A rating.

Table 95: Scores for collective generators

The score for space heating is the score of the worst-performing collective space heating generator.
The score for sanitary hot water is the score of the worst performing collective generator for sanitary hot water.

The installations indicator is the average score for space heating and the score for sanitary hot water, rounded down to the lowest score. If there is no score for either of the two, the available score will be used as the installations indicator.

If there are no collective generators for space heating nor for sanitary hot water, there is no installations indicator. There is one exception to this: when the installations indicator is immediately assigned the value A:

- if there are no collective generators for space heating or sanitary hot water; and
- if it has been demonstrated that all individual space heating and sanitary hot water installations do not use fossil fuels; and
- if the insulation indicator is equal to D or better.

2.12.3 Solar energy indicator

The solar energy indicator is determined on the basis of the proportion of roof area used for solar installations. This percentage is calculated as follows:

V. 160

with:

r_{sun}	Percentage of roof area used for solar power installations	[-]
$A_{roof,s}$	The surface area of roof (part) s	[m²]
$A_{,pv,j,flat}$	The surface area of collector j for PV on a flat roof or on a roof outside the protected volume.	[m²]
$A_{zb,j,flat}$	The surface area of collector j for a solar water heater on a flat roof or on a roof outside the protected volume.	[m²]
$A_{pv,j,sloping}$	The surface area of collector j for PV on a sloping roof	[m²]
$A_{zb,j,sloping}$	The surface area of collector j for solar water heater on a sloping roof	[m²]
α	The angle of inclination of collectors on flat roofs, set at 10°	[°]

If, for a PV collector, a peak power rating has been entered rather than an area, the equivalent area is calculated as follows:

V. 161

With:

P_{pv}	Peak power of the photovoltaic system in W at a solar current of 1,000 W/m² determined according to NBN EN 60904-1	[WP]
$P_{pv,indicator}$	Yield per m² of the PV cells from Table 87	[Wp/m²]

The solar energy indicator is allocated in accordance with Table 96.

Percentage of roof area used for solar energy r_{sun}	**Solar energy indicator**
≥ 50%	A
≥ 30% and < 50%	B

< 30% or no solar energy installations	C

Table 96: Limits for the solar energy indicator depending on the percentage of roof area r_{sun}.

The energy label will be upgraded by one label tier if both of the following conditions are met:

- Indicator insulation is C or better and
- Solar energy indicator is A.

2.12.4 Apartment building energy label

The energy label of the apartment building is the average of the insulation and installations indicators, rounded to the worst score. If there is no installations indicator, the insulation indicator applies. Energy label A can only be awarded if the installations indicator is rated A. If this condition is not met, the energy label is limited to B.

2.13.4 CO2 emissions

This table:

Table 95: CO_2 emission factors per fuel

Energy carrier	**$F_{CO2,fuel}$ (kg/MJ)**
Electricity not generated by PV panels	0.0925
Electricity generated by PV panels	0.197
Heating network, detailed calculation	0.035
Heating network, efficient	0.035
Heating network, non-energy-efficient	0.073
Gas	0.056
Fuel oil	0.073
Pellets	0.0
Wood (other)	0.0
Coal	0.093

is replaced by the following table:

Table 97: CO_2 emission factors per fuel

Energy carrier	**$F_{CO2,fuel}$ (kg/MJ)**
Electricity not generated by PV panels	0.058
Electricity generated by PV panels	0
Heating network, detailed calculation	0.035
Heating network, efficient	0.035
Heating network, non-energy-efficient	0.074
Gas	0.056

Fuel oil	0.074
Pellets	0.112
Wood (other)	0.112
Coal	0.095

2.13.8 Calculation of the annual amount of renewable energy generated and/or used

This chapter is added:

The following energy technologies are taken into account when calculating the amount of renewable energy generated and/or used:

- Heat pumps;
- Photovoltaic solar energy systems at the site;
- Energy from biomass (heating);
- Solar thermal energy (heating and sanitary hot water);
- External heat supply.

The annual amount of renewable energy generated and/or used is determined as follows:

	V. 196

With:

q_{HE}	Annual amount of renewable energy generated and/or used per square metre of usable floor area	[kWh/m²]
	The annual amount of renewable energy used by heat pumps, as defined in Section 2.13.8.1	[kWh]
	Annual energy contribution from PV cells, as defined in Section 2.9	[MJ]
	The annual amount of renewable energy produced from biomass, as defined in Section 2.13.8.2	[kWh]
	The annual amount of renewable energy generated by solar thermal systems, as defined in Section 2.13.8.3	[kWh]
	The annual amount of renewable energy used in the EPW unit through an external heat supply, as defined in Section 2.13.8.4	[kWh]
	Usable floor area of the building unit	[m²]

2.13.8.1 Calculation of the annual amount of renewable energy used by heat pumps

	V. 197

With:

The annual amount of renewable energy used by heat pumps	[kWh]
Generation efficiency for space heating preferred generator, as defined in Section 2.5.6	[-]
Generation efficiency for space heating non-preferred generator, as defined in Section 2.5.6	[-]
Monthly fraction of the total amount of heat supplied by the preferred switched heat generator of installation x, as defined in Section 2.5.6	[-]
A weighting factor for the type of generator when the generator is a heat pump or heat pump water heater is equal to 1; in all other cases, it is 0.	[-]

	Monthly gross energy consumption for space heating of installation x, as defined in Section 2.5	[MJ]
	Generation efficiency for sanitary hot water, as defined in Section 2.6.2	[-]
	Monthly gross energy consumption for sanitary hot water from installation x, as defined in Section 2.6	[MJ]
$Q_{storage,m,x}$	Storage losses of the storage tank of installation x in month m, as defined in Section 2.6	[MJ]
$Q_{zb,m}$	Output of the solar boiler in month m, as defined in Section 2.6.5	[MJ]
$f_{zb,x}$	Percentage of the output of the solar boiler allocated to installation x, as defined in Section 2.6	[-]

A total must be made of all installations x of the building unit.

2.13.8.2 Calculation of the annual amount of renewable energy generated by biomass

	V. 198

With:

	The annual amount of renewable energy generated by biomass used	[kWh]
	A weighting factor for the type of generator: if the generator is a biomass stove or boiler or an on-site biomass CHP plant, this factor is equal to 1; in all other cases, it is 0.	[-]
F_{prim}	Primary energy factor for the fuel	[-]
	Annual final space heating energy consumption for the preferred heat generator of installation x, as defined in Section 2.5	[MJ]
	Annual final space heating energy consumption for the non-preferred heat generator of installation x, as defined in Section 2.5	[MJ]

A total must be made of all installations x of the building unit.

2.13.8.3 Calculation of the annual amount of renewable energy generated by thermal solar energy systems

		V. 199
	The annual amount of renewable energy generated by thermal solar energy systems	[kWh]
	Contribution of the solar boilers in month m, as defined in Section 2.6.5	[MJ]

2.13.8.4 Calculation of the annual amount of renewable energy through external heat delivery

		V. 200
	The annual amount of renewable energy used through the district heating network	[kWh]
	The renewable percentage of the heat network for month m	[-]
	Conversion factor to primary energy of the energy carrier, as defined in Section 2.3	
	A weighting factor for the type of generator when the generator is a heating network is equal to 1; in all other cases, it is 0.	[-]
	Monthly final space heating energy consumption for the preferred heat generator of installation x, as defined in Section 2.5	[MJ]

	Monthly final space heating energy consumption for the preferred heat generator of installation x, as defined in Section 2.5	[MJ]
	Monthly final space heating energy consumption for the preferred heat generator of installation x, as defined in Section 2.6	[MJ]

8 APPENDIX 18/4: INSPECTION PROTOCOL EPC RES, KNR, GD

PART I, I.4 Identification of the building or building unit to be certified

In the following sentence, the underlined provision is added:

'How to identify the buildings and building units and determine their (primary) intended use and what to do in case of incorrect boundary of building or building units can be read in the 'Guide to the EPC for each building (unit)' at https://www.vlaanderen.be/epc-pedia/informatie-voor-toekomstige-energiedeskundigen-type-a/documenten-voor-energiedeskundigen-type-a.'

PART I, I.12 Safety

In the list for safety clothing, 'Fine dust mask or FFP2 face mask' is replaced with 'Dust or face mask'.

PART II, II.1 Collection of import data

In point 1, under 'Energy performance database: energy performance database.vlaanderen.be', the following points:

- You can verify that the address of the unit or building is present and correct.
- You can check how many units there are in the building.

are replaced by:

- You can check whether *the boundary of the building and the number of building units are correct.

PART II, II.2.1.1 Units

In the sentence: 'When drawing up the EPC of the individual building units, the energy expert is required to examine the unit on site.' 'unit' is replaced by 'building unit'.

PART II, II.2.1.2 Common areas of an apartment building

These sentences are deleted:
The energy expert can explain, using the comment field on the EPC, which space(s) or units were not seen. The areas and units that were not seen are also listed or marked on the plan in the project dossier (see II.7).

PART II, II.3.3.2.1 Plans

The following point is added to the list:

- Digital plans are always accompanied by the corresponding digitally approved and signed universal planning permit.

PART II, II.3.3.2.17 Fossil-free building

A new item is added with the title 'II.3.3.2.17 Fossil-free building'. The following text will be added under this point:

‘To demonstrate that no individual energy generator in a building uses fossil fuels, there are two options:

- The energy expert inspects each unit in the building and establishes that no individual generator still uses fossil fuels.

- The energy expert accepts a statement of honour as evidence to demonstrate that throughout the entire building, no unit uses fossil fuel for an individual space heating or sanitary hot water generator. This statement of honour is only valid and acceptable if it has been drawn up in accordance with the template provided by VEKA and if it has been completed and signed by the property manager or building manager.’

PART II, II.7 Project file retention

The sentence:
‘The energy expert keeps the project file for ten years from the date of the EPC and irrespective of the validity of that EPC.’

is replaced by:
‘’The energy expert is required to keep the project file for ten years from the date of the EPC and irrespective of the validity of that EPC. In order to comply with this requirement, the energy expert must make sufficient efforts by providing backups.
If the energy expert is a legal person, that legal person bears ultimate responsibility for the accuracy of the EPCs and for maintaining the project files created by its employees on its behalf. Even if the employee in question is no longer in the company’s employ, the legal entity must continue to keep a record of this for the duration of its validity.
Detailed examples of a complete and correct project file can be found on the EPC-pedia.’

PART II, II.7.1 VEKA check

The underlined word is added to the following sentence: ‘The complete project file must be submitted to the VEKA at the time of an audit.’

PART II, II.7.3 Photographic file

The underlined parts are added to the list ‘Photographs must be taken of the following visual observations at a minimum’:

- Overall photograph of all (safely accessible) façades, of which the most characteristic (usually the front façade) is uploaded on the first page of the EPC. *These photographs, taken from the outside, show all visible parts of the building (façades, roofs, openings, etc.), recesses, protruding sections, dormer windows, etc. In the case of an apartment, the location in the building is also indicated in the photograph.
- Existing insulating layer: per type of building element and per different insulation input. The photographs must make it possible to determine details such as the thickness of the insulation and type of insulation material. If no other supporting documents are available, a photograph proving the presence of insulation is required in order to enter this insulation;
- Per different main type of façades, roofs, ceilings, floors, doors and panels;
- Per different main type of glazing and profiles. The number of glass panes must be apparent from the photographs of the glazing;
- Input on assumptions such as the presence of a vapour screen, post-insulation of a cavity wall, etc.
- Space heating: presence and characteristics of heat-generating appliances, heat distribution systems and indoor temperature control systems; presence of an outdoor sensor; all identification plates present

- Sanitary hot water: presence and characteristics per type of installation; all identification plates present
- Refrigeration system: presence and characteristics of heat pumps, heat transfer systems; all identification plates present
- Lighting: presence and characteristics of lighting installations and control systems
- Ventilation: presence and characteristics of ventilation openings and permanently rotating mechanical ventilation devices; all identification plates present
- Solar boiler and photovoltaic panels: presence.

In addition, the sentence:
'Photographs are taken or the information is recorded for the other findings, such as product characteristics (e.g. glass ID, HR marking, U-value) in the spacer between the glass panes, the presence of a low-e coating, a nameplate, labels, etc.'
is replaced by:
'Photographs are taken of the other findings or the information recorded.'

PART II, II.7.4 Graphic file

In the second paragraph, the following text is added: 'If an existing plan is available that corresponds to the actual situation, everything may be indicated on a copy of this plan.'

PART II, II.7.4.1 For units

Various changes are made to the listing 'Plans of all floors (horizontal cross-sections)'. The following must be indicated:'.
The current list:
- The protected volume and usable floor area are indicated by a boundary line.
- Per space:
  - Type and location of generation units and distribution systems for space heating and cooling
  - Type of space for ventilation: living space, wet space, circulation space, garage or 'dark' living space
  - Type and position of ventilation openings and permanently rotating ventilation devices
  - Type of lighting fixtures
- All dimensions required to determine the space clusters for space heating and cooling, as well as the lighting zones

is replaced by:
- The external dimensions and boundaries;
- The protected volume and usable floor area are indicated by a boundary line;
- Per space:
  - The function of the space. The labels on the floor plans must correspond to those used when entering the ventilation spaces.
  - Location of external doors, internal doors and windows;
  - Type and location of generation units and distribution systems for space heating and cooling;
  - Type and location of ventilation openings and permanently operating ventilation units;
- Type of light source of the lighting;
- All dimensions required to determine the space clusters for space heating and cooling, as well as the lighting zones.

PART II, II.7.4.2 For common areas of an apartment building

Several changes are being made to the listing.
The current list:
- Views or a volume sketch showing:

    - The protected volume of the apartment building with an indication of the spaces excluded from the protected volume;
    - The outer dimensions and limits of the envelope components of the protected volume of the apartment building.
- The energy expert registers the units and areas of the apartment building that were not visited.
- An illustrative sketch of the apartment building for use in the software (see II.7.4.3).

is replaced by:

- Plans of all floors (horizontal cross-sections) with at least the outer dimensions, boundaries and protected volume of the apartment building. Floors with the same dimensions may be indicated together.
- At least one vertical cross-section showing, at a minimum, the heights of the floors/facades and/or roofs. The protected volume is indicated by a border.
- 3D views or a volume sketch with horizontal and vertical cross-sections.
- An illustrative sketch of the apartment building for use in the software (see II.7.4.3).

PART II, II.7.4.3 Guidelines for drawing up a sketch of an apartment building

The following sentence is added at the end of the first paragraph: 'Examples of a well-prepared sketch can be found on the EPC-pedia.'

At the end of the fourth paragraph, the word 'important' is replaced by 'essential' and the following sentence is added:'The designation must correspond to the shell components entered in the software of the energy performance database.'

'Figure 3: Sketches of an apartment building' is replaced by 'Figure 3: EPC GD sketch with legend'.

PART III, III.1.1 Units

The text:
'For the EPC of a unit, the building unit ID is required. In order to create the EPC of a unit, the address of this unit is selected.'

is replaced by:
The term 'unit(s)' in the inspection protocol means 'unit(s) of building' unless explicitly stated otherwise. The building unit ID is required for a unit's EPC. If no building unit is available, the EPC cannot be issued. An EPC should never be prepared with incorrect classification or boundaries. In such cases, an energy expert will always refuse the assignment.

In the case of incorrect building boundaries or unit, see I.4.

PART III, III.3.2 Date of site visit

The paragraphs:
'The EPC may be submitted no later than six months after the site visit. EPCs Common Areas adjusted at the request of another energy expert may, in exceptional cases, be resubmitted later than six months after the site visit.

Only if the energy expert performs a new site visit when preparing a (new) EPC and checks all data entered from a previous energy performance certificate and adapts it to the latest version of the inspection and measurement protocol will the energy expert then change the date of the site visit.

If the owner - after forwarding the EPC to the Energy Performance Database - makes additional supporting documents available to the energy expert and these do not conflict with the previous findings during the site

visit, the energy expert may - without visiting the site again - modify them in the software. The date of the site visit may not be changed in this case.'

are replaced by:
The EPC may be submitted no later than six months after the site visit.

An EPC that has been submitted may be corrected or modified without the need for a future site visit, provided that the date of the site visit remains unchanged and that one of the following conditions is met:

- Errors are corrected. This is permitted at any time, even if more than six months have passed since the site visit.
- Modification of import data following receipt of new supporting documents by the owner, only if these conditions are met:
    - It has not been six months since the site visit;
    - The supporting documents demonstrate that the work was carried out before the site visit;
    - The supporting documents do not contradict the findings at the site.

In all other cases, a **new** site visit is always mandatory and a new EPC must be entered with a **new date of the site visit**.

PART III, III.5.2 Consumption data

The example 'In November 2015 and October 2016, the fuel oil tank was refilled with 2,000 l in each case (based on invoices for delivery).' is deleted.

PART IV, IV.1.1.18 Basement floor

In the first paragraph, the following underlined sentence is added: 'A basement floor is a floor where the vertical surfaces are more than 70% below the ground level. All vertical surfaces on the outermost perimeter of the floor are included, even if they are situated on the plot boundary or are attached to the building. In order to calculate the vertical surfaces, the height is taken to be the sum of the floor thickness of the basement floor, the internal height and the half floor thickness of the upper floor. If there is no ground level locally, the ground level is fictitiously and linearly extended between the two points where the ground level is known.'

After the first paragraph, the figure 'Figure 6: Fictitious extension of ground level' is added.

PART IV, IV.3.4.2.3 Perimeter and depth

The following bullet point is added to the list below:
'

- If the floor on the foundation consists of several levels, the floors are calculated separately, each with its own depth below ground level and its own perimeter (see Figure 44).
- If there are several floors on the foundation that are not connected (for example, because there is a basement across the full width of the property between them), all floors must be entered separately, each with its own properties (area, depth, perimeter, boundaries, construction, presence of underfloor heating).
- In the case of an inclined or staggered ground level where the floor cannot be divided into several floor parts, the average depth of the floor is calculated. To calculate this, the average of the maximum and minimum depths of the floor is taken, regardless of how the ground slopes against the façade: (dmin + dmax)/2.

- If the bottom of the floor is higher than the ground level, a depth of zero is assumed (i.e. no depth is entered).
- Depths < 50 cm below ground level may be ignored. Depths ≥ 50 cm must always be entered.'

PART IV, IV.3.4.3.1.3 Openings

In the following sentence, the underlined words are added: 'On a sloping roof, it is not possible to install a panel or door.'

PART IV, IV.3.4.3.2.2 Openings

In the following sentence, the underlined words are added: 'On a flat roof, it is not possible to install a panel or door.'

PART IV, IV.3.4.4 Openings

In the following sentence, the underlined words are added:' **Tip:** In the common areas of an apartment building, it is permitted to enter all the private openings of the units as one opening per type of facade surface **and per type of roof surface.'**

PART V, V.1.3.2 Specific sources

The following is added to the list:
'

- **The Flemish Institute for Bio-Ecological Building and Living**: http://www.vibe.be/

  On the VIBE website (under documentation and publications), you will find λ-values (based on the specified standards or European and national technical approvals) for ecological materials. Click on 'ETAs bio-ecological insulation materials and technical approvals' for the technical specifications.'

PART V, V.2.4.2 Main type determination

The text under 'Main type 2':
'This main type of wall includes all walls made of insulating quick-build blocks in walls with external boundaries with an external finish (see V.1.2.5). This type is designated by documentary evidence stating:'

is replaced by:
'This main type of wall includes all walls made of insulating quick-build blocks. In addition, walls with external boundaries must also have an external finish (see V.1.2.5). This type is designated by documentary evidence stating:'

PART V, V.2.4.3.6 Walls adjacent to AOR or land

In the list, the point 'on the parcel boundary, excluding walls on the building line' is deleted.

PART V, V.2.5.1 Identification of air layer and insulation

In the first paragraph, the following underlined sentence is added: 'In the case of an insulating fill layer, the declared lambda value or R-value of that composite material must be known in order for this material to be imported as insulation. If it can be demonstrated that mortar containing insulating aggregates was used, this may be classified as 'insulating mortar, without the need for a known R-value or lambda value.'

PART VI, VI.1.6 External furnace room

In the unnumbered figure, the caption ‘Figure 109’ is added.

PART VI, VI.2.2.2 Energy efficiency class

The link ‘http://www.be.nl.heatinglabel.com/Start_BE‘ is replaced by ‘https://eprel.ec.europa.eu/screen/home’.

PART VI, VI.4.1 Step-by-step plan

Under ‘Step 3: Unheated spaces’, the underlined text is added to the following sentence in the list for clarification: ‘an unheated floor that is only accessible through a door from an indirectly heated stairway’

PART VI, VI.5.2.2.2 Industrial or agricultural buildings

The title ‘Non-residential buildings and units’ is changed to ‘Industrial or agricultural buildings’.

The sentence ‘Non-residential units are counted per building unit, regardless of size.’ is replaced by ‘For industrial or agricultural buildings, one equivalent unit is counted each time, regardless of size.’

The second example is deleted.

PART VI, VI.12.2.2.1 Single generator – decentralised generation and centralised distribution of water and/or air

The following is added to the title ‘One generator – decentralised generation and central distribution of water’ at the end: ‘and/or air’.

PART VI, VI.12.2.2.2 and VI.12.2.2.3

The point ‘VI.12.2.2.2 One generator – decentralised generator and central distribution via air’ is deleted in its entirety. As a result, the numbering of the following section, ‘Two heat generators, including a water-heating stove – one distribution system’, changes from VI.12.2.2.3 to VI.12.2.2.2.

PART VII, VII.4.2 Global warming potential of refrigerant

The text under ‘Procedure’:
‘If the refrigerant is not included in the software list, the refrigerant and corresponding GWP value must be searched for and entered.

Search for the refrigerant in one of the two sources below and record the corresponding GWP value.

Source 1: Table 12 shows the GWP values of common refrigerants.

Source 2: A comprehensive list of refrigerants with the corresponding GWP value can be found in the annexes of European Regulation EU 517/201428. In this table, the typical requirement ‘R’ is replaced by an indication of the chemical elements contained in the substance (e.g. ‘HFC’). The GWP value associated with the substance that has the same combination of numbers is used and, where applicable, also the letters at the end of its name.’

is replaced by:
'The software provides a list of commonly used refrigerants with their corresponding GWP values; see Table 12.

If the refrigerant is not included in this list, the refrigerant and corresponding GWP value must be searched for and entered. A comprehensive list of refrigerants with the corresponding GWP value can be found in the annexes of European Regulation EU 517/2014[1]. In this table, the typical requirement 'R' is replaced by an indication of the chemical elements contained in the substance (e.g. 'HFC'). The GWP value associated with the substance that has the same combination of numbers is used and, where applicable, also the letters at the end of its name.'

PART IX.3.1 EPC residential or EPC small non-residential

In the following sentence under 'Step 2: Determine the ventilation openings and type for each wet space and for each living space': In the sentence, 'If there are two or more ventilation openings of the same type in a mixed-use room, this type may be assigned to both the wet area and the living area.', the word 'may' is replaced by 'must'.

PART IX, IX.7.2.3 Bypass

In the unnumbered figure, the caption 'Figure 236' is added.

PART XI, XI.3.2.2 Step-by-step plan

To the paragraph: 'By which, in the case of non-residential units, the most appropriate scheme is specified for each space, the scheme specified here is the one that **is predominantly in place** based on floor space. This is estimated by the energy expert.', the following sentence is added: 'If there are two types of schemes for the same floor space, the best scheme is indicated.'

9 ANNEX 18/5: FORMULA STRUCTURE EPC NR

2.1.2

The title of Table 31:

Solar radiation on horizontal planes and planes with an inclination angle of 45° (roof windows + thermal solar energy systems)

is replaced by:

Solar radiation horizontal planes and planes with an inclination angle of 45° (roof windows)

A Table 91 is added:

Table 91: Solar radiation surfaces with an inclination angle of 35° (photovoltaic and solar thermal energy systems)

	I_s (MJ/m2) 35° inclination angle							
	N	NE	E	SE	S	SW	W	NW
Jan	48.8	50	67	92.4	104.8	92.4	67	50

[1] https://eur-lex.europa.eu/legal-content/NL/TXT/PDF/?uri=CELEX:32014R0517

Feb	81.7	87.9	118	152.3	169.3	152.3	118	87.9
Mar	154.9	178.5	224.9	267.8	287.8	267.8	224.9	178.5
Apr	244.4	282.1	336.7	376.7	391.8	376.7	336.7	282.1
May	375.7	403.1	457.5	490.6	499	490.6	457.5	403.1
June	409.9	428.1	475.2	499.3	503.2	499.3	475.2	428.1
July	394.7	415.4	463.2	489.8	495.4	489.8	463.2	415.4
Aug	318.2	353	411.5	450.8	463.8	450.8	411.5	353
Sep	192.7	236.2	298.1	349.7	372.5	349.7	298.1	236.2
Oct	119.8	134.3	180.4	228.5	251.8	228.5	180.4	134.3
Nov	58.9	61.2	84.6	116	131.5	116	84.6	61.2
Dec	38	38.6	51.3	72.6	82.9	72.6	51.3	38.6

2.1.9

The equation 173 total:

in which:

$E_{p,heat,m}$ The monthly primary energy consumption for heating, calculated in accordance with Section 2.1.9.1, in MJ;

$E_{p,cool,m}$ The monthly primary energy consumption for cooling, calculated in accordance with Section 2.1.9.1, in MJ;

$E_{p,water,m}$ The monthly primary energy consumption for the production of sanitary hot water, calculated in accordance with Section 2.1.9.2, in MJ;

$E_{p,aux,m}$ The monthly primary auxiliary energy consumption, calculated in accordance with Section 2.1.9.3, in MJ;

$E_{p,light,m}$ The monthly primary energy consumption for lighting, calculated in accordance with Section 2.1.9.4, in MJ;

$E_{p,\,COGEN,\,m}$ The monthly primary energy from electricity production from cogeneration, calculated in accordance with Section 2.1.9.5, in MJ.

is replaced by:

in which:

$E_{p,heat,m}$ The monthly primary energy consumption for heating, calculated in accordance with Section 2.1.9.1, in MJ;

$E_{p,cool,m}$ The monthly primary energy consumption for cooling, calculated in accordance with Section 2.1.9.1, in MJ;

$E_{p,water,m}$ The monthly primary energy consumption for the production of sanitary hot water, calculated in accordance with Section 2.1.9.2, in MJ;

$E_{p,aux,m}$ The monthly primary auxiliary energy consumption, calculated in accordance with Section 2.1.9.3, in MJ;

$E_{p,light,m}$ The monthly primary energy consumption for lighting, calculated in accordance with Section 2.1.9.4, in MJ;

$E_{p,cogen,m}$ The monthly primary energy from electricity production from cogeneration, calculated in accordance with Section 2.1.9.6, in MJ.

$E_{p,pv,m}$ The monthly primary energy resulting from electricity generation by photovoltaic solar energy systems, calculated in accordance with Section 2.1.9.6, in MJ.

2.1.9.5

The section:

Determine the equivalent monthly primary energy savings due to the electricity production of CHP units with:

Eq. 179 $E_{\text{p,cogen,m}} = \sum_i f_p \cdot 3.6 \cdot W_{\text{cogen,i,m}}$ (-)

in which:

$E_{p,cogen,m}$	The monthly reduction in primary energy consumption corresponding to the monthly amount of electricity generated by CHP installations on site, in MJ;
f_p	The conventional conversion factor to primary energy (primary energy factor) for electricity, determined in accordance with Annex A;
$W_{cogen,i,m}$	The monthly amount of electricity produced by the CHP plant, determined in accordance with Section C.3, in kWh.

The figures for all CHP units serving the unit must be totalled.

is replaced by:

Determine the equivalent monthly primary energy savings due to the electricity production of CHP units with:

Eq. 322 $E_{\text{p,cogen,m}} = f_p \cdot 3.6 \cdot W_{\text{cogen,util,m}}$ (-)

in which:

$E_{p,cogen,m}$	The monthly reduction in primary energy consumption corresponding to the monthly amount of electricity generated by CHP installations on site, in MJ;
f_p	The conventional conversion factor to primary energy (primary energy factor) for electricity, determined in accordance with Annex A;
$W_{cogen,util,m}$	The monthly input of electricity produced by the CHP plant, determined in accordance with Section C.4, in kWh.

2.1.9.6

The following new Section 2.1.9.6 is added:

9..1.6 The primary energy savings as a result of the electricity production of photovoltaic solar energy systems

Determine the equivalent monthly primary energy savings as a result of the electricity production of photovoltaic solar energy systems as:

Eq. 323 $E_{p,pv,m} = f_p . 3.6 . W_{pv,util,m}$ (MJ)

with:

f_p	The conventional conversion factor to primary energy for electricity, determined in accordance with Annex A;
$W_{pv,util,m}$	The monthly utilised electricity production of the photovoltaic energy systems, determined in accordance with Section D.2, in kWh;

2.1.13

The following new Section 2.1.13 is added:

2.113. Calculation of the coverage of the primary annual energy requirement for zero-emission buildings

2.1.13.1 Calculation of the coverage of the annual energy requirements of zero-emission buildings

The coverage of the annual primary energy requirement within the framework of zero-emission buildings is determined as follows:

Eq. 324 $$Q_{cover,ZEB} = Q_{\Re,ZEB} + Q_{part,ZEB} + \frac{Q_{dh,ZEB} + ¿ f_{grid,ZEB} \cdot Q_{elec,need} ¿}{Q_{need,prim,ZEB}}$$ (%)

in which:

$Q_{need,prim,ZEB}$ The annual primary energy requirement in the context of zero-emission buildings per m² useful floor area, determined in accordance with Section 2.1.13.2, in kWh/m²;

$Q_{RE,ZEB}$ The annual amount of renewable energy generated and/or used in the context of zero-emission buildings per square metre of usable floor area, determined in accordance with Section 2.1.13.3, in kWh/m²;

$Q_{part,ZEB}$ The annual quantity of renewable electricity purchased in the context of energy sharing per m² of useful floor area, which meets the conditions laid down in Annex 18/6 to this Ministerial Decree, in kWh/m²

$Q_{dh,ZEB}$ The annual amount of renewable energy through district heating and cooling that contains at least 50% heat from renewable energy sources as referred to in Article 7.4.1, Section 7, fourth paragraph, of the Energy Decree of 19 November 2010 or at least 50% waste heat, which meets the conditions set out in Article 7.4.1, Section 7, second paragraph, 1°, a), 2°, a) and 3°, of the Energy Decree of 19 November 2010 or at least 50% from a combination of these energy sources used as energy source by the building unit, per m² of useful floor area, determined in accordance with Section 2.1.13.4, in kWh/m².

$f_{grid,ZEB}$ Factor for the percentage of zero-emission electricity in the electricity grid, set at 0.66;

$Q_{elec,need}$ The annual amount of electricity drawn from the grid, determined in accordance with Section 2.1.13.5, in kWh/m².

If the total annual primary energy demand is fully covered within the framework of zero-emission buildings – and therefore a zero-emission building unit – $Q_{cover,ZEB}$ is 100% or higher.

2.1.13.2 Annual primary energy requirement of zero-emission buildings within the framework of zero-emission buildings

The annual primary energy requirement for zero-emission buildings comprises the primary energy consumption for space heating, hot water production, auxiliary energy, cooling and lighting.

The annual primary energy requirement for zero-emission buildings is determined as follows:

Eq. 325 $$Q_{need,prim,ZEB} = \frac{1}{3.6 \cdot A_{use}} \cdot \sum_{m=1}^{12} \left(E_{p,heat,m} + E_{p,water,m} + E_{p,cool,m} + E_{p,aux,m} + E_{p,light,m} \right)$$ (kWh/m²)

in which:

$E_{p,heat,m,}$ The monthly primary energy consumption for space heating, determined in accordance with Section 2.1.9.1, in MJ;

$E_{p,water,m}$ The monthly primary energy consumption for the production of sanitary hot water, determined in accordance with Section 2.1.9.2, in MJ;

$E_{p,aux,m}$ The monthly primary auxiliary energy consumption, determined in accordance with Section 2.1.9.3, in MJ;

$E_{p,cool,m}$ The equivalent monthly primary energy consumption for cooling, determined in accordance with Section 2.1.9.1, in MJ;

$E_{p,light,m}$ The equivalent monthly primary energy consumption for lighting, determined in accordance with Section 2.1.9.4, in MJ;

A_{use} The usable area of the unit, determined according to Section 2.1.2, in m².

2.1.13.3 Annual quantity of renewable energy supplied to the unit as part of the zero-emission buildings scheme

The following energy technologies are taken into account when calculating the amount of renewable energy generated on site in the context of zero-emission buildings:

- Photovoltaic solar energy systems;
- Energy from biomass (heating and hot water).

The ambient heat used by a heat pump is not included in the primary energy requirement and is therefore not included in the calculation of the coverage. Similarly, the contribution made by a solar water heater is already deducted from the primary energy requirement and is no longer taken into account when determining the coverage.

The annual amount of energy generated and/or consumed is determined as follows:

Eq. 326 $$Q_{\Re,ZEB} = \frac{1}{3.6 \cdot A_{use}} \cdot \sum_{m=1}^{12} \left(E_{p,pv,m} + E_{p,bio,m} \right)$$ (kWh/m²)

in which:

$E_{p,pv,m}$ The monthly primary energy resulting from electricity generation by photovoltaic solar energy systems, calculated in accordance with Section 2.1.9.6, in MJ.

$E_{p,bio,m}$ The monthly amount of primary renewable energy generated by biomass, determined as set out below, in kWh;

A_{use} The usable area of the unit, determined according to Section 2.1.2, in m².

The monthly quantity of primary renewable energy generated from biomass is defined as:

Eq. 327

$$E_{p,bio,m} = \sum_x f_{\text{p,pref}} \cdot w_{\text{bio}} \cdot Q_{\text{heat,final,seci,pref,x,m}} + \sum_x f_{\text{p,pref}} \cdot w_{\text{bio}} \cdot Q_{\text{cool,final,pref,x,m}} + \sum_x f_{\text{p,pref}} \cdot w_{\text{bio}} \cdot Q_{\text{hum,final,pref,x,m}} + \sum_x$$

(MJ)

in which:

$f_{p,pref,x}$ The conventional conversion factor to primary energy (primary energy factor) of the preferred heat generator(s) or cooling supplier(s), as defined in Annex A, (-);

$f_{p,npref\ x}$ The conventional conversion factor to primary energy (primary energy factor) for the non-preferred heat generator/cooling supplier, as defined in Annex A (-);

w_{bio} A weighting factor that determines whether a biomass stove, boiler or CHP plant on site, fuelled by biomass, is responsible for supplying heat for heating or cooling or for supplying heat or cold to a humidifier, whether or not via a preferred and non-preferred heat supply:

- If yes, w_{bio} = 1;
- If no: w_{bio} = 0;

$Q_{heat,final,pref,x,m}$ The monthly final energy consumption of the preferred heat generator in installation x for space heating, as defined in Section 2.1.4, in MJ;

$Q_{heat,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator in installation x for space heating, as defined in Section 2.1.4, in MJ;

$Q_{hum,final,pref,x,m}$ The monthly final energy use of the preferred heat generator for humidifier x, as defined in Section 2.1.4, in MJ;

$Q_{hum,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator for humidifier x, as defined in Section 2.1.4, in MJ;

$Q_{cool,final,pref,x,m}$ The monthly final energy consumption of the preferred cooling suppliers for installation x, as defined in Section 2.1.4, in MJ;

$Q_{cool,final,npref,x,m}$ The monthly final energy consumption of the non-preferred cooling supplier for installation x, as defined in Section 2.1.4, in MJ;

A total must be calculated for all systems x that use biomass as an energy source for space heating, cooling and humidification within the unit.

2.1.13.4 Annual quantity of energy supplied from a district heating within the framework of zero-emission buildings

The annual quantity of energy taken from district heating and cooling that contains at least 50% heat from renewable energy sources as referred to in Article 7.4.1, Section 7, fourth paragraph, of the Energy Decree of 19 November 2010 or at least 50% waste heat that meets the conditions set out in Article 7.4.1, Section 7, second paragraph, 1°, a), 2°, a) and 3°, of the Energy Decree of 19 November 2010 or at least 50% from a combination of these energy sources used as an energy source by the building unit in the context of zero-emission buildings is determined as follows:

Eq. 328

$$Q_{\mathrm{dh,ZEB}} = \sum_{m=1}^{12} \frac{f_{ZEB,dh}}{A_{use}} \cdot \left(+ \sum_{x} f_{\mathrm{p,pref,x}} \cdot w_{\mathrm{dh}} \cdot \frac{Q_{\mathrm{hum,final,pref,x,m}}}{3.6} + ¿ \sum_{x} f_{\mathrm{p,npref,x}} \cdot w_{\mathrm{dh}} \cdot \frac{Q_{\mathrm{heat,final,npref,x,m}}}{3.6} ¿ + \sum_{x} f_{\mathrm{p,npref,x}} \cdot w_{\mathrm{dh}} \cdot \frac{Q_{\mathrm{water,final,npref,x,m}}}{3.6} + + \sum_{x} f_{\mathrm{p,pref,x}} \cdot w_{\mathrm{dh}} \cdot \frac{Q_{\mathrm{heat,final,pref,x,m}}}{3.6} + \sum_{x} f_{\mathrm{p,pref,x}} \cdot w_{\mathrm{dh}} \cdot \right.$$

(kWh/m²)

in which:

A_{use} The unit's usable area, as defined in Section 2.1.2, in m².

$f_{ZEB,dh}$ A factor that determines whether the heat supplied by the external heat supply system can be included in the coverage of the annual energy needs of zero-emission buildings. This factor is 1 in the case of a district heating system that derives at least 50% of its heat from renewable energy sources as specified in Article 7.4.1, Section 7, fourth paragraph, of the Energy Decree of 19 November 2010, or at least 50% from residual heat that meets the conditions set out in Article 7.4.1, Section 7, second paragraph, 1°, a), 2°, a), and 3°, of the Energy Decree of 19 November 2010, or at least 50% from a combination of these energy sources used by the building unit; in all other cases, this factor is equal to 0;

w_{dh} A weighting factor that determines whether an external heat supply is responsible for the space heating, cooling or sanitary hot water of the building unit:
If yes: w_{dh} = 1, (-);
If no: w_{dh} = 0, (–);

$f_{p,pref,x}$ The conventional conversion factor to primary energy (primary energy factor) of the preferred heat generator(s) or cooling supplier(s), as defined in Annex A, (-);

$f_{p,npref\ x}$ The conventional conversion factor to primary energy (primary energy factor) for the non-preferred heat generator/cooling supplier, as defined in Annex A (-);

$Q_{heat,final,pref,x,m}$ The monthly final energy consumption of the preferred heat generator in installation x for space heating, as defined in Section 2.1.4, in MJ;

$Q_{heat,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator in installation x for space heating, as defined in Section 2.1.4, in MJ;

$Q_{hum,final,pref,x,m}$ The monthly final energy use of the preferred heat generator for humidifier x, as defined in Section 2.1.4, in MJ;

$Q_{hum,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator for humidifier x, as defined in Section 2.1.4, in MJ;

$Q_{cool,final,pref,x,m}$ The monthly final energy consumption of the preferred cooling suppliers for installation x, as defined in Section 2.1.4, in MJ;

$Q_{cool,final,npref,x,m}$ The monthly final energy consumption of the non-preferred cooling supplier for installation x, as defined in Section 2.1.4, in MJ;

$Q_{water,final,pref,x,m}$ The monthly final energy consumption of the preferred heat generator of installation x for the preparation of the sanitary hot water, as defined in Section 2.1.5, in MJ;

$Q_{water,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator of installation x for the production of sanitary hot water, as defined in Section 2.1.5, in MJ.

A total must be calculated for all systems x with an external heat supply acting as the heat source for space heating, cooling, humidification and hot water for the unit.

2.1.13.5 The annual amount of electricity purchased from the electricity grid

Eq. 329 $$Q_{elec,need} = \frac{1}{A_{use}} \cdot \sum_{m=1}^{12} f_{p,elec} W_{elec,m}$$ (kWh/m²)

in which:

A_{use} The unit's usable area, as defined in Section 2.1.2, in m².

$f_{p,elec}$ The conventional conversion factor to primary energy for electricity, as defined in Annex A, (-);

$W_{elec,m}$ The total monthly electricity requirement, calculated in accordance with C.4.1, in kWh.

3.1.1

The third final section:

Green electricity supplied through the electricity distribution network is therefore not considered renewable energy in this method.

is replaced by:

Renewable electricity supplied through the electricity distribution network is therefore not considered renewable energy by definition in this method. An exception is made for the purchase of renewable electricity in the context of energy sharing, peer-to-peer trading in renewable energy and the sale of renewable electricity within an apartment building or multifunctional building referred to in Article 7.2.1, 7.2.2 or 7.2.3 of the Energy Decree of 8 May 2009.

3.1.2

Section 3.1.2:

All energy consumption associated with the operation of the unit must be taken into account, even if these functions are physically located outside the unit, e.g.:

- Parking (lighting, ventilation, pumps, barrier, etc.)
- Intercom/video intercom
- Cameras
- Pump stations (rainwater/dirty water)
- Advertising signs
- Sound systems (e.g. in shopping centres);

An exception is made for the use of the following functions because they are essentially separate from the use of the unit:

- Charging stations for electric vehicles
- Energy use for public parking. It is therefore also used outside the unit's operating hours.
- Public lighting

If the consumption associated with these functions is included in the meter readings submitted, this may be deducted if sub-meter readings are available; however, these are not mandatory (see Section 3.4.7).

is replaced by:

All energy use associated with the use of the unit must be accounted for, unless this can be considered as energy use outside the unit. The items listed below are defined in the inspection protocol for the EPC NR.

If the consumption associated with these functions is included in the meter readings submitted, this may be deducted if sub-meter readings are available; however, these are not mandatory (see Section 3.4.7).

3.3

Table 70:

Table 3: CO_2 factor f_{CO2} for determining the carbon return, in kg CO_2/kWh

Energy carrier	**f_{CO2} [kg CO_2/kWh]**
Coal	0.36
Diesel oil/gas oil (light fuel oil)	0.29
Heavy fuel oil	0.29
Liquid biofuel	0.28
Propane	0.22
Natural gas – low calorific	0.22
Natural gas – high calorific	0.22

Methane	0.22
Butane	0.22
Hydrogen gas	0.22
Biogas	0.1
Wood (pellets or chopped) and other biomass	0.04
Electricity from electricity network	0.64
Electricity from local generation PV, wind or water	0
Heat from heat network	0.26
Heat from solar boiler	0
* Residual heat recovered at the site	0
* Environmental heat absorbed by heat pump in heating mode	0
* Heat extracted by chiller or heat pump in cooling mode	0
Other or unknown	0.64

is replaced by Table 70:

Table 70: CO_2 factor f_{CO2} for determining the carbon return, in kg CO_2/kWh

Energy carrier	**f_{CO2} [kg CO_2/kWh]**
Coal	0.34
Diesel oil/gas oil (light fuel oil)	0.27
Heavy fuel oil	0.27
Liquid biofuel	0.27
Propane	0.2
Natural gas – low calorific	0.2
Natural gas – high calorific	0.2
Methane	0.2
Butane	0.2
Hydrogen gas	0.2
Biogas	0.2
Wood (pellets or chopped) and other biomass	0.4
Electricity from electricity network	0.21
Electricity from local generation PV, wind or water	0
Electricity from energy sharing, peer-to-peer trading of renewable energy and sales within an apartment or multi-purpose building	0
Heat from heat network	0.27
Heat from solar boiler	0
Residual heat recovered at the site	0
Environmental heat absorbed by heat pump in heating mode	0
Heat extracted by chiller or heat pump in cooling mode	0
Other or unknown	0.4

3.4.4

Table 72:

Table 4: renewable fraction F_H

Energy carrier	**F_H**	***F_A**
Coal	0	*0
Fuel oil		
• Fuel oil (light)	0	*0

• Fuel oil (heavy)	0	*0
Liquid biofuel	1	*0
Gas		
• Propane	0	*0
• Natural gas – low calorific	0	*0
• Natural gas – high caloric	0	*0
• Methane	0	*0
• Butane	0	*0
• Hydrogen	0	*0
• Biogas	1	*0
Wood (pellets or chopped) and other biomass	1	*0
Electricity from distribution network	0	*0
Electricity from PV, wind or hydropower	1	*0
* Heat from heat network	Renewable share of external heat-supply system (1)	Share of non-renewable residual heat from system external heat supply
* Cold from cold network	Renewable share of external cold supply system (1)	Share of non-renewable residual cold system external heat supply
Heat from solar boiler	1	*0
* Environmental heat absorbed by heat pump in heating mode	1	*0
* Residual heat recovered via heat pump in heating mode	0	*1
* Direct residual heat recovery	0	*1
* Heat extracted by chiller or heat pump in cooling mode	$Max.\left(0;Min.\left(1;\frac{SPF_{p,x}-SPF_{p,low}}{SPF_{p,high}-SPF_{p,low}}\right)\right)$ (2)	*0
(1) Determined and substantiated in the same way as in the EPB regulations and as laid down by the minister. This can be any value between 0 and 1, including values 0 and 1. The value in the absence is 0 (completely non-renewable). (2) With $SPF_{p,low}$ = 1.4; $SPF_{p,high}$ = 6 and SPF_p determined as defined below.		

is replaced by Table 72:

Table 72: renewable fraction F_H and residual fraction F_A

Energy carrier	**F_H**	**F_A**
Coal	0	0
Fuel oil		
• Fuel oil (light)	0	0
• Fuel oil (heavy)	0	0
Liquid biofuel	1	0
Gas		
• Propane	0	0
• Natural gas – low calorific	0	0
• Natural gas – high caloric	0	0
• Methane	0	0
• Butane	0	0

• Hydrogen	0	0
• Biogas	1	0
Wood (pellets or chopped) and other biomass	1	0
Electricity from distribution network	0	0
Electricity from PV, wind or hydropower	1	0
Electricity from energy sharing, peer-to-peer trading of renewable energy and sales within an apartment or multi-purpose building	1	0
Heat from heat network	Renewable share of external heat-supply system (1)	Share of non-renewable residual heat from system external heat supply
Cold from cold network	Renewable share of external cold supply system (1)	Share of non-renewable residual cold system external heat supply
Heat from solar boiler	1	0
Environmental heat absorbed by heat pump in heating mode	1	0
Residual heat recovered via heat pump in heating mode	0	1
Direct residual heat recovery	0	1
Heat extracted by electric compression chiller, heat pump in cooling mode or geo-cooling open system	$Max.\left(0\,;Min.\left(1;\frac{SPF_{p,x}-SPF_{p,low}}{SPF_{p,high}-SPF_{p,low}}\right)\right)$ (2)	0

(3) Determined and substantiated in the same way as in the EPB regulations and as laid down by the minister. This can be any value between 0 and 1, including values 0 and 1. The value in the absence is 0 (completely non-renewable).

(4) With $SPF_{p,low}$ = 1.4; $SPF_{p,high}$ = 6 and SPF_p determined as defined below.

Annex A

In Annex A, Table 75:

Table 5: Conversion factors to primary energy and the ratio of the lower to the higher calorific value

Fuel	f_p	$f_{NCV/GCV}$
natural gas/methane/biogas	1.00	0.90
fuel oil	1.00	0.94
propane/butane/LPG	1.00	0.92
coal	1.00	0.96
firewood/other biomass	1.00	0.93
pellets	1.00	0.91
hydrogen	1.00	0.85
electricity	2.50	1.00
Electricity produced by a photovoltaic installation	2.50	1.00
Electricity produced by a CHP installation	2.50	1.00
*Direct residual heat recovery	1.00	1.00

Replaced by Annex 75:

Table 75: Conversion factors to primary energy and the ratio of the lower to the higher calorific value

Fuel	f_p	$f_{NCV/GCV}$
natural gas/methane/biogas	1.10	0.90
fuel oil	1.10	0.94
propane/butane/LPG	1.10	0.92
coal	1.10	0.96
firewood/other biomass	1.10	0.93
pellets	1.10	0.91
hydrogen	1.10	0.85
electricity	1.9	1.00
Electricity produced by a photovoltaic installation	1.9	1.00
Electricity produced by a CHP installation	1.8	1.00
Direct residual heat recovery	1.00	1.00

Appendix C

In Annex C, the following Section C.4 is added:

C.4 Monthly utilised amount of electricity produced by the CHP installation

Determine the monthly utilised amount of electricity produced by the CHP installation with:

Eq. 330 $W_{cogen,util,m} = min$ ¿ (kWh)

in which:

$W_{elec,mu}$ The total monthly electricity demand, determined in accordance with Section C.4.1, in kWh;

$W_{cogen,x,m}$ The monthly amount of electricity produced by CHP plant x, determined in accordance with Section C.3, in kWh.

The total must be calculated across all CHP units x serving the facility.

C.4.1 The total monthly electricity demand

Determine the total monthly electricity demand as:

Eq. 331

$$W_{elec,m} = \frac{1}{3.6}\left(\sum_x Q_{heat,final,pref,x,m} + \sum_x Q_{heat,final,npref,x,m} + \sum_x Q_{hum,final,pref,x,m} + \sum_x Q_{hum,final,npref,x,m} + \sum_x Q_{cool,final,pref,x,m}\right.$$

(kWh)

in which:

$Q_{heat,final,pref,x,m}$ The monthly final energy consumption of the preferred heat generator in installation x for space heating, as defined in Section 2.1.4, in MJ;

$Q_{heat,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator in installation x for space heating, as defined in Section 2.1.4, in MJ;

$Q_{hum,final,pref,x,m}$ The monthly final energy use of the preferred heat generator for humidifier x, as defined in Section 2.1.4, in MJ;

$Q_{hum,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator for humidifier x, as defined in Section 2.1.4, in MJ;

$Q_{cool,final,pref,x,m}$ The monthly final energy consumption of the preferred cooling suppliers for installation x, as defined in Section 2.1.4, in MJ;

$Q_{cool,final,npref,x,m}$ The monthly final energy consumption of the non-preferred cooling supplier for installation x, as defined in Section 2.1.4, in MJ;

$Q_{water,final,pref,x,m}$ The monthly final energy consumption of the preferred heat generator of installation x for the preparation of the sanitary hot water, as defined in Section 2.1.5, in MJ;

$Q_{water,final,npref,x,m}$ The monthly final energy consumption of the non-preferred heat generator of installation x for the production of sanitary hot water, as defined in Section 2.1.5, in MJ.

$W_{aux,fans,m}$ The monthly electricity consumption for ventilation in the unit, as defined in Section 2.1.7.1.1, in kWh;

$W_{aux,dis,m}$ The monthly electricity consumption for distribution in the unit, as defined in Section 2.1.7.1.2, in kWh;

$W_{aux,free,m}$ The monthly electricity consumption for free-chilling in the unit, as defined in Section 2.1.7.2, in kWh.

$W_{light,m}$ The monthly electricity consumption for lighting, as defined in Section 2.1.8, in kWh.

A total must be calculated for all systems x that use electricity as the energy source for space heating, cooling, humidification and hot water within the unit.

Appendix D

The following Annex D is added:

Annex D Solar energy systems

D.1 Monthly electricity production from photovoltaic solar power systems

Determine the monthly electricity production of photovoltaic solar energy systems as:

Eq. 332 $$W_{pv,m,i} = \frac{P_{pv,i} . RF_{pv} . c_{pv} . I_{s,m,i}}{3600}$$ (kWh)

in which:

$P_{pv,i}$ The peak power of the photovoltaic system i with an irradiance of 1000 W/m², determined in accordance with NBN EN 60904-1 or in accordance with standards such as IEC 61215 or IEC 61646 that explicitly refer to the IEC 60904 series of standards, (Wp);

RF_{pv} Reduction factor for the collector type of the photovoltaic system, set at 0.78, (-);

c_{pv} Shading factor for the photovoltaic system, set at 0.9, (-);

$I_{s,m,i}$ Solar radiation in month m for the orientation of the collector of photovoltaic system i, derived from Table 91, in MJ/m².

For solar radiation, an angle of inclination of 35° is always assumed.

Determine the monthly PV production of the photovoltaic systems of the building unit as:

Eq. 339 $$W_{pv,m} = f_A \sum_i W_{pv,m,i}$$ (kWh)

with:

f_A Surface ratio of the building unit, calculated as the surface area of the building unit considered divided by the sum of all the surfaces of all building units combined (including the building units other than non-residential) (–);

$W_{pv,m,i}$ The monthly electricity production of the photovoltaic solar energy system i of the scope, determined in accordance with Eq. 332, in kWh.

A total must be calculated for all photovoltaic solar energy systems within the scope.

D.2 Monthly utilised electricity production from solar photovoltaic systems

Determine the monthly utilised electricity production of photovoltaic solar energy systems if:

Eq. 333 $W_{pv,util,m} = W_{sc,m} + \Delta W_{sc,m}$ (kWh)

in which:

$W_{sc,m}$ The monthly self-consumption of electricity generated by the building unit's photovoltaic solar energy systems, as defined in Section D.2.1, in kWh;

$\Delta W_{sc,m}$ The monthly increase in own use due to the addition of an electrical storage system, as defined in Section D.2.2, in kWh.

D.2.1 The monthly use of the electricity production of the photovoltaic solar energy systems

Determine the monthly use of the electricity production of photovoltaic solar energy systems as:

Eq. 334 $W_{sc,m} = min$ ¿ (kWh)

in which:

$f_{sc,m}$ The monthly self-consumption ratio, as defined in Section D.2.1.1, (-) ;

f_{hs} The correction factor for the presence of thermal storage, equivalent to 5 if a storage tank of at least 100 litres is present for a generator with electricity as an energy carrier, otherwise equal to 0, (–);

$W_{pv,m}$ The monthly electricity production of the photovoltaic solar energy systems of the building unit, as defined in Section D.1, in kWh.

A total must be calculated for all photovoltaic solar energy systems in the building unit.

D.2.1.1 Self-consumption ratio

For the monthly self-consumption ratio, $f_{sc,m,}$ use the values from Table 92, as a function of the monthly dimensioning ratio f $dim_{,m,}$ as defined in D.2.1.2.

Table 92: Self-consumption ratio $f_{sc,m}$ per dimensioning ratio $f_{dim,m}$. per month

Dimensioning ratio $f_{dim,m}$	January	February	March	April	May	June	July	August	September	October	November	December
0.00	100	100	100	100	100	100	100	100	100	100	100	100
>0.05	100	100	100	100	100	100	100	100	100	100	100	100
>0.10	100	100	100	100	100	100	100	100	100	100	100	100
>0.15	100	100	100	100	100	100	100	100	100	100	100	100
>0.20	100	100	100	100	100	100	100	100	100	100	100	100
>0.25	92	96	100	100	100	100	100	100	100	100	100	98
>0.30	83	87	94	100	100	100	100	100	100	100	98	90
>0.35	73	78	86	94	100	100	100	100	100	98	91	81
>0.40	66	71	78	87	95	96	98	97	98	92	84	73
>0.45	60	65	73	82	89	90	93	91	92	86	78	68
>0.50	55	60	67	75	83	84	87	85	87	81	72	63
>0.55	52	57	62	70	78	79	82	79	82	75	67	58
>0.60	48	52	57	66	73	74	77	74	78	71	62	54
>0.65	45	49	54	62	69	69	72	69	73	67	59	50
>0.70	42	45	50	59	65	65	68	65	69	64	55	47
>0.75	39	43	48	56	62	61	65	61	66	60	53	44
>0.80	36	40	45	52	58	58	62	58	63	57	50	42
>0.85	34	38	43	50	56	55	59	56	60	54	48	39
>0.90	32	36	41	47	53	53	56	53	57	52	45	38
>0.95	31	34	39	45	51	51	54	51	55	50	43	36

>1.00	29	33	38	43	49	49	52	49	53	48	41	34
>1.05	28	31	36	41	47	47	50	47	51	46	39	33
>1.10	27	30	34	40	45	45	49	46	49	44	38	32
>1.15	25	29	33	38	43	44	47	44	47	43	36	31
>1.20	24	28	31	37	42	43	46	43	45	41	35	29
>1.25	23	27	30	36	40	41	45	41	44	40	34	28
>1.30	22	26	29	34	39	40	44	40	42	39	33	28
>1.35	22	25	28	33	37	39	42	39	41	37	31	27
>1.40	21	24	27	32	36	38	41	38	40	36	30	26
>1.45	20	24	26	31	35	37	41	37	39	35	30	25
>1.50	19	23	25	31	34	36	40	36	38	34	29	25
>1.55	19	22	24	30	33	36	39	36	37	33	28	24
>1.60	18	22	23	29	32	35	38	35	36	32	27	23
>1.65	18	21	23	28	31	34	37	34	35	31	26	23
>1.70	17	21	22	27	30	33	37	34	34	30	26	22
>1.75	17	20	21	26	30	33	36	33	33	30	25	21
>1.80	16	20	21	25	29	32	35	32	32	29	25	21
>1.85	16	19	20	25	28	32	35	32	32	28	24	20
>1.90	15	19	20	24	27	31	34	31	31	27	23	20
>1.95	15	19	19	24	27	31	34	31	30	27	23	19
>2.00	15	18	19	23	26	30	33	30	30	26	22	19
>2.05	14	18	18	22	26	30	33	30	29	26	22	18
>2.10	14	18	18	22	25	29	33	29	29	25	22	18
>2.15	14	17	17	21	25	29	32	29	28	25	21	17
>2.20	13	17	17	21	24	28	32	28	28	24	21	17
>2.25	13	17	17	20	24	28	31	28	27	24	20	17
>2.30	13	16	16	20	23	27	31	27	27	23	20	16
>2.35	12	16	16	20	23	27	30	27	26	23	20	16
>2.40	12	16	16	19	22	26	30	26	26	22	19	16
>2.45	12	15	15	19	22	26	29	26	26	22	19	15
>2.50	12	15	15	18	22	25	28	25	25	22	18	15
>2.55	11	15	15	18	21	25	28	25	25	21	18	15
>2.60	11	14	14	18	21	24	27	24	24	21	18	14
>2.65	11	14	14	17	20	24	27	24	24	20	17	14
>2.70	11	14	14	17	20	23	26	23	23	20	17	14
>2.75	11	14	14	17	20	23	26	23	23	20	17	14
>2.80	10	13	13	16	19	22	25	22	22	19	16	13
>2.85	10	13	13	16	19	22	25	22	22	19	16	13
>2.90	10	13	13	16	19	22	24	22	22	19	16	13
>2.95	10	13	13	16	18	21	24	21	21	18	16	13
>3.00	10	13	13	15	18	21	24	21	21	18	15	13
>3.05	10	12	12	15	18	20	23	20	20	18	15	12
>3.10	9	12	12	15	17	20	23	20	20	17	15	12
>3.15	9	12	12	15	17	20	22	20	20	17	15	12
>3.20	9	12	12	14	17	20	22	20	20	17	14	12
>3.25	9	12	12	14	17	19	22	19	19	17	14	12
>3.30	9	11	11	14	16	19	21	19	19	16	14	11
>3.35	9	11	11	14	16	19	21	19	19	16	14	11
>3.40	9	11	11	13	16	18	21	18	18	16	13	11
>3.45	8	11	11	13	16	18	21	18	18	16	13	11
>3.50	8	11	11	13	15	18	20	18	18	15	13	11
>3.55	8	11	11	13	15	18	20	18	18	15	13	11
>3.60	8	10	10	13	15	17	20	17	17	15	13	10
>3.65	8	10	10	13	15	17	19	17	17	15	13	10
>3.70	8	10	10	12	15	17	19	17	17	15	12	10
>3.75	8	10	10	12	14	17	19	17	17	14	12	10
>3.80	8	10	10	12	14	16	19	16	16	14	12	10
>3.85	8	10	10	12	14	16	18	16	16	14	12	10
>3.90	7	10	10	12	14	16	18	16	16	14	12	10
>3.95	7	9	9	12	14	16	18	16	16	14	12	9
>4.00	7	9	9	11	14	16	18	16	16	14	11	9
>4.05	7	9	9	11	13	15	17	15	15	13	11	9
>4.10	7	9	9	11	13	15	17	15	15	13	11	9
>4.15	7	9	9	11	13	15	17	15	15	13	11	9
>4.20	7	9	9	11	13	15	17	15	15	13	11	9
>4.25	7	9	9	11	13	15	17	15	15	13	11	9
>4.30	7	9	9	11	13	15	16	15	15	13	11	9
>4.35	7	9	9	11	12	14	16	14	14	12	11	9
>4.40	7	9	9	10	12	14	16	14	14	12	10	9
>4.45	7	8	8	10	12	14	16	14	14	12	10	8

>4.50	6	8	8	10	12	14	16	14	14	12	10	8
>4.55	6	8	8	10	12	14	16	14	14	12	10	8
>4.60	6	8	8	10	12	14	15	14	14	12	10	8
>4.65	6	8	8	10	12	13	15	13	13	12	10	8
>4.70	6	8	8	10	12	13	15	13	13	12	10	8
>4.75	6	8	8	10	11	13	15	13	13	11	10	8
>4.80	6	8	8	10	11	13	15	13	13	11	10	8
>4.85	6	8	8	9	11	13	15	13	13	11	9	8
>4.90	6	8	8	9	11	13	14	13	13	11	9	8
>4.95	6	8	8	9	11	13	14	13	13	11	9	8
>5.00	6	8	8	9	11	13	14	13	13	11	9	8

D.2.1.2 Dimensioning ratio

Determine the monthly dimensioning ratio of the photovoltaic solar energy systems i as:

Eq. 335 $$f_{dim,m} = \frac{W_{pv,m}}{W_{elec,m} - W_{cogen,util,m}}$$ (-)

in which:

$W_{pv,m}$ The monthly electricity production of the photovoltaic solar energy systems of the building unit, as defined in Section D.1, in kWh;

$W_{elec,m}$ The total monthly electricity requirement of the building unit, as defined in Section C.4.1, in kWh;

$W_{cogen,util,m}$ The monthly consumed amount of electricity produced by the site's CHP installation(s), as defined in Section C.4, in kWh.

A total must be calculated for all photovoltaic solar energy systems in the building unit.

D.2.2 The monthly increase in self-consumption resulting from the installation of an electric storage system

Determine the monthly increase in self-consumption resulting from the addition of an electric storage system as:

Eq. 336 $\Delta W_{zc,m} = \min(W_{prod,excess,m}; (t_m.1000000/86400).f_A.C_{bat}.\eta_{charge}.\eta_{discharge}.DoD; W_{cons,excess,m})$ (kWh)

in which:

$W_{prod,excess,m}$ The surplus production, as defined in Section D.2.2.1, in kWh;

t_m The length of the relevant month, derived from Table 1, in Ms;

f_A Surface ratio of the building unit, calculated as the surface area of the building unit considered divided by the sum of all the surfaces of all building units combined (including the building units other than non-residential) (–);

C_{bat} The nominal capacity of the electrical storage, in kWh;

η_{charge} The system efficiency when recharging the electrical storage, equal to 0.9, (–);

$\eta_{discharge}$ The system efficiency when discharging the electrical storage, equal to 0.9, (–);

DoD The depth of discharge of the electrical storage facility, equal to 0.9, (-).

$W_{cons,excess,m}$ The remaining monthly electricity requirement, as defined in Section D.2.2.2, in kWh.

D.2.2.1 Excess production

Determine the remaining monthly electricity production of the photovoltaic systems that is not consumed immediately as:

Eq. 337 $W_{prod,excess,m}$ = ¿

in which:

$f_{sc,m}$ The monthly self-consumption ratio, as defined in Section D.2.1.1, (-).

f_{hs} The correction factor for the presence of thermal storage, equivalent to 5 if a storage tank of at least 100 litres is present for a generator with electricity as an energy carrier, otherwise equal to 0, (–);

$W_{pv,m}$ The monthly electricity generation from the photovoltaic solar energy systems, as defined in Section D.1, in kWh.

A total must be calculated for all photovoltaic solar energy systems.

D.2.2.2 The remaining electricity demand

Determine the remaining monthly electrical energy use not covered by the electricity production of the photovoltaic systems as:

Eq. 338 $W_{cons,excess,m} = W_{elec,m} - W_{cogen,util,m} - W_{sc,m}$

in which:

$W_{sc,m}$ The monthly self-consumption of electricity generated by photovoltaic energy systems, as defined in Section D.2.1, in kWh;

$W_{elec,m}$ The monthly electric energy consumption, as defined in Section C.4.1, in kWh;

$W_{cogen,util,m}$ The monthly consumed amount of electricity produced by the site's CHP installation(s), as defined in Section C.4, in kWh.

10 ANNEX 18/6: EPC NR INSPECTION PROTOCOL

Introduction

The fourth section:

If the energy expert has drawn up the energy performance certificate, the expert signs the EPC so as to render it legally valid. It may also be digitally signed using an eID. The energy expert delivers the signed EPC in its entirety to the owner, either digitally or on paper. If the owner requests it, the energy expert prints the EPC. Please note that printed EPCs must be **hand-signed** (i.e. not digitally).

is deleted.

I.2 Indicators

The introduction:

The EPC NR consists of two parts:

- The **energy label**: is a measure of the distance to the long-term target (LTD) and forms the basis for a tightening-up in the future.
- The assessment of energy efficiency on the basis of a calculated partial performance and an **energy score**, where the energy score is a measure of the (theoretically) calculated energy performance of the building unit.

Both indicators, the energy label and the energy score, form a basis for recommendations for energy renovation.

The energy score is always determined for a single building unit. The energy label may be determined for several units at the same time (see also Part II:Assignment).

is replaced by:

The EPC NR consists of two parts:

- The **measured energy label**: A measurement of the distance to the long-term target (LTD) based on the long-term target indicator (I_{LTD});
- The **calculated energy score**: The assessment of energy efficiency on the basis of a calculated partial performance and an **energy score**, where the energy score is a measurement of the (theoretically) calculated energy performance of the building unit.

Both indicators, the measured energy label (based on I_{LTD}) and the energy score, form the basis for energy renovation recommendations.

The calculated energy score is always determined for a single building unit. The I_{LTD} can be determined for several units at a time (see also Part II:Assignment).

I.2.1

The title:

Energy label

is replaced by:

Measured energy label

I.2.1.1

The text:

 Renewable electricity locally generated and used by the building unit

is replaced by:

 Renewable electricity generated locally and used by the building unit or sourced from the distribution network as part of an energy-sharing scheme

I.2.1.2

The first sentence under 'Note':

- In contrast to the energy score, the energy label is determined on the basis of the **total energy use** of the building unit; this includes both building-related (cooling, heating, lighting, etc.) and non-building-related (computers, refrigerators, etc.) energy use.

is replaced by:

- In contrast to the calculated energy score, the measured energy label is determined on the basis of the **total energy use** of the building unit; this includes both building-related (cooling, heating, lighting, etc.) and non-building-related (computers, refrigerators, etc.) energy use.

I.2.1.3

The text after the first bullet point:

- **Renewable electricity** produced and used at its own site or supplied via a direct line or as part of energy-sharing scheme[2] and used within the scope at its own site;

is replaced by:

- **Renewable electricity** produced and used at its own site or supplied via a direct line or as part of energy-sharing scheme and used within the scope at its own site;

With the following footnote:

Energy-sharing scheme, peer-to-peer trading in renewable energy and the sale of renewable electricity within an apartment building or multi-purpose building, as referred to in Articles 7.2.1, 7.2.2 or 7.2.3 of the Energy Decree of 8 May 2009.

[2]

The following last bullet point is added:

- Renewable electricity supplied via the distribution network, in the context of an energy-sharing scheme, peer-to-peer trading in renewable energy and the sale of renewable electricity within an apartment building or multi-purpose building, as referred to in Articles 7.2.1, 7.2.2 or 7.2.3 of the Energy Decree of 8 May 2009.

I.2.2

The title:

Energy score

is replaced by:

Calculated energy score

I.2.2.1

The first section:

The energy quality of the building unit and its installations is expressed as a **calculated energy score**, as the annual total primary energy consumption for heating, cooling, lighting, sanitary hot water, humidification and ventilation including auxiliary energy consumption, divided by the gross floor area (GFA) of the building unit. The impact of renewable technologies, building use and building function is only included in this score to a limited extent, as it is mainly assessed via the energy label.

is replaced by:

The energy quality of the building unit and its installations is expressed as a **calculated energy score**, as the annual total primary energy consumption for heating, cooling, lighting, sanitary hot water, humidification and ventilation including auxiliary energy consumption, divided by the gross floor area (GFA) of the building unit. The impact of building use and building function is only included in this score to a limited extent, as it is mainly assessed via the measured energy label.

I.4.3

In the section '**: general supporting documents'**, a third bullet point is added under the first bullet point 'Plans':

- Digital plans are always accompanied by the corresponding digitally approved and signed universal planning permit.

I.4.4

The section:

I.4.4 Keeping the project file up to date

The energy expert must **retain the project file for 5 years** starting from the date of the EPC and irrespective of the validity of that EPC. The project file must be submitted to the VEKA at the time of an audit. All documents must be clear and legible.

The project file consists of the supporting documents with overview list, photographs of the visual findings and a graphic file.

is replaced by:

I.4.4 Updating and transferring the project file

The energy expert must **retain the project file for 5 years** from the date of the EPC and irrespective of the validity of that EPC. In order to comply with this requirement, the energy expert must make sufficient efforts by providing backups.

If the energy expert is a legal entity, that legal entity is responsible for the accuracy of the EPCs and for updating the project files created by its employees on its behalf. Even if the employee concerned were no longer in service, these project files must be kept up to date for the duration of their validity.

The project file must be submitted to the VEKA at the time of an audit. All documents must be clear and legible.

A copy of, at a minimum, the supporting documents from the project file, as described below, must be provided to the commissioning party. This may be submitted either on paper or digitally.

The project file consists of the supporting documents with overview list, photographs of the visual findings and a graphic file.

I.5

The following Section I.5 is added:

For each building unit, a comments section is provided for feedback by the energy expert. The content of this feedback depends on the specific situation and is therefore determined by the energy expert. This section may also be left blank. However, if the unit **does not meet** the next **minimum labelling requirement** (e.g. measured energy performance label E from 2030), the energy expert **is obliged** to provide **recommendations** on how to meet this labelling requirement. If not all the required meters are available, the energy expert will advise on which meters need to be installed to avoid being assigned energy label X. If the required measurements are available, but the indicator for the long-term objective is too low, the energy expert provides advice on the best measures to be taken to increase the indicator.

The energy expert enters a concise summary of the advice in the software's comments section. This entry also appears on the certificate. The energy expert refers to these recommendations when the EPC is transferred to the commissioning party.

II

In the two bullets above the 'Note' box, the text:

- A **certificate** is generated for each non-residential building unit **separately.** The calculated energy score on this certificate is determined for the relevant non-residential building unit **separately.**
- The **energy label** on this certificate is calculated for **all** building units included within the same assignment. Each non-residential building unit within the same assignment will therefore be assigned the same indicator I_{LTD}.

is replaced by:

- A **certificate** is generated for each non-residential building unit **separately.** The calculated energy score on this certificate is determined for the relevant non-residential building unit **separately.**

- The **measured energy label** on this certificate is calculated for **all** building units included within the same assignment. Each non-residential building unit within the same assignment will therefore be assigned the same indicator I_{LTD}.

II.1

The following text is added to the second section:

An exception to this are EPCs that must be adjusted after an inspection by the VEKA, which may be submitted later than six months after the site visit. The date of the site visit must then be updated.

II.3

The last sentence above II.3.1:

If the buildings and/or building units do not correspond to the actual situation, contact the VEKA before drawing up the EPC.

is replaced by:

If the buildings and/or building units do not correspond to the actual situation, this must be reported to the VEKA using the relevant form before drawing up the EPC.

II.3.1

The section:

Inspection results

Data collected	Type
Building automation and control system mandatory from 2025?	• Yes • No

A building automation and control system will be mandatory from 31 December 2025 for all non-residential buildings that have at least one of the following systems:

- A heating system with a rated power > 290 kW
- A combined heating and ventilation system with a rated power > 290 kW
- A cooling system with a rated power > 290 kW
- A combined cooling and ventilation system with a rated power > 290 kW

In the context of this EPC, an inspection will be carried out to determine whether the building is covered by this obligation. This entry does not affect the label or the energy score, but a recommendation about this obligation will appear if the building is covered.

As mentioned above, this obligation applies to all buildings with a heating or cooling system (whether or not combined with ventilation) with a rated power of at least 290 kW. If the building contains several heating or cooling systems, the different powers are summed up. A building, therefore, falls within the scope of application where at least one of the following conditions is met:

- the sum of the rated powers of all heating systems and combined heating and ventilation systems in the building exceeds 290 kW

- the sum of the rated powers of all cooling systems and combined cooling and ventilation systems in the building exceeds 290 kW

Note
For this summation, only the systems that are building-specific and intended for the climate control of the building are considered. Systems intended for the heating or cooling of specific processes are not considered here.

For buildings with exclusively non-residential units, this summation takes place over all systems present. For buildings that, in addition to non-residential, also contain building units intended for residential or industrial purposes, the summation applies to all systems that serve the non-residential building units. Systems that partially serve only the non-residential units are therefore also included in the list.

is replaced by:

Inspection results

Data collected	Type
Building automation and control system mandatory?	• Yes • No
Building automation and control system installed?	• Yes • No

A building automation and control system is mandatory for all non-residential buildings that have at least one of the following systems:
- A heating system with a rated power > 290 kW
- A combined heating and ventilation system with a rated power > 290 kW
- A cooling system with a rated power > 290 kW
- A combined cooling and ventilation system with a rated power > 290 kW

Buildings with only one of the 3 installations (heating, cooling or ventilation) are exempted from this requirement.

As part of this EPC, an inspection is only carried out to determine whether the building is subject to this requirement and whether a BACS is installed. This entry does not affect the label or the energy score, but a recommendation about this obligation will appear if the building is covered.

A building, therefore, falls within the scope of application where at least one of the following conditions is met:

- The sum of the rated powers of all hydraulically connected heating systems and combined heating and ventilation systems in the building exceeds 290 kW
- The sum of the rated powers of all hydraulically or refrigeration connected cooling systems and combined cooling and ventilation systems in the building exceeds 290 kW

Note
For this summation, only the systems that are building-specific and intended for the climate control of the building are considered. Systems intended for the heating or cooling of specific processes are not considered here.

For buildings comprising non-residential units only, this summation applies to all systems installed with a hydraulic or refrigeration connection. For buildings that, in addition to non-residential, also contain building units intended for residential or industrial purposes, the summation applies to all systems that serve the non-residential building units. Systems that partially serve only the non-residential units are therefore also included in the list.

It must also be indicated whether a building automation and control system is installed. Check the 'Yes' box here only if the system meets the requirements set out here[3]. If you are unsure whether a system is installed or whether it meets the requirements, please state that no building management and monitoring system is installed.

III

The second sentence:

After all, this entry is used to determine the energy score and the energy label.

is replaced by:

After all, this entry is used to determine the calculated energy score and the measured energy label.

III.1.7

The following Section III.1.7 is added:

III.1.7 Can respond to an external signal

Inspection results

Data collected	Type
Generator can respond to an external signal	• Yes • No • Unknown

The energy expert checks 'Yes' here if the generator can synchronise its operation with an external signal.
Examples of how a device might respond to an external signal:

- A PV installation reduces (or switch off completely) its electricity production when the injection fee becomes negative;
- A heat pump (boiler) raises the temperature of the water supplied to the storage tank when there is a surplus of electricity.

Responding to an external signal is understood to mean that the system adapts its functioning without the intervention of a person, whether or not according to pre-defined rules. Being able to adjust the operation of a device remotely, for example using an app, is not considered responding to an external signal, as a person must intervene to adjust the operation (by using the app).

III.3.1

The last sentence in the 'Note' box:

Residual heat recovery by which this is not the case does not apply for the energy label.

[3] See https://www.vlaanderen.be/gebouwautomatisering-en-controlesystemen-voor-niet-residentiele-gebouwen-verplicht-tegen-eind-2025/technische-vereisten-voor-een-bacs-building-automation-and-control-system

is replaced by:

Residual heat recovery by which this is not the case does not apply for the measured energy label.

III.5.5

The second sentence:

This value does not affect the calculated energy score and is used exclusively for the determination of the measured energy label.

is replaced by:

This value does not affect the calculated energy score and is used exclusively for the determination of the measured energy label.

III.14.1

A 'Note' box is added at the bottom:

Note
If 'unknown' is indicated, the PV production will **not** be taken into account in the calculation of the energy score.

III.14.3 en III.14.4

Two paragraphs are added:

III.14.3 Orientation

Inspection results

Data collected	Type
PV panel orientation	• N • NE • E • SE • S • SW • W • NW

The energy expert determines the orientation of the PV panels. If the orientation differs from these possibilities, the nearest orientation is entered.
If several PV panels are facing different directions, a separate installation is created for each orientation.

III.14.4 Electricity storage

Inspection results

Data to be collected	Type
Electricity storage installed?	• Yes

	• No		
If electricity storage is installed	Type	Unit	Contains between
Storage capacity	• Unknown • value	[kWh]	1 and →

The nominal capacity of the electrical storage is entered in kWh. This value can be found on the battery's technical data sheet or the AREI inspection report.

IV.6.3

The second section:

Next, estimate the **percentage of the total useful floor area** that this space cluster includes for cooling. For the designation of the spaces, the general procedure for space clusters is used (IV.1.3).

is replaced by:

Next, estimate the **percentage of the total useful floor area** that this space cluster includes for ventilation. For the designation of the spaces, the general procedure for space clusters is used (IV.1.3).

Note
If the ventilation air is heated or cooled, the system should also be considered a heating system. A space heating and/or space cooling generator is then entered, which is connected to a space heating system and/or a cooling system.

V.1.6.11

The text under 'Manufactured in the factory':

Insulating panels or mats manufactured in a factory on the basis of vegetable and/or animal fibres.

is replaced by:

Insulating panels or mats manufactured in a factory on the basis of vegetable and/or animal fibres. The density must be greater than or equal to 50 kg/m³ and less than 150 kg/m³ in order to be entered as 'natural materials'.

VI.1.3

The second row of Table 7

Electricity		All electricity from external networks (see IV.1.2), regardless of any guarantees of origin.

is replaced by:

Electricity	Renewable electricity purchased as part	All electricity from external

	of energy-sharing schemes or person-to-person sales (peer-to-peer trading) in renewable energy and the sale of renewable electricity within an apartment building or multi-purpose building, as referred to in Article 7.2.1, 7.2.2 or 7.2.3 of the Energy Decree of 8 May 2009.'	networks (see IV.1.2), regardless of any guarantees of origin.

VI.2

The table and first bullet below:

Inspection results

Data collected	Type
Type of incoming flow	• Electricity network • Gas network • External heat supply

An energy flow can enter the scope in three forms:

- Electricity: This is usually a connection to the electricity distribution network, but this can also be a connection to another local external electricity network (see IV.1.2).

are replaced by:

Inspection results

Data collected	Type
Type of incoming flow	• Electricity network • Energy-sharing scheme • Gas network • External heat supply

An energy flow can enter the scope in three forms:

- Electricity: This is usually a connection to the electricity distribution network, but this can also be a connection to another local external electricity network (see IV.1.2). A distinction is made between standard consumption of electricity from the grid and consumption of renewable electricity as part of an energy-sharing scheme.

VI.7

The following Section VI.7 is added:

VI.7. ENERGY-SHARING SCHEME

Inspection results

Data collected	Type
Energy-sharing group reference	Reference

When an incoming flow of the 'Energy-sharing scheme' type is entered, the energy-sharing group must be identified by its name or ID. Each participant in an energy-sharing group receives this ID from the administrator. It cannot be requested from the distribution system operator.

VII.1.1

The example at the very bottom:

Example:

- *Consider a meter that can measure up to 10 kWh. According to the technical data sheet, the uncertainty is 0.5% on the full scale. This means that each measurement is measured to an accuracy of 0.05 kWh (= 0.005 x 10 kWh).*
  - *If this is an electricity meter, the accuracy condition for measurements of 2.5 kWh or higher is met. For lower values, the accuracy of 0.05 kWh of the measurement is greater than 2%, which means that the accuracy condition is not met.*
  - *If this is a heat meter, the accuracy conditions for all measurements are met since after all, the accuracy is 0.5% at full scale, which is better than the 2% requirement.*

is replaced by:

Example:

- *Consider a meter that can measure up to 10 kWh. According to the technical data sheet, the uncertainty is 0.5% on the full scale. This means that each measurement is measured to an accuracy of 0.05 kWh (= 0.005 x 10 kWh).*
  - *If this is an electricity meter, the accuracy condition for measurements of 2.5 kWh or higher is met. For lower values, the accuracy of 0.05 kWh of the measurement is greater than 2%, which means that the accuracy condition is not met.*

VII.3.3

The third sentence:

Chillers that can be measured as part of the energy label are limited to electrically driven compression equipment and geocooling.

is replaced by:

Chillers that can be measured as part of the measured energy label are limited to electrically driven compression equipment and geocooling.

VIII

The table and first section:

Data to be collected:

Start meter reading	□
End of meter reading	□

□ : The data is strictly necessary to apply the method of determination

(□) : The data is not strictly necessary, so this entry may also be indicated as 'Unknown'

Measurements are entered at the level of the assignment. The measurements provide an overview of all meters entered (for both generators and energy flows). For each meter, enter the meter reading at the start and end of the measurement period, in the measurement unit indicated for the meter in question. Meter readings may be taken from the meter itself or using software to record meter readings remotely. If meter readings are read remotely, there is a greater risk of data loss and consequently, incorrect measurement data; if possible, it is recommended that the meter readings be taken at the site.

are replaced by:

Data to be collected:

Start meter reading	(□)
End of meter reading	(□)
Usage during the measurement period	(□)

□ : The data is strictly necessary to apply the method of determination

(□) : The data is not strictly necessary, so this entry may also be indicated as 'Unknown'

Measurements are entered at the level of the assignment. The measurements provide an overview of all meters entered (for both generators and energy flows). For each meter, enter either the meter reading is at the start and end of the measurement period or the consumption or production during the measurement period in the measurement unit indicated for the meter in question. Meter readings may be taken from the meter itself or using software to record meter readings remotely. If meter readings are read remotely, there is a greater risk of data loss and consequently, incorrect measurement data; if possible, it is recommended that the meter readings be taken at the site.

The last section:

The start and end meter readings during the measurement period are always entered into the software. Only for utility meters that do not have a display (no reading on the meter possible) and where the invoice data indicates only an energy consumption over the measurement period may the start meter reading '0' be entered and the end meter reading is the energy consumption over the measurement period. In all other cases, the correct start and end meter readings are always entered.

is replaced by:

If the start and end meter readings during the measurement period are known, these are always entered into the software. Alternatively, if the consumption or production figures during the measurement period are known – for example, from an invoice – these can also be entered directly.

In the case of an energy-sharing scheme, the measurement takes place via the distribution network operator. The amount of renewable electricity purchased through energy-sharing schemes must therefore always be substantiated with information from the distribution system operator, such as in the form of a .csv file. If no valid supporting documents are available, the use of energy-sharing schemes may not be recorded.

Measurements carried out under the ETS regulations may be accepted, provided that a monitoring protocol approved by the VBBV that documents these measurements is included in the project file.

VIII.1.2.2

The first two sentences:

In the absence of mandatory measurements, the energy label cannot be determined. In this case, an EPC NR can be drawn up in which the energy label is undetermined.

are replaced by:

In the absence of mandatory measurements, the measured energy label cannot be determined. In this case, an EPC NR can be drawn up in which the measured energy label is undetermined.