**Order of 4 August 2021 on the energy and environmental performance requirements for buildings in metropolitan France and approving the method of calculation provided for in Article R. 172-6 of the Construction and Housing Code**

* Title I: GENERAL PROVISIONS (Articles 1 to 7)
* Title II: SPECIFICATIONS ON THE EXPRESSION OF ENERGY AND ENVIRONMENTAL PERFORMANCE REQUIREMENTS (Articles 8 to 18)
* Title III: THERMAL CHARACTERISTICS AND REQUIREMENTS FOR MEANS (PER COMPONENT) (Articles 19 to 40)
* Title IV: PROPOSAL FOR SIMPLIFIED APPLICATION METHODS IN INDIVIDUAL HOUSES (Articles 41 to 42)
* Title V: SPECIAL CASES (Articles 43 to 44)
* Title VI: MISCELLANEOUS PROVISIONS (Articles 45 to 52)
* Annex

Groups concerned: owners, contractors, builders and developers, architects, heating and environment consultants, building economists, technical inspectors, construction companies, manufacturers of building materials and technical building systems and energy providers in metropolitan France, software editors.
Purpose: for new buildings and extensions of buildings in metropolitan France, setting requirements on their energy and environmental characteristics; precisions for fixing their energy and environmental performance; fixing the method of calculating their energy and environmental performance.
Entry into force: these requirements, as well as the method of calculation shall apply from 1 January 2022 to the construction of buildings or parts of buildings for residential use, and from 1 July 2022 to the construction of buildings or parts of buildings for office or primary or secondary educational use. They also apply to temporary constructions and extensions, depending on their surface area, used for the same purposes from 1 January 2023. These requirements also apply to constructions including those that do not require a building permit or prior declaration.
Notice: this order establishes the resource (or per component) requirements that the above-mentioned buildings located in metropolitan France must meet. It specifies how to fix the following five (or overall) result requirements: (1) optimisation of the energy design of the building independently of the energy systems implemented; (2) limitation of primary energy consumption, (3) limitation of the impact on climate change associated with these consumptions; (4) limitation of the impact of the building components on climate change; (5) limiting situations of discomfort in the building during the summer. Finally: the order establishes the method used to calculate the energy and environmental performance of residential, office or primary or secondary education buildings in metropolitan France, through three annexes:
- ANNEX  II: General rules for the calculation of energy and environmental performance;
- ANNEX  III: Calculation method “Th-ECB 2020”, detailing the rules for calculating energy performance;
- ANNEX IV: “Th-Bat 2020” rules, to determine the input data for energy performance calculations.
References: the written text as amended by this order may be consulted on the Légifrance website (www.legifrance.gouv.fr).

The Minister of Ecological Transition and the Minister Delegate to the Minister of Ecological Transition, in charge of housing,
Having regard to Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings, as amended by Directive 2018/844 of the European Parliament and of the Council of 30 May 2018, in particular its Article 3;
Having regard to Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services (codified text);
Having regard to the construction and housing code, and in particular Articles L. 181-1, R. 172-1 to R. 172-9 and R. 126-16 thereof;
Having regard to the Energy Code, and in particular Articles R. 241-26 and R. 241-30 thereof;
Having regard to the Town Planning Code, and in particular Articles L. 151-19, R\*. 421-2 and R\*. 421-5;
Having regard to the Order of 3 May 2007 on the thermal characteristics and energy performance of existing buildings listing all the works concerned and setting out the associated requirements, as amended by the Order of 22 March 2017;
Having regard to the Order of 13 June 2008 on the energy performance of existing buildings with a surface area exceeding 1 000 m², when undergoing major renovations;
Having regard to the Order of 26 October 2010 on the thermal characteristics and energy performance requirements of new buildings and new parts of buildings;
Having regard to the order of 28 December 2012 relating to the thermal characteristics and energy performance requirements of new buildings and new parts of buildings other than those concerned by Article 2 of the decree of 26 October 2010 relating to thermal characteristics and performance energy for buildings;
Having regard to the opinion of the Higher Energy Council (CSE), issued on 25 March 2021;
Having regard to the opinion of the Higher Council for Construction and Energy Efficiency dated 13 April 2021;
Having regard to the opinions of the National Standards Assessment Council of 1 April and 6 May 2021;
Having regard to notifications No 2020/791/F and No°2020/792/F sent to the European Commission on 14 December 2020 and to the Commission’s reply of 15 June 2021;
Having regard to the observations made during the public consultation carried out from 23 March 2021 to 13 April 2021, in application of Article L. 123-19-1 of the environment code,
Decree:

**Title I: GENERAL PROVISIONS (Articles 1 to 7)**

**Chapter I: SCOPE (Articles 1 to 2)**

**Article 1**

The provisions of this Order shall apply to the construction of buildings and parts of buildings for residential, office and primary or secondary education use that are subject to Article R. 172-1 of the Construction and Housing Code, as well as to the construction of car parks associated with these constructions.
They shall not apply to buildings situated in Guadeloupe, Guyana, Martinique, Reunion and Mayotte.

**Article 2**

Part of a building can be assimilated to the main use of the building, with application of the associated requirements, when the following cumulative conditions are met:

- the reference area of the part of the building in question is less than 150 m² and less than 10% of the reference area of the main use of the building;
- the part of the building corresponding to the main use shall be subject to this Order, or to the above-mentioned Order of 26 October 2010, or to the above-mentioned Order of 28 December 2012.

A part of a building used as an individual house cannot be assimilated to another use.
The reference area of the building, denoted Sref, is defined in X of Chapter I of the Annex to Article R. 172-4 of the Construction and Housing Code. Unless otherwise stated, this shall be the surface area used throughout this Order.

**Chapter II: PROCEDURES FOR TEMPORARY APPLICATION (Article 3)**

**Article 3**

I. - In accordance with Article R. 172-1(II) of the Construction and Housing Code, the provisions of this Order shall apply only from 1 January 2023 to light recreational dwellings within the meaning of Article R.\* 421-2 of the Town Planning Code and to temporary constructions within the meaning of Article R.\* 421-5 of the same Code.
II. - In accordance with Article R. 172-3 of the Construction and Housing Code, the provisions of this Order shall apply only from 1 January 2023 to:

- buildings and building extensions with a reference area of less than 50 m²;
- extensions of individual or adjoined houses with a reference area of strictly between 50 m² and 100 m²;
- extensions for uses other than individual houses with a reference area of less than 150 m² and 30% of the reference area of the existing premises.

For these buildings, until 31 December 2022, only the provisions of the aforementioned Order of 26 October 2010 shall apply.

**Chapter III: DEFINITIONS (Article 4)**

**Article 4**

The terms necessary to understand this Order are defined in Annex I. The indicators Bbio, Cep, Cep, nr, Icenergy, Icconstruction, DH, Icbuilding, StockC, Icconstruction and Icded, as well as the maximum values Bbio\_max, Cep\_max, Cep, nr\_max, Icenergy\_max, Icconstruction\_max and DH\_max, referred to in this Order, are defined in I to IX of Chapter I of the Annex to Article R. 172-4 of the Construction and Housing Code.

**Chapter IV: ENERGY AND ENVIRONMENTAL PERFORMANCE REQUIREMENTS AND MINIMUM TECHNICAL CHARACTERISTICS (Articles 5 to 7)**

**Article 5**

Buildings or parts of buildings subject to this Order shall comply with the requirements laid down in Article R. 172-4 of the Construction and Housing Code and determined in accordance with the procedures set out in the Annex to that article and in Article 8 of this Order.

**Article 6**

The minimum technical characteristics of certain building components or assemblies of components of buildings subject to this Order must comply with the requirements laid down in Title III of this Order.

**Article 7**

Buildings whose characteristics comply with the simplified application methods, approved under the conditions described in Title IV of this Order, shall be deemed to comply with the requirements of this Order.

**Title II: SPECIFICATIONS ON THE EXPRESSION OF ENERGY AND ENVIRONMENTAL PERFORMANCE REQUIREMENTS (Articles 8 to 18)**

**Chapter V: ASSESSMENT OF COMPLIANCE WITH THE REQUIREMENTS (Articles 8 to 17)**

**Article 8**

The calculation method attached to Appendices II to IV of this order, and provided for in Article R. 172-6 of the construction and housing code, is approved.
In accordance with paragraph I of the same article, this calculation method determines the energy and environmental performance of the building, with particular reference to the indicators described in I to IX of Chapter I of the Annex to Article R. 172-4 of the same code, based on the characteristics of the building and its components.
In particular:

- these indicators shall be calculated with an emphasis on conventional climatic and intensity of use data;
- the Bbio, Cep, nr and Cep indicators shall be calculated over one year;
- the climate change impact indicators Icenergy, Icconstruction and Icbuilding shall be calculated using the coefficients specified in Article 11 and taking the lifespan of the building to be 50 years, by convention;
- calculation of the Cep, nr indicator shall take into account the coefficients defined in I of Article 9;
- calculation of the Cep indicator shall take into account the coefficients defined in II of Article 9;
- calculation of the Icenergy indicator shall take into account the coefficients defined in Article 10.

**Article 9**

I. - The transformation coefficients of the energy entering the building as non-renewable primary energy shall be used when determining the Cep, nr indicator described in this Order and are taken by convention to be equal to the:

|  |  |
| --- | --- |
| **Type of energy imported by the building** | **Transformation coefficients of the energy entering the building as non-renewable primary energy** |
| Wood | 0 |
| Electricity | 2.3 |
| District heating network (heat) | 1 - Renewable energy or network recovery ratio (heat) |
| District heating network (cold) | 1 |
| Methane gas (natural) from networks | 1 |
| Renewable energy captured on the building or the plot | 0 |
| Other energies | 1 |

The renewable energy or urban heating network recovery ratio shall be defined by the order for each existing infrastructure.
II. - The transformation coefficients of the energy entering the building as primary energy shall be used when determining the Cep indicator and are taken by convention to be equal to the:

|  |  |
| --- | --- |
| **Type of energy imported by the building** | **Transformation coefficients of the energy entering the building as primary energy** |
| Wood | 1 |
| Electricity | 2.3 |
| District network (heating) | 1 |
| District network (cold) | 1 |
| Methane gas (natural) from networks | 1 |
| Renewable energy captured on the building or the plot | 0 |
| Other energies | 1 |

By convention, the energy produced by the building on behalf of a network, as well as the possible quantity of energy imported by the building to produce this energy, do not affect the building’s Cep, nr, Cep and Icenergy indicators.

**Article 10**

The transformation coefficients of the energy entering the building as quantities of greenhouse gases emitted shall be used when determining the Icenergy indicator and are taken by convention to be equal to the:

|  |  |
| --- | --- |
| **Type of energy per kWh EF LCV** | **kg CO2 equivalent per kilowatt hour of final energy in LCV** |
| Wood, biomass - wood chips | 0.024 |
| Wood, biomass - Granules (pellets) or briquettes | 0.03 |
| Wood, biomass - Log | 0.03 |
| Electricity for heating | 0.079 |
| Electricity for cooling | 0.064 |
| DHW electricity | 0.065 |
| Electricity for tertiary lighting | 0.064 |
| Electricity for residential lighting | 0.069 |
| Electricity for other uses | 0.064 |
| Methane gas (natural) from networks | 0.227 |
| Butane gas | 0.272 |
| Propane gas | 0.272 |
| Other fossil fuels | 0.324 |

The emission factor for urban heating or cooling networks is defined by the order for each existing infrastructure.

**Article 11**

The weighting coefficients used for calculation of the climate change impact indicators Icenergy, Icconstruction and Icbuilding depending on the year of emission and the type of gas emitted, shall be taken as equal to:

You can view the entire text with its images from the extract of the authenticated electronic Official Journal accessible at the bottom of the page

**Article 12**

The software enabling all or part of the calculation of the indicators described in I to IX of Chapter I of the Annex to Article R. 172-4 of the Construction and Housing Code in order to verify compliance with the aforementioned article and this Order must adhere to the calculation method mentioned in Article 8.
For this, it must rely on a calculation tool for the Bbio, Cep, nr, Cep and DH indicators, made available on request, in accordance with Article L. 121-2 of the Construction and Housing Code. Updates to this tool shall be integrated within one month of their release into the software concerned.
Any regulatory use of this software shall first be approved by the Minister for Energy and the Minister responsible for Construction, in particular to verify that the results obtained comply with the calculation method and that the input interface minimises the risk of modeller input errors.
As a transitional measure, software that has carried out self-checking may be used for regulatory purposes for simulations carried out until 30 June 2022.
Annex V describes the procedures for self-checks, and the approval procedure for such software.
The approval shall be renewed, following a periodic review, according to the following conditions:

- the period of validity of the first inspection shall be two years;
- the validity period of the approval shall be extended by five years following a review that does not identify any major deviations from the calculation method in force when the review file was submitted;
- the validity period of the approval shall be extended by 2 to 5 years following a review that has led to the correction of major deviations from the calculation method in force when the review file was submitted.

The approval can be withdrawn at any time, in particular following the finding of a major deviation from the calculation method in force at the time of the observation, or following the observation of at least three failures to integrate certain systems present in the calculation method in force at the time of said finding.

**Article 13**

The values used as input data for the calculation specified in Article 8 and describing the geometric characteristics of the building must correspond to the construction plans when the building has not been completed, or to the quantities actually used once the work has been completed.
The lengths, areas or orientations of the building and its components are part of the data describing the geometric characteristics of the building.

**Article 14**

The values used as input data for the calculation specified in Article 8 and describing the quantities of construction products or equipment used in the building must correspond to the estimated quantities necessary for construction of the building when it has not been completed, or to the quantities actually used once the work has been completed.

**Article 15**

I. - The values used as input data for the calculation specified in Article 8 and describing the thermal characteristics of the building components shall correspond to the characteristics of the components envisaged for the construction of the building when it has not been completed, or the characteristics of the components actually used once the work has been completed.
These thermal characteristics are obtained as follows, for each component:

- if the component is covered by the harmonised technical specifications of Regulation No 305/2001 of 9 March 2011, harmonised standards or European assessment documents, in which case the products will bear the CE marking, and if the value of the thermal characteristic is established in these specifications, then this value shall be used in accordance with the procedures laid down in Article 8;
- if this is not the case, if the thermal characteristic is obtained by reference to French standards or technical opinions or equivalent national standards accepted by a Member State of the European Union or party to the EEA agreement, or by Turkey, and are issued by an independent third-party body notified under Directive 305/2011 that is recognised by a Member State of the European Union or a State party to the Agreement establishing the European Economic Area, this value shall be used in accordance with the procedures laid down in Article 8. The advantage of this provision shall only apply during the period preceding the application of a harmonised European standard or European technical approval. Whatever the rounding rules established by these various standards or technical opinions, the value used as input data cannot be more favourable than the value obtained from the measurement taken, if need be.

If it is not possible to obtain a characteristic value according to the procedures above, the value to be used shall be the default value defined by the calculation method referred to in Article 8, with the exception of the default useful thermal conductivity value for bio-based insulation as defined in Annex XII to this Order.
II. In buildings for residential use, in the event that when the building is delivered certain energy system installation work remains to be carried out, default data must be used in accordance with the method specified in Article 8.

**Article 16**

I. - The values used as input data for the calculation of the Icconstruction and Icbuilding indicators must correspond to the characteristics of the components planned for construction when the building has not been completed, or to the characteristics of the components actually used upon completion of the work. By way of derogation from this provision, it is possible to use an input datum corresponding to a component with characteristics superior to those of the component envisaged or used, provided that they are part of the same range from the same manufacturer.
These values shall be obtained, for each component, on the basis of environmental declarations made available by manufacturers in accordance with rules laid down by decree, or in the absence of such data by means of default environmental data made available by the Minister in charge of construction.
When, for a building component, no information meeting the characteristics mentioned in the previous paragraph is available, the component shall be described in the calculation and environmental information defined as“empty” shall be associated with it; in addition, a request to create a default environmental datum corresponding to the component shall be submitted via a website indicated on the website of the Ministry in charge of construction.
II. - In the event that, upon delivery of the building, certain work remains to be carried out, default data shall be used to describe this work in accordance with the method specified in Article 8.
III. - For certain sets of building components and depending on the use of the building, it is possible, replacing the requirements mentioned in I and II of this Article, to describe their impact on climate change through fixed values. The sets of components concerned and the corresponding values are given in Annex XI.
IV. - The data which may be used in accordance with the I of this Article shall be the data available on the date of completion of the calculation of the indicators Icconstruction, Icded and Icbuilding. However, if data have been used in a previous calculation of these indicators, then updated or deleted, they shall remain usable under the conditions laid down in I of this Article.

**Article 17**

I. - The building’s air permeability value shall be obtained:

- for buildings for residential use, either by measurement or by adopting a quality approach for the airtightness of the building in accordance with the procedures defined in Annex VII to this Order;
- for other types of buildings, the value of the air permeability of the building can be justified by measurement in accordance with the methods defined in Annex VII to this Order. In the absence of measurement according to these methods, the value to be used shall be the default value defined by the calculation method referred to in Article 8;

In the case of permeability measurement by sampling, the measurement values obtained shall be multiplied by 1.2.
In the event that work liable to affect the air permeability of the dwellings remains to be carried out after delivery, and in the absence of a reservation preventing any creation of leaks during this work, the permeability values obtained shall be increased by 0.3 m³/(h.m²).
These two increases shall be cumulative in this order.
II. - For all buildings the permeability value for the aeraulic networks shall be obtained either by measurement or by adopting a quality approach for the airtightness of the aeraulic networks, in accordance with the procedures defined in Annex VII to this Order. In the absence of measurement and a quality approach according to these methods, the value to be used shall be the default value defined by the calculation method referred to in Article 8.
If the air permeability of the building or the permeability of the aeraulic networks is justified by measurement, the person carrying out the measurement must be a person recognised as competent by the Minister responsible for Construction, independent of the applicant and of the organisations involved in the execution or project management of the buildings targeted.

**Chapter VI: JUSTIFYING THE APPLICATION OF REQUIREMENTS (Article 18)**

**Article 18**

The building owner shall establish a standardised digital summary of the energy and environmental study from software that meets the requirements of Article 12, upon completion of the work, at the latest.
The content and format of the standardised summary of the energy and environmental study to be drawn up are described in Annex VI.
In the event, covered by Title IV of this Order, that the requirements of this Order are applied according to an approved simplified process or mode of application, the simplified process or mode of application shall specify the content and format of the standardised summary of the energy and environmental study to be established.
This data shall be preserved and transmitted by the building owner in accordance with Article R. 172-8 of the Construction and Housing Code.

**Title III: THERMAL CHARACTERISTICS AND REQUIREMENTS FOR MEANS (PER COMPONENT) (Articles 19 to 40)**

**Chapter VII: VERIFICATION OF PERFORMANCE AFTER CONSTRUCTION (Articles 19 to 20)**

**Article 19**

For individual or adjoined houses and collective residential buildings, the air permeability of the building envelope under 4 Pa, Q4Pa-surf, determined in accordance with Article 17, shall be less than or equal to:
0.60 m³/(h.m²) of depleted walls, excluding a low floor, in a detached or adjoining house.
1.00 m³/(h.m²) of loss-resistant walls, excluding a low floor, in a collective residential building.

**Article 20**

In buildings and parts of buildings for residential use, in order to ensure that it is working properly, any ventilation system in the building shall be checked and its performance measured by a person recognised as competent by the Minister in charge of construction, in accordance with the provisions laid down in Annex VIII. It shall comply with the ventilation system verification protocol referred to in the same Annex.

**Chapter VIII: THERMAL INSULATION (Articles 21 to 22)**

**Article 21**

The partitions separating continuously occupied parts of the building from discontinuously occupied parts of the building must have a heat transmission coefficient U, as defined in the calculation method referred to in Article 8, that cannot exceed an average value of 0.36 W/(m².K). The surface area considered here is the surface area of the aforementioned partitions.

**Article 22**

In order to avoid any risk of physical or microbiological degradation of the materials, such as insulation compaction or the development of mould any building or part of a building shall be designed and constructed in such a way as to avoid, under normal conditions of occupancy, any situation which may lead to the appearance of condensation on the surface or inside the walls, either in a single occurrence or in a distributed manner, unless such condensation is only temporary.
For this purpose, it shall comply with one of the requirements of I or II of this Article:
I. - It shall have a surface temperature of less than 15 °C, under winter conditions, on the bare inside and on the bare inside of the insulation, at any point on these surfaces.
II. - It simultaneously meets the following requirements:

- the overall average linear heat transmission ratio, Ratio ψ, of the thermal bridges of the building should not exceed 0.33 W/(m²Sref. K).

This ratio represents the heat losses of all of the thermal bridges of the buildings, relative to the reference area of the building. It shall be determined in accordance with the calculation method referred to in Article 8.

- the average linear heat transmission coefficient of the connections between the middle floors and external walls or walls giving onto unheated rooms, Ψ 9, shall not exceed 0.6 W/(linear m. K).

**Chapter IX: ACCESS TO NATURAL LIGHTING (Article 23)**

**Article 23**

In order to ensure sufficient natural lighting and view of the outside, residential buildings shall comply with one of the requirements specified in I or II of this Article.
I. - Each residence shall have all of the following characteristics:

- a lighting level of at least 300 lx in 50% of the living areas, except for the premises with temporary occupancy, for more than half of the daylight hours of the year;
- a lighting level of at least 100 lx in 95% of the living areas, except for the premises with temporary occupancy, for more than half of the daylight hours of the year;
- in at least one living area, within the meaning of R. 111-1 of the Building and Housing Code, the occupant has, at a distance of at least 1 metre from the façade, a view of the outside including both the sky and the horizon.

II. - The total surface area of the openings, measured in a table, is greater than or equal to 1/6 of the reference area.
If the available surface area of the building façade is less than half of the living area of the building, or the average living area of the accommodations in the building is less than 25 m², it may, instead of the previous requirements, have a total opening area, measured in a table, greater than or equal to one-third of the available surface area of the façade.
This Article shall not apply in cases where compliance with it would run contrary to planning authorisations in protected areas, architectural, urban and landscape heritage protection areas or promoted architectural and heritage areas, the surroundings of historic monuments, registered and classified sites, sites on the UNESCO world heritage list or any other preservation decreed by local authorities, as well as at places and sectors designated under Article L. 151-19 of the Town Planning Code.

**Chapter X: SUMMER COMFORT (Article 24 to 25)**

**Article 24**

With the exception of openings in rooms with temporary occupancy, the openings have a solar factor less than or equal to the solar factor defined in the table below, with the solar shading device, if any, considered in the fully extended position:

|  |  |  |  |
| --- | --- | --- | --- |
| Zones H2a | All altitudes |  |  |
| Zones H1a, H1b and H2b | Altitude > 400 m | Altitude < or = 400 m |  |
| Zones H1c and H2c | Altitude > 800 m | Altitude < or = 800 m |  |
| Zones H2d and H3 |  | Altitude > 400 m | Altitude < or = 400 m |
| 1. BR1 exposed openings – sleeping rooms |
| North-facing vertical opening | 0.65 | 0.45 | 0.25 |
| Non-north-facing vertical opening | 0.45 | 0.25 | 0.15 |
| Horizontal opening | 0.25 | 0.15 | 0.10 |
| 2. BR2 or BR3 exposed openings – sleeping rooms |
| North-facing vertical opening | 0.45 | 0.25 | 0.25 |
| Non-north-facing vertical opening | 0.25 | 0.15 | 0.15 |
| Horizontal opening | 0.15 | 0.10 | 0.10 |
| 3. BR1 exposed openings – other than in sleeping rooms |
| Non-north-facing vertical opening | 0.65 | 0.45 | 0.25 |
| Horizontal opening | 0.45 | 0.25 | 0.15 |
| 4. Exposed openings – BR2 or BR3 other than in sleeping rooms |
| Non-north-facing vertical opening | 0.45 | 0.25 | 0.25 |
| Horizontal opening | 0.25 | 0.15 | 0.15 |

Openings that are not exposed to direct sunlight from April to October, due to distant solar shading, may only apply the requirements for north-facing openings.

**Article 25**

Openings within the same room, other than rooms in temporary occupation, should open to at least 30% of their surface area, unless hygiene or safety rules prohibit it.
This limit shall be reduced to 10% for rooms in which the altitude difference between the lowest point of its lowest opening and the highest point of its highest opening is equal to or greater than 4 m.

**Chapter XI: ENERGY CONSUMPTION (Articles 26 to 28)**

**Article 26**

Any automation resulting in an increase in energy consumption:

- shall be designed and implemented in such a way that the automation is triggered only when necessary;
- shall be timed or programmed so as to automatically stop the increase in energy consumption as soon as it is no longer necessary;
- can be adapted by the future building manager according to the building occupancy conditions.

Automation shall only allow the automatic triggering of artificial lighting in homes, offices, meeting rooms, classrooms and multi-purpose rooms, only after manual action by the occupant in or in the immediate vicinity of the room concerned, less than 6 hours earlier.

**Article 27**

Residential buildings or parts thereof shall be equipped with systems enabling the energy consumption of each residence to be measured or estimated, except for the consumption of individual wood systems in individual or adjoined houses.
In the case of collective energy production, ‘energy consumed by the dwelling’ is understood to mean the share of the total energy consumption dedicated to this dwelling according to a distribution key to be defined by the building owner during construction of the building.
These systems shall enable the occupants to be informed of their energy consumption at least on a monthly basis.
This information shall be delivered in the living space, by type of energy, broken down to at least the following:

- heating;
- cooling;
- domestic hot water production;
- mains sockets;
- others.

This breakdown can be based either on measured data or on estimated data based on predefined settings.
However, in the case of a project owner who is also the future landlord and lessor of the constructed building; in particular, owners of social rental housing, this information can be delivered to the occupants, at least monthly, by electronic or postal means rather than directly in the living space.
Evidence that this Article has been taken into account shall be provided in accordance with the guidelines entitled Systems for Measuring or Estimating Consumption in housing, which shall specify the procedures for its application.

**Article 28**

Non-residential buildings or parts thereof shall be fitted with systems enabling energy consumption to be measured or calculated:

- for heating: for each 500 m² of the surface area concerned or for each electrical panel, or for each floor, or for each direct output cable;
- for cooling: for each 500 m² of the surface area concerned or for each electrical panel, or for each floor or for each direct output cable;
- for the production of domestic hot water;
- for lighting: for each 500 m² of the surface area concerned or for each electrical panel, or for each floor;
- for the network of electrical sockets: for each 500 m² section of the surface area concerned, or for each electrical panel, or for each floor;
- for ventilation units: for each unit;
- for each direct output of more than 80 amps.

**Chapter XII: HEATING AND COOLING (Articles 29 to 34)**

**Article 29**

Heating units must include, for each room supplied, one or more devices that can be manually stopped or automatically adjusted according to the temperature inside the room.
However, when the heating is provided by underfloor heating using low-temperature hot water or blown air or by an independent wood heating device, this device may be shared by rooms with a maximum total surface area of 100 m².
The automatic adjustment shall be programmed so as to meet the requirements of Article R. 241-26 of the Energy Code.

**Article 30**

In the case of non-residential buildings or parts thereof, any heating unit supplying discontinuously occupied rooms shall include a device that can be manually controlled and automatically programmed, at least using a clock, that enables:

- heat to be supplied according to the following four levels: comfort, low, freeze prevention and stop;
- an automatic switch between these levels.

During switching between two levels, the heating power shall be zero or maximum in order to minimise the duration of the transition phases.
Such a device may only be shared by rooms with similar occupancy times. The same device can serve a surface area of no more than 5 000 m².

**Article 31**

Collective networks distributing heating or cooling water must be fitted with a balancing unit at the foot of each column.
The pumps for heating and cooling installations are fitted with devices to stop them.

**Article 32**

Cooling units must include, for each room supplied, one or more devices that can be manually stopped and which automatically adjust the supply of cold according to the temperature inside the room.
However:

- when the cold is supplied by a variable air flow system, this device may be shared by rooms with a maximum total surface area of 100 m2, provided that the total blown flow rate is regulated without increasing the pressure loss;
- when the cold is supplied by a cooling floor, this device may be shared by rooms with a maximum total surface area of 100 m².
- for ‘cold-only two-tube fan convectors’, the requirement in paragraph 1 shall be considered met if each fan is controlled by the indoor temperature and the cold water production and distribution installations are fitted with a device enabling their programming;
- for buildings or parts of a building cooled by cooling fresh air without increasing processed flow rates beyond double that of hygiene needs, the requirement in paragraph 1 shall be considered met if the cold supply is, firstly, adjusted according to at least the temperature of air return and the temperature outside and, secondly, prohibited in heating periods.

The automatic adjustment shall be programmed so as to meet the requirements of Article R. 241-30 of the Energy Code.

**Article 33**

Access doors to cooled zones shall be fitted with a self-closing device.

**Article 34**

Before the final output into the room, except where heating is obtained by recuperation from cold production, the air should not be heated and then cooled, or vice versa, by energy-consuming devices designed to heat or cool the air.

**Chapter XIII: LIGHTING (Articles 35 to 38)**

**Article 35**

In walkway areas, vertical and horizontal communal indoor areas and car parks, all lighting installations shall include, for each room, an automatic device making it possible, when the room or the car park is unoccupied:

- either to dim the lighting to the regulatory minimum level;
- or to extinguish artificial light sources, if no regulation imposes a minimum level.

In addition, if the room has access to natural light, it should include a device enabling the lighting system to be automatically switched off as soon as the natural light is sufficient.
A single device shall serve at most:

- a maximum surface area of 100 m² and a single level for horizontal walkways and indoor communal areas;
- three levels for vertical walkways;
- one level and at most an area of 500 m² for parking spaces.

**Article 36**

In non-residential buildings or parts thereof, each room shall be fitted with a manual device for switching lighting on and off, or an automatic device according to the rate of occupancy.

**Article 37**

In non-residential buildings or parts thereof, each room in which lighting control is the responsibility of its management staff must, even during periods of occupation, include a device enabling the lighting to be switched on and off. If this device is not situated in the room in question, it must enable the lighting status in this room to be viewed from the control point.

**Article 38**

In buildings or parts of buildings for non-residential use, in the same room, artificially lit points, which are placed less than 5 m from an opening, shall be controlled separately from other lighting points when the total installed power in each of these positions exceeds 200 W.

**Chapter XIV: VENTILATION (Articles 39 to 40)**

**Article 39**

In the case of non-residential buildings or parts thereof, rooms or groups of rooms whose occupation or usage is very different must be served by independent ventilation systems.

**Article 40**

In the case of non-residential buildings or parts thereof that are equipped with specific mechanised ventilation systems, any manual device for modifying the air flow of a room shall be operated with a timer.

**Title IV: PROPOSAL FOR SIMPLIFIED APPLICATION METHODS IN INDIVIDUAL HOUSES (Articles 41 to 42)**

**Article 41**

A simplified application method is a combination of architectural characteristics, energy and environmental performance of works and equipment attached to a defined family of individual houses, deemed to be in compliance with the provisions of Titles I to III of this Order for all the buildings in this family.
The simplified application method can only be used in its integral form.

**Article 42**

The proposal for a simplified application method shall be sent to the Minister responsible for Energy and to the Minister responsible for Construction, accompanied by a study file composed as indicated in Annex IX.

**Title V: SPECIAL CASES (Articles 43 to 44)**

**Article 43**

In the event that the calculation method mentioned in Article 8 does not take into account the specificities of a construction project, an application for approval for the project shall be sent to the Minister responsible for Energy and to the Minister responsible for Construction.
In the following cases, an application for approval of the project or the method used to justify the performance of the heating or cooling system or network may be sent to the Minister responsible for Energy and the Minister responsible for Construction:

- if the calculation method mentioned in Article 8 does not take into account the specificities of a system;
- if an urban heating or cooling network is created;
- if work to modify a heating or cooling network is likely to cause a significant change in its emission factor as provided for in Article 10.

Applications for approval shall be accompanied by a study file composed as indicated in Annex X, which shall in particular set forth the way in which the calculation method mentioned in Article 8 does not take into account the specifics of the construction project or system, as applicable.
Approval of a construction project shall not be compulsory where a certificate of compliance with the objectives, within the meaning of Article L. 112-9 and relating to a subject other than energy performance, provides for input data specific to the solutions having equivalent effect concerned enabling to apply the calculation method referred to in Article 8.

**Article 44**

The Minister responsible for Energy and the Minister responsible for Construction may approve the proposal to take into account the construction project, or the heating or cooling system or network, after consulting a committee of experts set up for this purpose.
For the creation of district heating or cooling networks, the approval shall be valid for a maximum period of three years; for works to modify district heating or cooling networks, approval shall be valid for a maximum period of five years, renewable two years after the opinion of a committee of experts.

**Title VI: MISCELLANEOUS PROVISIONS (Articles 45 to 52)**

**Article 45**

If a building or part of a building is delivered without a heating system, it is assessed with a default heating system as provided for in the method mentioned in Article 8. If no default heating system is provided for in the method for the building in question, it may only meet the resource requirements defined in Title III and the requirements defined in Article R. 172-4(1°), (4°) and (5°) of the Construction and Housing Code and determined in accordance with the procedures specified in the Annex to the same Article.

**Article 46**

I. - The requirements laid down in the above-mentioned Orders of 26 October 2010 and 28 December 2012 are presumed to have been complied with if the requirements laid down in Article R. 172-4 of the Construction and Housing Code and determined in accordance with the procedures set out in the Annex to that same article, as well as the requirements laid down in this Order are satisfied.
II. - The requirements laid down in the Orders of 13 June 2008 and 3 May 2007 referred to above are presumed to have been complied with, when the requirements defined in Article R. 172-4(1°) to (3°) and (5°) of the Construction and Housing Code and determined in accordance with the procedures specified in the annex to that same article, as well as the requirements set out in Title III of this Order, are satisfied.

**Article 47**

The provisions of this Order cannot compromise the legislative and administrative measures in force with regards to health, sanitation, hygiene and safety.

**Article 48**

In Articles 11 and 12 of the Order of 26 October 2010 referred to above, the words “1 September 2021” are replaced by “31 December 2021”.

**Article 49**

I. - Article 10 of the Order of 26 October 2010 and Article 10 of the Order of 28 December 2012 referred to above are replaced by:

“Article 10. - By 1 January 2013 at the latest, the software used to carry out the calculations of Cep, Bbio and Tic must have been evaluated by the Minister responsible for construction and by the Minister responsible for energy, in accordance with the procedure laid down in Annex X. At the end of that assessment, an assessment report shall be issued. This evaluation should be reviewed every two years, on the anniversary date of the issuance of the evaluation report, or at least once as from 1 January 2018.”

II. - At the beginning of 5 of Annex X of the Order of 26 October 2010 referred to above, and at the beginning of 5 of Annex VI of the above-mentioned Order of 28 December 2012, the following sentence is added: “The following paragraph shall not apply to software that was subject to a review of the evaluation after 1 January 2018.”

**Article 50**

At the end of Article 49 of the Order of 26 October 2010 referred to above, and at the end of Article 39 of the Order of 28 December 2012 referred to above, the following paragraph shall be added:
“The approval of a construction project is not mandatory where a certificate of compliance with the objectives, within the meaning of Article L. 112-9 of the Construction and Housing Code and relating to a subject other than energy performance, provides for input data specific to the solutions having equivalent effect concerned enabling the calculation method Th-B-C-E 2012.”

**Article 51**

I. - The provisions of Articles 48 to 50 shall enter into force the day after the publication of this Order.
II. - The provisions of the other Articles shall enter into force on 1 January 2022.

**Article 52**

This Order shall be published in the Official Journal of the French Republic.

**Annex**

**Article**

ANNEXES

You can view the entire text with its images from the extract of the authenticated electronic Official Journal accessible at the bottom of the page

Dated 4 August 2021.

The Delegate Minister to the Minister of Ecological Transition, in charge of housing,
For the Minister and by delegation:
The Director of Housing, Urban Development and Landscapes,
F. Adam

The Minister for the Ecological Transition
For and on behalf of the Minister:
The Director of Housing, Urban Planning and Landscapes,
F. Adam
The Director General of Energy and Climate,
L. Michel