1. ------IND- 2020 0792 F-- EN- ------ 20210111 --- --- PROJET

|  |  |  |
| --- | --- | --- |
| FRENCH REPUBLIC | | |
|  |  |  |
| Ministry of the Ecological Transition | | |
|  | | |
| Housing | | |
|  | | |

**Order of [date]**

**on the energy and environmental performance requirements for residential, office or primary or secondary education buildings in metropolitan France**

 NOR:

*Groups concerned: building 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.*

*Purpose: to establish requirements on the energy and environmental characteristics and the energy and environmental performance of new buildings and building extensions in metropolitan France.*

*Entry into force: these requirements shall apply from 1 July 2021 to the construction of buildings or parts of buildings for residential, office or primary or secondary educational use, as well as to temporary constructions and extensions, depending on their surface area, used for the same purposes, including those that do not require a building permit or prior declaration.*

*Notice: the Order establishes the energy and environmental performance requirements that the above-mentioned buildings located in metropolitan France must meet; in particular, the following five performance 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 this consumption; (4) limitation of the impact of the building components on climate change; (5) limitation of summer discomfort in the building. It also sets the resource requirements applicable to these buildings.*

*References: the wording of the text, as amended by this Order, may be consulted on the Légifrance website (*[*www.legifrance.gouv.fr*](http://www.legifrance.gouv.fr/)*).*

The Minister for the Ecological Transition, the Minister Delegate for Housing, attached to the Minister for the Ecological Transition,

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), and in particular Notification No year/XXX/F;

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 Articles 3, 4 and 6 thereof;

Having regard to Directive 2018/2001/EU of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, in particular Article 15 thereof;

Having regard to the CCH [Construction and Housing Code], and in particular Book I, Title I, Section 4 and Articles L134-2 and L151-1 thereof;

Having regard to Articles R241-26 and R241-30 of the Energy Code;

Having regard to Article R571-38 of the Environmental Code;

Having regard to the Town Planning Code, in particular Articles L123-1-5, R112-4 to 112-17, R\*421-2 and R\*421-5 thereof;

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 on the thermal characteristics and energy performance requirements of new buildings and new parts of buildings other than those covered by Article 2 of the Decree of 26 October 2010 on the thermal characteristics and energy performance of constructions;

Having regard to the Order of 3 May 2007 on the thermal characteristics and energy performance of existing buildings, [which] lists all the work concerned and gives the associated requirements, 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 greater than 1 000 m², when they are the subject of major renovation work;

Having regard to the observations made during the public consultation carried out from XXX to XXX, pursuant to Article L120-1 of the Environmental Code;

Having regard to the opinion of the National Council for the Evaluation of Standards (CNEN), dated XXX;

Having regard to the opinion of the Higher Energy Council (CSE), dated XXX;

Having regard to the opinion of the Higher Council on Construction and Energy Efficiency (CSCEE), dated XXX;

Having regard to the referral letter from the Assembly of Guyana, dated XXX;

Having regard to the referral letter from the Assembly of Martinique, dated XXX;

Having regard to the referral letter from the Departmental Council of Guadeloupe, dated XXX;

Having regard to the referral letter from the Departmental Council of Reunion Island, dated XXX;

Having regard to the referral letter from the Regional Council of Guadeloupe, dated XXX;

Having regard to the referral letter from the Regional Council of Reunion Island, dated XXX;

Having regard to the referral letter from the Departmental Council of Mayotte, dated XXX;

**Hereby order:**

# TITLE I. General provisions

## CHAPTER I. - SCOPE

### Article 1. (Types of buildings subject to the Order)

The provisions of this Order shall apply, from 1 July 2021 onwards, to the construction of buildings and parts of buildings for residential, office and primary or secondary education use that are subject to Article R111-20 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 French overseas departments.

### Article 2. (Minority use assimilated to the main use)

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 ANNEX I. Unless otherwise stated, this shall be the surface area used throughout this Order.

## CHAPTER II. PARTIAL APPLICATION

### Article 3. (Partial application possibilities for temporary constructions and constructions with small surface areas)

For certain buildings or parts of buildings, only the requirements specified in CHAPTER VIII need be applied.

This provision concerns the following, in accordance with Articles R111-20-1 and R111-20-2 of the Construction and Housing Code:

* temporary constructions within the meaning of Article R\*421-5 of the Town Planning Code that are intended to be used for two years or less;
* buildings and building extensions with a reference area of less than 50 m²;
* extensions of individual or adjoined houses with a reference area of less than 100 m², provided that the heating system of the existing building is used for the operation of the extension, or that a room is located both in the existing building and in the extension;
* extensions for other uses of buildings with a reference area of less than 150 m² and less than 30% of the reference area of the existing rooms, provided that the heating system of the existing building is used for the operation of the extension, or that a room is located both in the existing building and in the extension.

## CHAPTER III. DEFINITIONS

### Article 4. (Definitions in Annexes)

The terms necessary for comprehension of this Order are defined in ANNEX I.

Eight climate zones (H1a, H1b, H1c, H2a, H2b, H2c, H2d and H3) are defined in ANNEX II to this Order.

Three building exposure classes for transport infrastructure noise (BR1, BR2 and BR3) are defined and determined according to the conditions of ANNEX III to this Order.

### Article 5. (General presentation of indicators)

Indicators, defined in Article 6 to Article 8, can be used to express the performance of new buildings or parts of new buildings in relation to three aspects:

* energy performance and the impact on climate change of the energy consumption of the building or part of a building;
* the impacts on climate change of the building or part of a building, and its components;
* summer comfort in the building or part of a building.

### Article 6. (Bbio indicators; Cep,nr; Cep; Icenergy)

1. The conventional bioclimatic energy needs of a building for heating, cooling and artificial lighting, is defined by a coefficient referred to as Bbio. It is a dimensionless value and is expressed as a number of points.
2. The consumption of non-renewable primary energy of the building for heating, cooling, domestic hot water production, lighting, mobility of building occupants, auxiliary heating, cooling, domestic hot water and ventilation, calculated for defined operating conditions, is defined by an indicator expressed in kWh/(m².year) of primary energy, denoted Cep,nr.
3. The primary energy consumption of the building for heating, cooling, domestic hot water production, lighting, mobility of building occupants, auxiliary heating, cooling, domestic hot water and ventilation, calculated for defined operating conditions, is defined by an indicator expressed in kWh/(m².year) of primary energy, denoted Cep. This indicator does not count renewable energies captured on the building plot for the use of the building, as primary energy consumption.
4. The impact on climate change associated with primary energy consumption, reflected by the Cep indicator defined in the previous paragraph, is defined by an indicator expressed in kg CO2 equivalent/m², denoted Icenergy.

The Bbio, Cep,nr, Cep and Icenergy indicators shall be calculated according to the methods defined in Article 17.

### Article 7. (The Iccomponents, Icbuilding indicators)

1. The impact on climate change associated with the building’s components, assessed over its entire life cycle, taking into account the storage of atmospheric carbon during the life of the building, is defined by an indicator expressed in kg CO2 equivalent/m² and denoted Iccomponents.

It corresponds to the impact on climate change linked to the production of building components, their transportation, installation and use, excluding the energy and water needs of the operational phase of the building; their maintenance, repair, replacement and end of life. The assessment of this impact shall take into account the costs and benefits associated with the recovery of components at the end of their life.

1. The impact on climate change associated with the building, assessed over its entire life cycle, taking into account the storage of atmospheric carbon during the life of the building, is defined by an indicator expressed in kg CO2 equivalent/m² and denoted Icbuilding. It corresponds to the sum of the impact on climate change of the components Iccomponents and energy consumption Icenergy, mentioned respectively in I. of this Article and in IV. of Article 6, as well as the impact on climate change of the construction site and water consumption and discharge during the operation of the building.
2. The storage of biogenic carbon during the life of the building is defined by an indicator expressed in kg C/m², and denoted StockC.
3. The proportion of default environmental data used in the building assessment is defined by an indicator expressed in % and denoted UDD. It corresponds to the share of the impact on climate change associated with this data in the calculation of the Iccomponents indicator.

These Iccomponents, Icbuilding, StockC and UDD indicators shall be calculated according to the methods defined in Article 17.

### Article 8. (DH indicator)

The number of degree-hours of summer discomfort, evaluated for each part of a thermally homogeneous building, is expressed in °C.h, and denoted DH. It expresses the duration and intensity of periods of discomfort in the building over a year, when the indoor temperature is believed to be causing discomfort.

This DH indicator is calculated according to the methods defined in Article 17.

## CHAPTER IV. ENERGY AND ENVIRONMENTAL PERFORMANCE REQUIREMENTS AND MINIMUM TECHNICAL CHARACTERISTICS

### Article 9. (Results requirements)

The buildings or parts of buildings subject to this Order must meet the following requirements, with the exception of the cases specified in CHAPTER II, which can alternatively meet the requirements specified in CHAPTER VIII:

1. the value of the building’s Bbio indicators shall be respectively less than or equal to the maximum Bbio\_max value, determined according to the methods specified in Article 12;
2. the values of the building’s Cep,nr, Cep, and Icenergy indicators shall be less than or equal to the maximum Cep,nr\_max, Cep\_max and Ic energy\_max values respectively, determined according to the methods specified in Article 13;
3. the value of the building’s Iccomponents indicators shall be respectively less than or equal to the maximum Iccomponents\_max value, determined according to the methods specified in Article 14;
4. For each thermally homogeneous part of a building, the value of the building’s DH indicator shall be less than or equal to the maximum value for DHmax, determined according to the methods specified in Article 15.
5. Performance concerning the Icbuilding, StockC and UDD indicators shall be valued in accordance with Article 17.
6. The performance of the indicators defined in the Order referred to in Article 17 can be calculated.

The provisions of this Article, except the provisions relating to the value of the Iccomponents indicator and the evaluation of the StockC indicator, apply only to parts of buildings with rooms which, in normal use, are intended to be heated to a temperature above 12 °C, or cooled to a temperature below 28 °C, and associated car parks. They apply in particular to all parts of buildings for residential use.

### Article 10. (Resource requirements)

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, with the exception of the cases specified in CHAPTER II, which can alternatively meet the requirements specified in CHAPTER VIII.

### Article 11. (Special case – Title IV)

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. EXPRESSION OF ENERGY AND ENVIRONMENTAL PERFORMANCE REQUIREMENTS

## CHAPTER V. ENERGY AND ENVIRONMENTAL PERFORMANCE REQUIREMENTS

### Article 12. (Bbio max)

The maximum Bbio\_max value of the building mentioned in Article 9 shall be determined as follows:

Bbiomax = Bbio\_maxavge × (1 + Mbgeo + Mbattics + Mbsurf + Mbnoise)

where:

Bbio\_maxavge: value of the Bbio\_max requirement for an average building, depending on the use of the building or part of the building;

Mbgeo: modulation coefficient according to the geographical location (geographical zone and altitude) of the building;

Mbattics: modulation coefficient according to the floor area of converted attics in the building;

Mbsurf: modulation coefficient according to the average surface area of the dwellings in the building or part of a building, or according to the surface area of the building or part of the building;

Mbnoise: modulation coefficient according to the noise exposure to transport infrastructure near the building.

The values of Bbio\_maxavge and of the modulation coefficients are defined in ANNEX IV.

### Article 13. (Cepmax, Cep,nr\_max and Icenergy\_max)

The building’s maximum Cep,nr\_max, Cep\_max and Icenergy\_max values, mentioned in Article 9 shall be determined as follows:

Cep,nr\_max = Cep,nr\_maxavge × (1 + Mcgeo + Mcattics + Mcsurf + Mccat)

Cep\_max = Cep,nr\_maxavge × (1 + Mcgeo + Mcattics + Mcsurf + Mccat)

Icenergy\_max = Icenergy\_maxavge × (1 Mcgeo + Mcattics + Mcsurf + Mccat)

where

Cep,nr\_maxavge, Cep\_maxavge, Icenergy\_maxavge: respective values of the Cep,nr\_max, Cep\_max and Icenergy\_max requirement for an average building, depending on the use of the building or part of the building;

Mcgeo: modulation coefficient according to the geographical location (geographical zone and altitude) of the building;

Mcattics: modulation coefficient according to the floor area of converted attics in the building;

Mcsurf: modulation coefficient according to the average surface area of the dwellings in the building or part of a building, or according to the surface area of the building or part of the building;

Mccat: modulation coefficient according to the external constraints category of the building.

The values of Cep,nr\_maxavge, Cep\_maxavge, Icenergy\_maxavge and of the modulation coefficients are defined in ANNEX IV.

### Article 14. (Iccomponents\_max)

The building’s maximum Iccomponents\_max value mentioned in Article 9 shall be determined as follows:

Iccomponents\_max = Iccomponents\_maxavge × (1 Miattics Misurf) Miinfra

where

Iccomponents\_maxavge: value of the Iccomponents\_max requirement for an average building, depending on the use of the building or part of the building;

Miattics: modulation coefficient according to the floor area of converted attics in the building;

Misurf: modulation coefficient according to the average surface area of the dwellings in the building or part of a building, or according to the surface area of the building or part of the building;

Miinfra: modulation coefficient according to the impact of the foundations and spaces in the basement of the building.

The values of Iccomponents\_maxavge and of the modulation coefficients are defined in ANNEX IV.

### Article 15. (DH\_max)

The maximum DH\_max value of the building mentioned in Article 9 shall be determined as follows:

DH\_max = DH\_maxcat

where

DH\_maxcat: value of the DH\_max requirement defined by categories of external constraints

The values for DH\_maxcat are defined in ANNEX IV.

### Article 16. (Requirements for multi-use buildings)

For buildings comprising several zones, defined by their use, the building’s Bbio\_max, Cep,nr\_max, Cep\_max, Icenergy\_max and Iccomponents\_max values shall be calculated in proportion to the reference surface areas of each zone, respectively using the Bbio\_max, Cep, nr\_max, Cep\_max, Icenergy\_max and Iccomponents\_max values of the different zones.

In the event that a part of a building represents a minor surface area of the building, Article 2 establishes the conditions under which this part of the building can be assimilated to the main use of the building.

## CHAPTER VI. ASSESSMENT OF COMPLIANCE WITH THE REQUIREMENTS

### Article 17. (Calculation method)

In accordance with Article R111-20-5(I) of the Construction and Housing Code, a calculation method determines the energy and environmental performance of the building, with particular reference to the indicators described in Article 6 to Article 8, based on the characteristics of the building and its components.

In particular:

* the indicators described in Article 6 and Article 8 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, Iccomponents and Icbuilding shall be calculated using the coefficients specified in Article 20 and taking the lifespan of the building to be 50 years, as per convention, with the exception of the case specified in Article 31;
* calculation of the Cep,nr indicator shall take into account the coefficients defined in I. of Article 18;
* calculation of the Cep indicator shall take into account the coefficients defined in II. of Article 18;
* calculation of the Icenergy indicator shall take into account the coefficients defined in Article 20.

The content of this calculation method is described in the Order of XXX approving the calculation method provided for in Article R111-20-5 of the Construction and Housing Code.

### Article 18. (PEF)

1. 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 Article 6 (II) of this Order and are taken by convention to be equal to:

|  |  |
| --- | --- |
| **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 |
| Other non-renewable energies | 1 |
| Renewable energy captured on the building or the plot | 0 |

The renewable energy or urban heating network recovery ratio (heat) shall be defined by Order for each existing infrastructure.

1. The transformation coefficients of the energy entering the building as primary energy shall be used when determining the Cep indicator described in Article 6 (III) and are taken by convention to be equal to:

|  |  |
| --- | --- |
| **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 (cooling) | 1 |
| Other non-renewable energies | 1 |
| Renewable energy captured on the building or the plot | 0 |

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 19. (Emission factors)

The transformation coefficients of the energy entering the building as quantities of greenhouse gases emitted shall be used when determining the Icenergy indicator described in Article 6 and are taken by convention to be equal to:

|  |  |
| --- | --- |
| 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 air conditioning | 0.064 |
| DHW electricity | 0.065 |
| Electricity for tertiary lighting | 0.064 |
| Electricity for home 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 networks (heating and cooling) is defined by Order for each existing infrastructure.

### Article 20. (Coefficients for the climate change impact calculation method)

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

| **Years** | Weighting coefficients for the climate change impact calculation | |
| --- | --- | --- |
| General case (*fco2 or f*) | Refrigerants (*frefrigerants*) |
| 0 | 1.000 | 1.000 |
| 1 | 0.992 | 0.999 |
| 2 | 0.984 | 0.998 |
| 3 | 0.976 | 0.997 |
| 4 | 0.969 | 0.996 |
| 5 | 0.961 | 0.995 |
| 6 | 0.953 | 0.994 |
| 7 | 0.945 | 0.993 |
| 8 | 0.937 | 0.992 |
| 9 | 0.929 | 0.991 |
| 10 | 0.921 | 0.990 |
| 11 | 0.913 | 0.988 |
| 12 | 0.905 | 0.987 |
| 13 | 0.897 | 0.986 |
| 14 | 0.889 | 0.984 |
| 15 | 0.880 | 0.983 |
| 16 | 0.872 | 0.981 |
| 17 | 0.864 | 0.980 |
| 18 | 0.856 | 0.978 |
| 19 | 0.848 | 0.976 |
| 20 | 0.840 | 0.975 |
| 21 | 0.831 | 0.973 |
| 22 | 0.823 | 0.971 |
| 23 | 0.815 | 0.969 |
| 24 | 0.806 | 0.967 |
| 25 | 0.798 | 0.965 |
| 26 | 0.790 | 0.963 |
| 27 | 0.781 | 0.961 |
| 28 | 0.773 | 0.958 |
| 29 | 0.764 | 0.956 |
| 30 | 0.756 | 0.954 |
| 31 | 0.747 | 0.951 |
| 32 | 0.739 | 0.948 |
| 33 | 0.730 | 0.946 |
| 34 | 0.721 | 0.943 |
| 35 | 0.713 | 0.940 |
| 36 | 0.704 | 0.937 |
| 37 | 0.695 | 0.934 |
| 38 | 0.686 | 0.930 |
| 39 | 0.678 | 0.927 |
| 40 | 0.669 | 0.923 |
| 41 | 0.660 | 0.920 |
| 42 | 0.651 | 0.916 |
| 43 | 0.642 | 0.912 |
| 44 | 0.633 | 0.908 |
| 45 | 0.624 | 0.904 |
| 46 | 0.615 | 0.899 |
| 47 | 0.606 | 0.895 |
| 48 | 0.597 | 0.890 |
| 49 | 0.587 | 0.885 |
| 50 | 0.578 | 0.880 |

### Article 21. (Software: assessment, reassessment)

The software enabling all or part of the calculation of the indicators described in Article 6 to Article 8 in order to verify compliance with this Order must adhere to the calculation method mentioned in Article 17.

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 L111-9-1-A [future L121-2] of the Construction and Housing Code.

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 and made an assessment request may be used for regulatory purposes for simulations carried out until 31 December 2021.

ANNEX V describes the procedures for self-checks, and the approval procedure for such software.

The approval shall be renewed, following a periodic review, under the following conditions:

* the duration of validity of the first inspection shall be two years;
* the validity 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 of the approval shall be extended by two 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 finding of at least three failures to integrate certain systems present in the calculation method in force at the time of said finding.

### Article 22. (Justification of geometric input data)

The values used as input data for the calculation specified in Article 17 and describing the geometric characteristics of the building must correspond to the construction plans if 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 23. (Justification of the quantities)

The values used as input data for the calculation specified in Article 17 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 if it has not been completed, or to the quantities actually used once the work has been completed.

### Article 24. **(Justification of the thermal characteristics of construction products and equipment)**

1. The values used as input data for the calculation specified in Article 17 and describing the thermal characteristics of the building components must correspond to the characteristics of the components envisaged for the construction of the building if 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;
* 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. 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 applicable.

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 17, with the exception of the default useful thermal conductivity value for bio-based insulation as defined in ANNEX XII to this Order.

1. 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 17.

### Article 25. (Justification of the environmental impact of construction or decoration products and equipment)

1. The values used as input data for the calculation of the Iccomponents 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 according to rules set by decree; or, in the absence of such data, through default environmental data made available by the Minister responsible for Construction.

If, 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 qualified ‘*vide*’ (empty) shall be associated with it; in addition, a request to create a default environmental datum corresponding to the component shall be submitted via one of the websites indicated on the website of the Ministry responsible for Construction.

1. 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 17.
2. 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.

### Article 26. (Justification of the air permeability and network tightness values)

1. 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 17;

In the case of permeability measurement by sampling dwellings, the measurement values obtained shall be increased by 0.2 m³/(h.m²).

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) in order to verify compliance with the requirements of this Article.

These two increases shall be cumulative.

1. 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 17.

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 and Housing, independent of the applicant and of the organisations involved in the execution, monitoring of works or project management of the buildings concerned.

## CHAPTER VII. JUSTIFYING THE APPLICATION OF REQUIREMENTS

### Article 27. (Performance of an RSEE and transmission of the file)

The building owner shall establish a standardised summary of the energy and environmental study (RSEE), in computer version, from software that meets the requirements of Article 21, at the latest upon completion of the work.

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 drawn up.

This data shall be preserved by the building owner in accordance with Article R111-20-7 of the Construction and Housing Code.

# TITLE III. THERMAL CHARACTERISTICS AND RESOUCE REQUIREMENTS

## CHAPTER VIII. REQUIREMENTS APPLICABLE TO BUILDINGS COVERED BY CHAPTER II CHAPTER II. PARTIAL APPLICATION

### Article 28. (Temporary constructions)

In accordance with R111-20-1 of the Construction and Housing Code, for temporary buildings or parts of buildings planned for an installation period of less than two years, only the alternative requirements specified in Article 30 and Article 31 need be applied.

### Article 29. (Constructions/extensions with small surface areas)

In accordance with Article R111-20-2 of the Construction and Housing Code:

1. For buildings and building extensions with a reference area of less than 50 m², only the alternative requirements specified in Article 30 and CHAPTER X to CHAPTER XVI, with the exception of Article 40 and Article 41 need be applied.
2. For the extensions of individual or adjoined houses specified in Article 3, only the following requirements need be applied:

* Article 9 (I);
* CHAPTER IX to CHAPTER XVI.

1. For the extensions of other uses of buildings specified in Article 3 only the following requirements need be applied:

* Article 30;
* CHAPTER IX to CHAPTER XVI.

For the extensions referred to in I. to III. of this Article, the following requirements shall not apply:

* if at least one room is located both in the existing part and in the new part of the building, Article 32 shall not apply;
* In the case of additional storeys, Article 35 shall not apply;
* If the existing building’s heating system is used for operation of the extension, Article 40, Article 41, and Article 44 shall not apply.

Building extensions that are not covered by I. to III. of this Article shall be subject to the general rules of this Order.

When the construction project includes several extensions of the same building, the area to be considered when applying this Article shall be the sum of the reference areas of the extensions of the building.

### Article 30. (Thermal regulation element requirements)

This Article only applies to buildings applying only the requirements set out in Article 28, or in Article 29 (I) or (III).

The buildings or parts of buildings concerned by this Chapter shall be subject to the following requirements of the aforementioned Order of 3 May 2007, in the version in force on 1 January 2023, as of the entry into force of this Order:

* Article 3, disregarding the ‘possible cases for adaptation’ column of the table, and Article 4, of Chapter I: Building Shell – Opaque Partitions;
* Articles 8 to 11 and Article 13 of Chapter II: Building Shell – Glazed Partitions;
* Chapters III to VII
* Articles 47 to 50 of Chapter VIII: Renewable Energies.

### Article 31. (LCA study requirement - temporary constructions)

This Article only applies to buildings applying only the requirements set out in Article 28.

The Iccomponents and StockC indicators, defined in Article 7, shall be evaluated according to the methods defined in Article 17, with the exception of the reference study period, which shall be taken to be equal to two years.

## CHAPTER IX. VERIFICATION OF PERFORMANCE AFTER WORK

### Article 32. (Airtightness requirement)

For individual or adjoined houses and collective residential buildings, the air permeability of the building envelope under 4 Pa, Q4Pa-surf, shall be less than or equal to:

0.60 m³/(h.m²) for loss-proof walls, excluding the lower floors, in an individual or adjoined house.

1.00 m³/(h.m²) for loss-proof walls, excluding the lower floors, in a collective residential building.

### Article 33. (Checking ventilation systems)

In buildings and parts of buildings for residential use, the correct operation of all building ventilation systems shall be checked by measurement.

This check shall be performed by a person recognised as competent by the Minister responsible for Construction, in accordance with the provisions laid down in ANNEX VIII.

## CHAPTER X. THERMAL INSULATION

### Article 34. (Insulation of partitions between rooms with continuous and discontinuous occupancy)

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 17, that does not exceed an average value of 0.36 W/(m².K). The surface area considered here is the surface area of the aforementioned partitions.

### Article 34. (Thermal bridges)

1. The buildings shall be designed and constructed in such a way as to avoid, under normal occupancy conditions, any situation permitting the localised or distributed appearance of condensation on the surface or inside the walls, unless this is only transient. Condensation is considered transient if it does not generate any risk of physical or microbiological degradation of the materials, such as insulation compaction or the development of mould.
2. Buildings with 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, shall be presumed to comply with the requirement in I.
3. As a technical solution, buildings simultaneously meeting the following requirements shall be presumed to comply with the requirement of I.:
   * 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 17.

* + The average linear heat transmission coefficient of the connections between the middle floors and external walls or walls giving onto unheated rooms, Ψ9, shall not exceed 0.6 W/(linear m.K).

## CHAPTER XI. ACCESS TO NATURAL LIGHTING

### Article 35. (1/6 glazed partitions in MI/LC)

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.

1. Each dwelling shall have all of the following characteristics:
   * a lighting level of at least 300 lx in 50% of the living areas 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 for more than half of the daylight hours of the year;
   * in at least one living area, 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.
2. The total area of the openings, measured in a table, is greater than or equal to one-sixth 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 dwellings 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 sites and sectors designated under Article L123-1-5(III)(2) of the Town Planning Code.

## CHAPTER XII. SUMMER COMFORT

### Article 36. (Sun protection)

The openings shall have a solar factor less than or equal to the solar factor defined in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| Zones H2a | All altitudes |  |  |
| Zones 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 |

### Article 37. (30% opening)

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 XIII. ENERGY CONSUMPTION

### Article 38. (Limitation of automatic triggering of energy consumption)

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; in particular, it enables energy consumption controlled by the automation to be stopped during a period of unoccupied activity.

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

### Article 39. (Measurement or estimation of energy consumption - Residential building or parts thereof)

Residential buildings or parts thereof shall be equipped with systems enabling the energy consumption of each dwelling 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;
* other.

This breakdown can be based either on measured data or on estimated data based on predefined settings.

However, in the case of a building owner who is also the future 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 40. (Measurement or estimation of energy consumption - Non-residential building or parts thereof)

Non-residential buildings or parts thereof shall be fitted with systems enabling the 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 XIV. HEATING AND COOLING

### Article 41. (Manual shutdown and automatic adjustment of heating)

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 R241-26 of the Energy Code.

### Article 42. (Manual shutdown and automatic programming of heating if discontinuously occupied)

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 stoppage;
* automatic switching 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. One device may serve a maximum surface area of 5 000 m2.

### Article 43. (Column balancing and pump shutdown: heating and cooling)

Collective networks distributing heating or cooling water must be fitted with a balancing unit at the foot of each column.

The heating and cooling unit pumps shall be fitted with devices enabling them to be stopped.

### Article 44. (Manual shutdown and automatic adjustment of cooling)

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 the first paragraph 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 them to be programmed;
* 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 the first paragraph 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 R241-30 of the Energy Code.

### Article 45. (Automatic closing of access doors to cooled zones)

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

### Article 46. (Prohibition on heating and then cooling air)

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 XV. LIGHTING

### Article 47. (Automatic switching off and dimming of lighting in communal areas and car parks)

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 communal indoor areas;

- three levels for vertical walkways;

- one level and at most an area of 500 m2 for parking spaces.

### Article 48. (Lighting: manual or automatic device for switching on and off)

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

### Article 49. (Lighting: device for switching the room lighting on and off, controlled by management staff)

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 50. (Separate automatic control of lighting points placed less than 5 m from openings)

In non-residential buildings or parts thereof, within a given room, the artificial lighting points, which should be placed at least 5 m from an opening, must be controlled separately from other lighting points as soon as the total power installed in each of these points is greater than 200 W.

## CHAPTER XVI. VENTILATION

### Article 51. (Ventilation by independent systems if the occupation or use of the rooms is clearly different)

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

### Article 52. (Timer operation of air flows if it is possible to change the flows manually)

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 timer operated.

# TITLE IV. APPROVAL OF SIMPLIFIED APPLICATION METHODS FOR INDIVIDUAL HOUSES

### Article 53. (Definition of the simplified application method; scope)

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, approved by the Minister responsible for Construction and Housing and by the Minister responsible for Energy. It constitutes a technical solution within the meaning of Article [L112-4](II) of the Construction and Housing Code in accordance with the provisions of this Order, for all buildings in this family.

The simplified application method can only be used in its integral form.

### Article 54. (Application for approval)

Applications for approval for simplified application methods 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.

### Article 55. (Approval conditions)

The Minister responsible for Energy and the Minister responsible for Construction may approve the simplified application method for a fixed period after consulting a committee of experts set up for this purpose.

The committee shall issue an opinion recorded in a statement after examining the proposed simplified application method and taking into account in particular the following elements:

* the definition of the individual houses concerned;
* the definition and relevance of the sample used to verify the reliability of the simplified application method;
* a description of the operation of the simplified application method;
* compliance with the characteristics indicated in Title III;
* the variation between the values obtained with the simplified application method and those obtained using the calculation method established in Article 17 on a representative sample of the scope, for the indicators set in Article 6 to Article 8 and for the performance requirements set out in CHAPTER V.

# TITLE V. SPECIAL CASES

### Article 56. (Scope, request to take specificities into account)

In the event that the calculation method mentioned in Article 17 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 17 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 or its renewable energy or recovery ratio, as provided for in Article 18 and Article 19.

Applications for approval shall be accompanied by a study file composed as indicated in ANNEX IX, which shall in particular set forth the way in which the calculation method mentioned in Article 17 does not take into account the specifics of the construction project or system, as applicable.

### Article 57. (Approval conditions)

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 district heating or cooling networks, the approval shall be valid for a maximum period of three years.

# TITLE VI. MISCELLANEOUS PROVISIONS

### Article 58. (Building delivered without a heating system)

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 17. 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 12, Article 14 and Article 15 of this Order.

### Article 59. (Compliance with RE2020 equals compliance with RT2012 and RTex)

1. The requirements defined in the aforementioned Orders of 26 October 2010 and 28 December 2012 shall be deemed met if the requirements defined by this Order are fulfilled.
2. The requirements defined in the above-mentioned Orders of 13 June 2008 and 3 May 2007 shall be deemed met if the requirements defined by this Order are fulfilled.

### Article 60. (Prevalence of the health, sanitation, hygiene and safety rules in force)

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

### Article 61. (JORF publication)

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

The Minister for the Ecological Transition,

Barbara Pompili

The Minister Delegate for Housing, attached to the Minister for the Ecological Transition,

responsible for Housing

Emmanuelle Wargon

#### ANNEX I. (DEFINITIONS)

Altitude: the altitude of a building corresponds to the altitude of the threshold of the main entrance door of the building.

Building: a covered immovable property intended to accommodate occupants, an activity or any other human use.

Part of a residential building: within the meaning of this Order, a part of a residential building is understood to mean a part of a building comprising dwellings, as well as possibly communal areas.

Tourist residences with a bedroom, a kitchen and toilets shall be subject to the rules applicable to residential buildings established in this Order.

Collective residential building, also called ‘collective housing’: a building that is principally residential and contains at least two partially or totally superimposed dwellings.

Adjoined buildings: two buildings are considered adjoined if they are side by side and connected by adjoining walls, the contact surface area of which is at least 15 m² for houses and 50 m² for other buildings. For the purposes of this Regulation, adjoined buildings are considered as a single building, regardless of the use to be considered for each part of the building.

Component: the term ‘component’ should be understood within the meaning of Article R111-20-3 of the Construction and Housing Code.

Major deviation from the calculation method: a deviation obtained, for at least one of the regulatory indicators calculated using the calculation method mentioned in Article 17 that gives a value at least 2% more favourable than the value obtained from the same descriptive data, after correct application of this calculation method.

Room: a room is an area totally separated from the outside or from other areas by horizontal and vertical walls, fixed or mobile.

Crossing room: a room is said to be ‘crossing’, in the sense of the ‘summer comfort’ in the calculation method mentioned in Article 17, if, for each orientation (north vertical, east vertical, south vertical, west vertical, horizontal) the area of the openings is less than 75% of the total area of the openings in the room.

Individual house: an individual house is a building for residential use that is not a collective residential building.

Thermally homogeneous part of a building: a set of rooms whose indoor temperature varies in a similar manner. In particular, rooms connected to different cooling systems are not considered thermally homogeneous. Crossing rooms and non-crossing rooms are not considered thermally homogeneous.

Temporary occupation of a room: A room in temporary occupation is one that, due to its purpose, does not involve stays of more than half an hour for the occupant.

For example, this is the case for walkways, bathrooms and shower rooms, and lavatories. However, a kitchen or hall that includes a workstation shall not be considered to be a room in temporary occupation.

Orientations:

A north orientation is any orientation between northeast, north, and northwest, including northeast and northwest.

An east orientation is any orientation between northeast, east, and southeast, not including northeast and southeast.

A south orientation is any orientation between southeast, south, and southwest, including southeast and southwest.

A west orientation is any orientation between southwest, west, and northwest, not including southwest and northwest.

Vertical or horizontal partition: a partition is said to be vertical if the angle of this partition with the horizontal plane is equal to or greater than 60 degrees; it is said to be horizontal if this angle is less than 60 degrees.

Lower floor: a lower floor is a horizontal partition, of which only the upper surface faces a heated room.

Middle floor: a middle floor is a horizontal partition of which both the lower and upper surfaces face a heated room.

District heating or cooling network: a network permitting the distribution of heat or cold to several buildings located on different plots. In the case of concomitant construction of buildings and a heating network supplying these buildings, this heating network is only considered to be a district heating network, within the meaning of this Order, if the owner(s) of the buildings constructed and supplied by the network cannot have access to the technical characteristics of the buildings and the network constructed. Where the building owner contracting the construction of buildings belongs to the same entity as that contracting the heating network supplying them, the network is not considered to be a district heating network within the meaning of this Order.

Reference area of a building or part of a building:

* for a residential building or part thereof, the living area of the building or part of a building;
* for other cases: the useful area of the building or part of the building

Living area of a building or part of a building: this area is defined for any residential building or part thereof.

The living area of a dwelling within the meaning of this Order shall be that defined in Article R\*111-2 of the Construction and Housing Code, including the area of heated verandas excluded by the third paragraph of this same Article. The living area of a building or part of a building is the sum of the living areas of the dwellings constituting it.

Useful area of a building or part of a building:

This area is defined for any non-residential building or part of a building.

The useful area of a building or part of a building, within the meaning of this Order, is the floor area of rooms subject to the thermal regulations, after deducting:

* surface areas occupied by walls, including insulation;
* fixed partition walls provided for in the plans;
* columns;
* steps and stairwells;
* lift shafts;
* door and window reveals;
* parts of rooms with a height of less than 1.80 m;
* parts of the lower level occupied by the footprint of a staircase or access ramp, or the parts of the lower level in which the lift shafts, goods lifts and smoke flues or ventilation ducts stop;
* technical rooms exclusively designated for the general operation of the building and which are in temporary occupation.

System: component or set of components making it possible to fulfil one or more functions of the building. These functions include in particular the production of heat, cold or domestic hot water, the regulation of such production and insulation of the building against external climatic conditions.

Air conditioning system: an air conditioning system is cold production equipment associated with cold emitters, intended to maintain comfort levels for the building occupants and with which it is possible to achieve a set temperature of 26 °C under summer conditions.

Use of a part of a building: this is the function of the part of the building or of the specific rooms comprising it. In the case of an extension, in the absence of specific rooms, the use of this extension shall be that of the existing building.

Main use of a building: the use for which the largest floor area of the building is designated.

Building zone: a building zone, sometimes referred to as a ‘zone’, is a part of a building comprising a single use.

#### ANNEX II. (DEFINITION OF GEOGRAPHICAL ZONES)

The eight climatic zones (H1a, H1b, H1c, H2a, H2b, H2c, H2d and H3) are defined according to the table below.

| **DEPARTMENT** | **Climatic zone** |
| --- | --- |
| 01 – Ain | H1c |
| 02 – Aisne | H1a |
| 03 – Allier | H1c |
| 04 – Alpes-de-Haute-Provence | H2d |
| 05 – Hautes-Alpes | H1c |
| 06 – Alpes-Maritimes | H3 |
| 07 – Ardèche | H2d |
| 08 – Ardennes | H1b |
| 09 – Ariège | H2c |
| 10 – Aube | H1b |
| 11 – Aude | H3 |
| 12 – Aveyron | H2c |
| 13 – Bouches-du-Rhône | H3 |
| 14 – Calvados | H1a |
| 15 – Cantal | H1c |
| 16 – Charente | H2b |
| 17 – Charente-Maritime | H2b |
| 18 – Cher | H2b |
| 19 – Corrèze | H1c |
| 2A – Corse-du-Sud | H3 |
| 2B – Haute-Corse | H3 |
| 21 – Côtes-d’Or | H1c |
| 22 – Côtes-d’Armor | H2a |
| 23 – Creuse | H1c |
| 24 – Dordogne | H2c |
| 25 – Doubs | H1c |
| 26 – Drôme | H2d |
| 27 – Eure | H1a |
| 28 – Eure-et-Loire | H1a |
| 29 – Finistère | H2a |
| 30 – Gard | H3 |
| 31 – Haute-Garonne | H2c |
| 32 – Gers | H2c |
| 33 – Gironde | H2c |
| 34 – Hérault | H3 |
| 35 - Ille-et-Vilaine | H2a |
| 36 – Indre | H2b |
| 37 – Indre-et-Loire | H2b |
| 38 – Isère | H1c |
| 39 – Jura | H1c |
| 40 – Landes | H2c |
| 41 – Loir-et-Cher | H2b |
| 42 – Loire | H1c |
| 43 – Haute-Loire | H1c |
| 44 – Loire-Atlantique | H2b |
| 45 – Loiret | H1b |
| 46 – Lot | H2c |
| 47 – Lot-et-Garonne | H2c |
| 48 – Lozère | H2d |
| 49 – Maine-et-Loire | H2b |
| 50 – Manche | H2a |
| 51 – Marne | H1b |
| 52 – Haute-Marne | H1b |
| 53 – Mayenne | H2b |
| 54 – Meurthe-et-Moselle | H1b |
| 55 – Meuse | H1b |
| 56 – Morbihan | H2a |
| 57 – Moselle | H1b |
| 58 – Nièvre | H1b |
| 59 – Nord | H1a |
| 60 – Oise | H1a |
| 61 – Orne | H1a |
| 62 – Pas-de-Calais | H1a |
| 63 – Puy-de Dôme | H1c |
| 64 – Pyrénées-Atlantiques | H2c |
| 65 – Hautes-Pyrénées | H2c |
| 66 – Pyrénées-Orientales | H3 |
| 67 – Bas-Rhin | H1b |
| 68 – Haut-Rhin | H1b |
| 69 – Rhône | H1c |
| 70 – Haute-Saône | H1b |
| 71 – Saône-et-Loire | H1c |
| 72 – Sarthe | H2b |
| 73 – Savoie | H1c |
| 74 – Haute-Savoie | H1c |
| 75 – Paris | H1a |
| 76 – Seine-Maritime | H1a |
| 77 – Seine-et-Marne | H1a |
| 78 – Yvelines | H1a |
| 79 – Deux-Sèvres | H2b |
| 80 – Somme | H1a |
| 81 – Tarn | H2c |
| 82 – Tarn-et-Garonne | H2c |
| 83 – Var | H3 |
| 84 – Vaucluse | H2d |
| 85 – Vendée | H2b |
| 86 – Vienne | H2b |
| 87 – Haute-Vienne | H1c |
| 88 – Vosges | H1b |
| 89 – Yonne | H1b |
| 90 – Territoire de Belfort | H1b |
| 91 – Essonne | H1a |
| 92 – Hauts-de-Seine | H1a |
| 93 – Seine-Saint-Denis | H1a |
| 94 – Val-de-Marne | H1a |
| 95 – Val-d’Oise | H1a |

#### ANNEX III. (DEFINITION AND DETERMINATION OF TRANSPORT INFRASTRUCTURE NOISE EXPOSURE CLASSES FOR OPENINGS)

Noise exposure classes (BR1, BR2, BR3) are determined as follows.

- The category classification of land transport infrastructure in the vicinity of the construction. This classification of roads is given by prefectural order in accordance with Article R571-38 of the Environmental Code.

- The location of the opening in relation to this infrastructure.

- The location of the building in relation to zones A, B, C or D of the noise exposure plan (PEB) of the nearest airport. The noise exposure plan shall be approved by prefectural Order issued pursuant to Articles R112-4 to R112-17 of the Town Planning Code.

The noise exposure classes shall be determined opening by opening according to the following methods and conventions.

##### PART I: Definition of ‘highly protective’ and ‘slightly protective’ obstacles to noise exposure

An obstacle to exposure masks the diffusion of noise (building, acoustic screen, mounds of earth, etc.). An obstacle is ‘highly protective’ if it is located at an altitude greater than or equal to the exposed floor in question. An obstacle is ‘slightly protective’ if it is located at an altitude lower than the floor in question while visually masking the infrastructure.

When the obstacle is more than 250 m from the opening in question and in order to take into account the curve effect of the noise diffusion (nocturnal thermal inversion), 10 m shall be added to the minimum altitude in order to account for the obstacle for residential rooms.

##### PART II: Definition of the view of an infrastructure from an opening

The view of the infrastructure from an opening is defined as follows:

* ‘Direct view’ means a plane view of the infrastructure of more than 90 degrees after deducting any highly protective obstacles to exposure. This is the case for the lateral faces of an unobstructed building.
* ‘Partial view’ means a horizontal view of the infrastructure of less than 90 degrees after deducting any highly protective obstacles to exposure.
* There is an ‘obstructed view’ when the infrastructure cannot be seen from the opening, taking into account any obstacles to exposure. These obstacles may be ‘highly protective’ or ‘slightly protective’ within the meaning of the definitions given for ‘highly protective’ and ‘slightly protective’ obstacles to exposure.
* ‘Rear view’ means the rear façade of the building in relation to the infrastructure.

##### PART III: Determining the noise exposure class of a building opening

###### Configuration 1:

According to the category of the infrastructure in the vicinity of the building or part of a building, and to the extent that this building or part of a building is situated at a distance greater than the maximum distance for taking into account the transport infrastructure indicated below, all of its openings shall be classed BR1 for noise exposure.

|  |  |  |
| --- | --- | --- |
|  | BUILDING LOCATION FOR WHICH OPENINGS ARE CLASSED BR1 | |
| Category of terrestrial transport facilities | 1 | Distance greater than 700 m |
| 2 | Distance greater than 500 m |
| 3 | Distance greater than 250 m |
| 4 | Distance greater than 100 m |
| 5 | Distance greater than 30 m |
| Aerodrome |  | Outside the noise exposure plan zone |

###### Configuration 2:

In other cases, the exposure class of the opening is determined in the tables provided below, firstly by the zones defined in the noise exposure plan of the aerodrome for air transport noise, and secondly from the infrastructure category, the distance from the infrastructure to the façade and the angle at which it is seen from the opening.

In the case of several infrastructures, the most unfavourable noise exposure class shall apply.

In the event of exposure to aerodrome noise:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | LOCATION OF THE BUILDING WITHIN THE EXPOSURE PLAN for aerodrome noise | | | | |
|  | Zone A | Zone B | Zone C | Zone D | Outside zone |
| All views | BR3 | BR3 | BR3 | BR2 | BR1 |

In the event of exposure to noise from land transport infrastructure:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| view of the infrastructure from the opening  distance to the infrastructure | direct view | partial view | view obscured by obstacles | | rear view |
| slightly protective | highly protective |
| Category 1 infrastructure | | | | | |
| 0-65 m | BR3 | BR3 | BR3 | BR3 | BR3 |
| 65-125 m | BR3 | BR3 | BR3 | BR3 | BR2 |
| 125-250 m | BR3 | BR3 | BR3 | BR2 | BR2 |
| 250-400 m | BR3 | BR2 | BR2 | BR2 | BR1 |
| 400-550 m | BR2 | BR2 | BR2 | BR1 | BR1 |
| 550-700 m | BR2 | BR1 | BR1 | BR1 | BR1 |
| >700 m | BR1 | BR1 | BR1 | BR1 | BR1 |
| Category 2 infrastructure | | | | | |
| 0-30 m | BR3 | BR3 | BR3 | BR3 | BR3 |
| 30-65 m | BR3 | BR3 | BR3 | BR3 | BR2 |
| 65-125 m | BR3 | BR3 | BR3 | BR2 | BR2 |
| 125-250 m | BR3 | BR2 | BR2 | BR2 | BR1 |
| 250-370 m | BR2 | BR2 | BR2 | BR1 | BR1 |
| 370-500 m | BR2 | BR1 | BR1 | BR1 | BR1 |
| >500 m | BR1 | BR1 | BR1 | BR1 | BR1 |
| Category 3 infrastructure | | | | | |
| 0-25 m | BR3 | BR3 | BR3 | BR3 | BR2 |
| 25-50 m | BR3 | BR3 | BR3 | BR2 | BR2 |
| 50-100 m | BR3 | BR2 | BR2 | BR2 | BR1 |
| 100-160 m | BR2 | BR2 | BR2 | BR1 | BR1 |
| 160-250 m | BR2 | BR1 | BR1 | BR1 | BR1 |
| >250 m | BR1 | BR1 | BR1 | BR1 | BR1 |
| Category 4 infrastructure | | | | | |
| 0-15 m | BR3 | BR3 | BR3 | BR2 | BR2 |
| 15-30 m | BR3 | BR2 | BR2 | BR2 | BR1 |
| 30-60 m | BR2 | BR2 | BR2 | BR1 | BR1 |
| 60-100 m | BR2 | BR1 | BR1 | BR1 | BR1 |
| >100 m | BR1 | BR1 | BR1 | BR1 | BR1 |
| Category 5 infrastructure | | | | | |
| 0-10 m | BR3 | BR2 | BR2 | BR2 | BR1 |
| 10-20 m | BR2 | BR2 | BR2 | BR1 | BR1 |
| 20-30 m | BR2 | BR1 | BR1 | BR1 | BR1 |
| >30 m | BR1 | BR1 | BR1 | BR1 | BR1 |

In the absence of a detailed classification, the BR class of a façade opening shall be the highest class of the openings in this façade.

##### PART IV: Defining the noise exposure class of part of a building

A part of a building or a zone is said to be in noise exposure class BR3 if all of the openings of the rooms constituting it are exposed to BR3 noise.

A part of a building or an area is said to be in noise exposure class BR2 if all the openings of the rooms constituting it are exposed to BR2 or BR3 noise and if at least one of the openings of the rooms constituting it is exposed to BR2 noise.

A part of a building is said to be in noise exposure class BR1 in all other cases.

#### ANNEX IV. (VALUES OF THE ASSOCIATED REQUIREMENTS AND MODULATION COEFFICIENTS)

##### PART I: General considerations

###### Average surface area of dwellings

The average surface area of the dwellings in the building or part of the building, denoted *Savglgt,* is calculated as follows: , where NL represents the number of dwellings in the building or part of the building.

|  |  |
| --- | --- |
| *Savglgt* | *Sref* |
| *NL* |

###### Category of external constraints

The category of external constraints of a thermally homogeneous part of a building and of a zone is defined by the category of external constraints of the rooms constituting it.

A thermally homogeneous part of a building or zone shall be in category 2 if all of the rooms other than those in temporary occupation are in category 2. It shall be classed as category 1 in all other cases.

A room is in category 2 if it is fitted with an air conditioning system and if one of the following conditions is met:

- simultaneously: the room is situated in a residential area, its openings are exposed to BR2 or BR3 noise and the building is constructed in climate zone H2d or H3 at an altitude of less than 400 m.

In all other cases, a room shall be classed as category 1.

##### PART II: Values of the coefficients described in Article 12 (Bbio max)

###### Values of Bbio\_maxavge

The coefficient Bbio\_maxavge shall take the following values, depending on the use of the part of the building:

|  |  |
| --- | --- |
| Use of the part of the building | Value of Bbio\_maxavge |
| Individual or adjoined houses | 63 points |
| Collective housing | 65 points |
| Offices |  |
| Education |  |

###### Values of the modulation coefficients for the Bbio\_max requirement

* 1. Individual or adjoined houses

The **Mbgeo** modulation coefficient for Bbio\_max shall take the following values according to the geographical location of the building (climatic zone and altitude):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  Altitude | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| < 400 m | 0.15 | 0.2 | 0.15 | -0.05 | 0 | -0.15 | 0.05 | -0.1 |
| 400 m-800 m | 0.4 | 0.5 | 0.45 | 0.15 | 0.3 | 0.05 | 0.1 | -0.05 |
| > 800 m | 0.75 | 0.85 | 0.75 | 0.55 | 0.65 | 0.35 | 0.25 | 0.1 |

The **Mbattics** modulation coefficient for Bbio\_max shall be calculated using the following formula according to the presence of converted attics in the building or part of the building:

Where Sattics represents the floor area of converted attics with a ceiling height of less than 1.8 metres.

The **Mbsurf** modulation coefficient for Bbio\_max shall take the following values according to the average surface area of the housing units in the building or part of the building *Savglgt*:

|  |  |
| --- | --- |
| Average surface area of the dwellings in the building | Mbsurf |
| *Savglgt ≤ 100 m2* | |  | | --- | | 31.5 – 0.35 \* *Savglgt* | | *Bbio\_maxavge* | |
| *100 m2 < Savglgt ≤ 150 m2* | |  | | --- | | 11.5 – 0.15 \* *Savglgt* | | *Bbio\_maxavge* | |
| *Savglgt > 150 m2* | |  | | --- | | –11 | | *Bbio\_maxavge* | |

The **Mbnoise** modulation coefficient for Bbio\_max shall take the following values according to the exposure to noise of the building or part of the building:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  Noise zone | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| Br1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Br2, Br3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0.1 |

* 1. Collective housing:

The **Mbgeo** modulation coefficient for Bbio\_max shall take the following values according to the geographical location of the building (climatic zone and altitude):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  Altitude | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| < 400 m | 0.15 | 0.20 | 0.10 | -0.05 | 0 | -0.15 | -0.05 | -0.15 |
| 400 m-800 m | 0.4 | 0.5 | 0.45 | 0.2 | 0.3 | 0.1 | 0.2 | -0.05 |
| > 800 m | 0.8 | 0.85 | 0.75 | 0.6 | 0.65 | 0.4 | 0.4 | 0.15 |

The **Mbattics** modulation coefficient for Bbio\_max shall be calculated using the following formula according to the presence of converted attics in the building or part of the building:

|  |  |
| --- | --- |
| *Mbattics =* | *(0.4 × Sattics)* |
| *Sref* |

Where Sattics represents the floor area of converted attics with a ceiling height of less than 1.8 metres.

The **Mbsurf** modulation coefficient for Bbio\_max shall take the following values according to the average surface area of the housing units in the building or part of the building *Savglgt*:

|  |  |
| --- | --- |
| Average surface area of the dwellings in the building | Mbsurf |
| *Savglgt ≤ 40 m2* | |  | | --- | | –14 + 0.3 \* *Savglgt* | | *Bbio\_maxavge* | |
| *40 m2 < Savglgt ≤ 80 m2* | |  | | --- | | –6 + 0.1 \* *Savglgt* | | *Bbio\_maxavge* | |
| *80 m2 < Savglgt ≤ 120 m2* | |  | | --- | | 2 + 0.05 \* *Savglgt* | | *Bbio\_maxavge* | |
| *Savglgt > 120 m2* | |  | | --- | | 4 | | *Bbio\_maxavge* | |

The **Mbnoise** modulation coefficient for Bbio\_max shall take the following values according to the exposure to noise of the building or part of the building:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  Noise zone | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| Br1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Br2, Br3 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0.2 | 0.2 |

##### PART III: Values of the coefficients described in Article 13 (Cepmax, Cep,nr\_max and Icenergy\_max)

###### Values of Cep,nr\_maxavge, Cep\_maxavge and Icenergy \_maxavge

The Cep,nr\_maxavge, Cep\_maxavge and Icenergy\_maxavge coefficients shall take the following values, depending on the use of the part of the building:

|  |  |  |  |
| --- | --- | --- | --- |
| Use of the part of the building | Value of Cep,nr\_maxavge | Value of Cep\_maxavge | Value of Icenergy\_maxavge |
| Individual or adjoined houses | 55 kWhep/(m².year) | 75 kWhep/(m².year) | 160 kgCO2/m² |
| Collective housing | 70 kWhep/(m².year) | 85 kWhep/(m².year) | 560 kgCO2/m² |
| Offices |  |  |  |
| Education |  |  |  |

As of 1 January 2024, the value of Icenergy\_maxavge for collective housing becomes equal to 240 kgCO2/m².

###### Values of the modulation coefficients for the requirements Cep,nr\_max, Cep\_max and Icenergy\_max

* 1. Individual or adjoined houses

The **Mbgeo** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall take the following values according to the geographical location of the building (climatic zone and altitude):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  Altitude | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| < 400 m | 0.1 | 0.15 | 0.1 | -0.05 | 0 | -0.1 | -0.2 | -0.25 |
| 400 m-800 m | 0.4 | 0.5 | 0.4 | 0.15 | 0.3 | 0.05 | 0 | -0.1 |
| > 800 m | 0.75 | 0.85 | 0.75 | 0.55 | 0.6 | 0.35 | 0.25 | 0.15 |

The **Mbattics** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall be calculated using the following formula according to the presence of converted attics in the building or part of the building:

|  |  |
| --- | --- |
| *Mcattics =* | *(0.4 × Sattics)* |
| *Sref* |

Where Sattics represents the floor area of converted attics with a ceiling height of less than 1.8 metres.

The **Mcsurf** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall take the following values according to the average surface area of the dwellings in the building or part of the building:

|  |  |
| --- | --- |
| Average surface area of the dwellings in the building | Mcsurf |
| *Savglgt ≤ 100 m2* | |  | | --- | | 49.5 – 0.55 \* *Savglgt* | | *Cep,nr\_maxavge* | |
| *100 m2 < Savglgt ≤ 150 m2* | |  | | --- | | 14.5 – 0.2 \* *Savglgt* | | *Cep,nr\_maxavge* | |
| *Savglgt > 150 m2* | |  | | --- | | -15.5 | | *Cep,nr\_maxavge* | |

The **Mccat** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall take the following values according to the external constraints category of the building or part of the building:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  External constraint category | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| Category 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Category 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.05 |

* 1. Collective housing:

The **Mbgeo** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall take the following values according to the geographical location of the building (climatic zone and altitude):

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  Altitude | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| < 400 m | 0.05 | 0.05 | 0.05 | -0.1 | 0 | -0.15 | -0.15 | -0.25 |
| 400 m-800 m | 0.35 | 0.4 | 0.35 | 0.2 | 0.2 | 0.05 | 0.05 | -0.1 |
| > 800 m | 0.55 | 0.65 | 0.55 | 0.45 | 0.5 | 0.3 | 0.3 | 0.15 |

The **Mbattics** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall be calculated using the following formula according to the presence of converted attics in the building or part of the building:

|  |  |
| --- | --- |
| *Mcattics =* | *(0.4 × Sattics)* |
| *Sref* |

Where Sattics represents the floor area of converted attics with a ceiling height of less than 1.8 metres.

The **Mcsurf** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall take the following values according to the average surface area of the dwellings in the building or part of the building, where NL is the number of dwellings in the building:

|  |  |
| --- | --- |
| Average surface area of the dwellings in the building | Mcsurf |
| *Savglgt ≤ 40 m2* | |  | | --- | | 21 – 0.45 \* *Savglgt* | | *Cep,nr\_maxavge* | |
| *40 m2 < Savglgt ≤ 80 m2* | |  | | --- | | 9 – 0.15 \* *Savglgt* | | *Cep,nr\_maxavge* | |
| *80 m2 < Savglgt ≤ 120 m2* | |  | | --- | | 3.4 – 0.08 \* *Savglgt* | | *Cep,nr\_maxavge* | |
| *Savglgt > 120 m2* | |  | | --- | | -6.2 | | *Cep,nr\_maxavge* | |

The **Mccat** modulation coefficient for Cep,nr\_max, Cep\_max and Icenergy\_max shall take the following values [according to] the external constraints category of the building or part of the building:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Climatic zone  External constraint category | H1a | H1b | H1c | H2a | H2b | H2c | H2d | H3 |
| Category 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Category 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.05 |

##### PART IV: Values of the coefficients described in Article 14(Iccomponents\_max)

###### Values of Ic components\_maxavge

The coefficient Iccomponents\_maxavge shall take the following values, depending on the use of the part of the building and the year in which the corresponding building permit application is submitted:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Value of Iccomponents\_maxavge | | | |
| Use of the part of the building | Years 2021 to 2023 | Years 2024 to 2026 | Years 2027 to 2029 | Year 2030 |
| Individual or adjoined houses | 630 kg eq. CO2/m² | 510 kg eq. CO2/m² | 450 kg eq. CO2/m² | 370 kg eq. CO2/m² |
| Collective housing | 700 kg eq. CO2/m² | 610 kg eq. CO2/m² | 540 kg eq. CO2/m² | 450 kg eq. CO2/m² |
| Offices |  |  |  |  |
| Education |  |  |  |  |

###### Values of the modulation coefficients for the requirement Iccomponents\_max

* 1. Individual or adjoined houses

The **Miattics** modulation coefficient for Iccomponents\_max shall be calculated using the following formula according to the presence of converted attics in the building or part of the building:

|  |  |
| --- | --- |
| *Miattics =* | *(0.4 × Sattics)* |
| *Sref* |

Where Sattics represents the floor area of converted attics with a ceiling height of less than 1.8 metres.

The **Misurf** modulation coefficient for Iccomponents\_max shall take the following values according to the average surface area of the dwellings in the building or part of the building :

|  |  |
| --- | --- |
| Average surface area of the dwellings in the building | Misurf |
| If *Savglgt ≤ 120 m2* | |  |  | | --- | --- | | 0.36 – | *3.63 × Savglgt* | | *1 000* | |
| If *Savglgt > 120 m2* | –0.076 |

The modulation coefficient **Miinfra** for Iccomponents\_max shall take the following values according to the impact of the foundations and spaces in the basement of the building:

|  |  |
| --- | --- |
| Value of | Miinfra |
| If *Iplot2 ≤ 40 kg eq. CO2/m2* |  |
| If *Iplot2 > 40 kg eq. CO2/m2* | 0.5 × (*Iplot2* – 40) |

Where represents the impact on climate change of plot 2 of the building or part of the building, calculated using the dynamic method of the calculation method defined in Article 17.

* 1. Collective housing:

The **Miattics** modulation coefficient for Iccomponents\_max shall be calculated using the following formula according to the presence of converted attics in the building or part of the building:

|  |  |
| --- | --- |
| *Miattics =* | *(0.4 × Sattics)* |
| *Sref* |

Where Sattics represents the floor area of converted attics with a ceiling height of less than 1.8 metres.

The **Misurf** modulation coefficient for Iccomponents\_max shall take the following values according to the reference area *Sref* of the building or part of the building:

|  |  |
| --- | --- |
| Reference area of the building | Misurf |
| If *Sref ≤ 1 300 m2* |  |
| If *1 300 m2 < Sref < 4 000 m2* |  |
| If *Sref ≥ 4 000 m2* |  |

The modulation coefficient **Miinfra** for Iccomponents\_max shall take the following values according to the impact of the foundations and spaces in the basement of the building:

|  |  |
| --- | --- |
| Value of | Miinfra |
| If *Iplot2 ≤ 40 kg eq. CO2/m2* |  |
| If *Iplot2 > 40 kg eq. CO2/m2* |  |

Where represents the impact on climate change of plot 2 of the building or part of the building, calculated using the dynamic method of the calculation method defined in Article 17.

##### PART V: Values of DH\_maxcat

The DHmaxcat value defined by category of external constraints shall take the following values:

|  |  |  |
| --- | --- | --- |
|  | Category 1 | Category 2 |
| DH\_maxcat | 1 250 | 1 850 |

#### APPENDIX V. (SOFTWARE SELF-CHECKING AND EVALUATION PROCEDURE)

#### ANNEX VI. (CONTENT OF THE STANDARDISED SUMMARY OF THE ENERGY AND ENVIRONMENTAL STUDY)

For each building covered by this Order, with the exception of buildings covered by Article 11, the standardised summary of the energy and environmental study shall be a computer file in XML format, comprising the following elements:

**Chapter 1: administrative data of the building**

**Chapter 2: energy performance requirements of Title II and thermal characteristics and requirements of Title III of this Order, including:**

- the values of Bbio, Bbio\_max, Cep,nr, Cep,nr\_max, Cep, Cep\_max, Icenergy, Icenergy\_max, IcComponents, IcComponents\_max, DH and DH\_max of the building, in accordance with the provisions of TITLE I and TITLE II of this Order;

- the values of the requirements for an average building and modulations, as obtained by applying ANNEX IV to this Order;

- the value of the reference area of the building used in the calculations;

- the status of the building project as regards each of the resource requirements to which the project is subject, defined in Title III of this Order.

**Chapter 3: other indicators provided for in the method specified in Article 17**

**Chapter 4: detail of the inputs and outputs of the regulatory calculations, in particular:**

- a breakdown of the characteristics of the building envelope, by category of partition (surface areas, orientations, energy characteristics, etc.);

- a breakdown of the characteristics of the building’s energy systems;

- a breakdown of the energy needs, consumption and production of the building, including by usage and energy type;

- the quantities and references of the environmental data of each building component, notably used to describe the impact on climate change of the building components;

- for each project, building, zone, group and room, all of the characteristics as defined in the method specified in Article 17;

- the parameters entered for calculation of the contributions to the impacts of water consumption and discharge and of the construction site.

**Chapter 5, optional calculation method: impact of different parameters on the conventional results (Bbio, Cep,nr, Cep and DH):**

- for the purposes of information for designers, the sensitivity of the calculation results to modifications in the technical characteristics of the building;

- for the purposes of information for future occupants, in the case of residential buildings, the sensitivity of the calculation results to behaviour different from the conventional behaviour used as the basis for the regulatory calculation.

For each building covered by Article 11 of this Order, the standardised summary of the energy and environmental study shall specify all of the data used, as well as the results obtained, demonstrating compliance with the simplified application method in terms of both scope and the technical and architectural provisions to be implemented. In the event that resource requirements are provided for, it shall also specify the status of the building project with respect to each of the resource requirements to which the project is subject.

#### ANNEX VII. (AIR PERMEABILITY)

#### ANNEX VIII (VENTILATION SYSTEM VERIFICATION PROCEDURES)

#### ANNEX IX. (SIMPLIFIED APPLICATION METHODS)

#### ANNEX X. (STUDY FILE FOR SPECIAL CASES)

##### PART I: Subject

This Annex describes the content of the study file for the construction projects, heating or cooling systems and networks specified in TITLE V of this Order, provided in support of the approval application to the Minister responsible for Energy and the Minister responsible for Construction and Housing.

In the case of the heating or cooling networks specified in TITLE V of this Order, the approval applications shall relate exclusively to the approval of a temporary value for the CO2 content of the kWh of energy delivered to its substations, as well as for the renewable energy or recovery ratio of the kWh of heat delivered to its substations (for heating and domestic hot water production). The approval shall be valid for up to three years.

Within the meaning of Article 57, a significant change in the emission factor (and correspondingly the renewable energy and recovery ratio) of a heating or cooling network consists in a foreseeable change in the emission factor (and correspondingly in the renewable energy and recovery ratio) due to modification work on the heating or cooling network, over a period of less than two years, of at least 30 gCO2/kWh delivered to the substation (20 points respectively).

##### PART II: Information to be provided by the applicant

The application can only be submitted for the cases provided for in Article 57.

###### Application for a construction project

The applicant must provide:

- a description of the construction project in question and its plans;

- the list of input data for the part of the calculation method that is applicable;

- a detailed description of the reasons why the calculation method is inapplicable to the other parts;

- the standardised summary of the thermal study, entering degraded building data for the parts to which the calculation method is inapplicable;

- an explanation of the way in which the elements of the project that cannot be modelled have been entered as degraded data, within the Regulation application tool.

- a detailed justification of how the figures were reached and the expected performance of the parts that cannot be modelled.

The file shall justify the performance level claimed for the operation and thus compliance with all of the regulatory requirements, in terms of both overall performance requirements and resource requirements. The approval, if applicable, only validates compliance with this Order on the basis of the supporting documents provided.

###### Application for a particular system

The applicant must provide:

- a description of the system in question, accompanied by elements making it possible to evaluate its thermal performance, in particular with a view to the subsequent integration of this system into the calculation methods; these elements include feedback on the installation of the system in at least ten construction projects in accordance with this Order or the above-mentioned Orders of 26 October 2010 and 28 December 2012;

- a description of the elements of the system that are not taken into account through the calculation method;

- a description of the scope of this system;

- the list of input data for the parts of the calculation method that are applicable;

- a detailed description of the reasons why the calculation method is inapplicable to the other system elements;

- a proposal for adaptation of the calculation method so that it can be applied to the system in question, accompanied by at least one example of digital application; this proposal shall be linked to the above-mentioned feedback.

###### Application for a heating or cooling network

The applicant must provide:

- a description of the heating or cooling network in question, accompanied by elements permitting assessment to be made of: its energy and environmental performance, initially and over time, particularly in relation to its energy supply; the performance of its generators; the performance of its distribution and its auxiliary consumption; and the projected volumes of heat and cold delivered;

- a proposal for the CO2 content of the kWh delivered to the network substations and for the renewable energy and recovery ratio, based in particular on the emission factors provided for in Article 19;

- a commitment to respond annually to the annual survey of heating and cooling networks for five years following commissioning of the network.

#### ANNEX XI. FIXED PERFORMANCES OF CERTAIN PLOTS

###### Individual or adjoined houses

The following values can be used to describe the impact of all the components belonging to the plots or subplots mentioned below and defined by the method specified in Article 17.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Impact on climate change by phase of the building’s life cycle (kg eq. CO2/m²) | | | | |
| Life cycle phase  Plot or subplot | Production | Construction | Operation | End of life | Module D |
| 8.1 | 61 | 0 | 106 | 3 | 0 |
| 10 | 50 | 0 | 45 | 3 | 0 |
| 11 | 1 | 0 | 1 | 0 | 0 |

###### Collective housing

The following values can be used to describe the impact of all the components belonging to the plots or subplots mentioned below and defined by the method specified in Article 17.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Impact on climate change by phase of the building’s life cycle (kg eq. CO2/m²) | | | | |
| Life cycle phase  Plot or subplot | Production | Construction | Operation | End of life | Module D |
| 8.1 | 16 | 0 | 57 | 1 | 0 |
| 10 | 24 | 0 | 23 | 1 | 0 |
| 11 | 1 | 0 | 1 | 0 | 0 |

#### ANNEX XII. DEFAULT PERFORMANCE OF BIO-BASED INSULATION

If it is not possible to justify a useful thermal conductivity value for a bio-based insulator defined according to the procedures specified in Article 24 of this Order, the value to be used shall be the default value defined in the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| TYPE OF INSULATOR | | DRY DENSITY (r) in kg/m3 | USEFUL THERMAL CONDUCTIVITY (λ) in W/(m.K) |
| Insulation derived from wood | Cork defined in accordance with standard NF B 57-000  - compressed  - expanded pure, in accordance with standard NF 13170 (ICB)  - agglomerated expanded with pitch or synthetic resins | ρ ≤ 500 | 0.10 |
| 100 ≤ ρ ≤ 150 | 0.049 |
| 100 ≤ ρ < 150 | 0.049 |
| 150 ≤ ρ ≤ 250 | 0.055 |
| Wood fibre panels defined according to standard NF EN 316 | 750 ≤ ρ ≤ 1 000 | 0.20 |
| 550 ≤ ρ ≤ 750 | 0.18 |
| 350 ≤ ρ ≤ 550 | 0.14 |
| 200 ≤ ρ ≤ 350 | 0.10 |
| ρ ≤ 200 | 0.07 |
| Wood wool panels  - agglomerated wood wool panels with a hydraulic adhesive, defined in accordance with standard NF EN 13168  - agglomerated wood wool panels | 350 ≤ ρ ≤ 450 | 0.10 |
| 30 ≤ ρ ≤ 350 | 0.08 |
| 450 ≤ ρ ≤ 600 | 0.10 |
| Insulators based on vegetable fibres | Cellulose | 20 ≤ ρ ≤ 100 | 0.049 |
| Hemp and flax  - bound fibres  - loose fibres (bulk insulation, unbound fibres) | 20 ≤ ρ ≤ 200 | 0.048 |
| 0.056 |
| Compressed straw  - transversely to the direction of the straw  - in the direction of the straw | 80 ≤ ρ ≤ 120 | 0.052 |
| 0.080 |
| Other insulators based on vegetable fibres | 20 ≤ ρ < 40 | 0.065 |
| 40 ≤ ρ < 60 | 0.060 |
| 60 ≤ ρ < 200 | 0.065 |
| Insulators based on animal fibres | Sheep’s wool | 10 ≤ ρ < 100 | 0.046 |
| Other insulators based on animal fibres | 10 ≤ ρ < 20 | 0.065 |
| 20 ≤ ρ < 50 | 0.060 |
| 50 ≤ ρ < 100 | 0.050 |