UNIVERSITÀ DEGLI STUDI DI TRIESTE

Regulatory Framework and Building Energy Design

The Fourth topic

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The Minimum Requirements

Italian interministerial Decree 28 October 2025



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The Minimum Requirements

Framework, purpose, definitions, scope, exclusions



Italian interministerial Decree 28 October 2025, the minimum requirements

The decree and its place in the legal system

Title:

- Ministerial Decree 28 October 2025: updating the minimum requirements for building energy performance
- Replacements the Interministerial Decree of 26 June 2015

Italian interministerial Decree 28 October 2025, the minimum requirements

The decree and its place in the legal system

What it is?

- **Official title:** Aggiornamento del decreto 26 giugno 2015, recante «Applicazione delle metodologie di calcolo delle prestazioni energetiche e definizione delle prescrizioni e dei requisiti minimi degli edifici»
- Issued by the **Minister of Environment and Energy Security** (MASE), **jointly** with the **Ministers of Infrastructure and Transport, Health, and Defence.**
- Published in GU n. 283 of 5 December 2025
- Reference point: the cleaned-up version of the "Legge 10" verifications

Italian interministerial Decree 28 October 2025, the minimum requirements

The decree and its place in the legal system

Timeline:

- **28/10/2025: signed**
- **25/11/2025: registered at the Corte dei conti**
- **05/12/2025: published in the GU**
- **03/06/2026: in force. Art. 11 says 180 days after publication**
- **Until 02/06/2026 the 2015 rules continue to apply**
- **12/06/2026: MASE guidance note to operators on first application (it adds no new obligations)**

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The decree and its place in the legal system

Why the update:

The decree's own premises give four new areas:

- Thermo-hygrometric comfort of indoor spaces
- Fire safety
- Seismic risk
- Electric-vehicle charging infrastructure

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The decree and its place in the legal system

Legal basis (the "Visto"):

- EU: Directive 2018/844 (EPBD amendment); Directive 2020/2184 (drinking water)
- D.Lgs. 192/2005 (as amended by D.Lgs. 48/2020); D.Lgs. 28/2011; D.Lgs. 102/2014; D.Lgs. 257/2016; D.Lgs. 199/2021; D.Lgs. 18/2023
- DM 26/6/2015; NTC 2018 (DM 17/1/2018); CAM (DM 23/6/2022); PNIRE; ARERA resolution 541/2020

Concertation and consent

- Consent from MIT, Health and Defence
- Agreement in the Conferenza unificata on 30 July 2025
- The decree is "cogent" for Regions only as a minimum, because energy is a shared competence

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The decree and its place in the legal system - Structure of the decree:

https://www.anit.it/nuova-guida-anit-sui-requisiti-minimi/



Italian interministerial Decree 28 October 2025, the minimum requirements

The decree and its place in the legal system - Structure of the decree:

Art.	Content
1	Purposes: adds EV charging infrastructure
2	Definitions: new letters g) and h), edits to d) and e)
3	Calculation methods: UNI/TS list
4	General criteria: paragraph 2 repealed
5	Operation and inspection: DPR 74/2013
6	Regions: ministry names updated
7	Calculation tools: paragraphs 4 and 5
8	Annex 1 replaced entirely
9	Annex 2 replaced entirely
10	D.Lgs. 192/2005, Annex A, point 32 (thermal bridge)
11	Entry into force

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The decree and its place in the legal system

What was fully replaced:

- Annex 1 (Arts. 3 and 4): general criteria and requirements, now with Appendix A (reference building) and Appendix B (existing buildings)
- Annex 2 (Art. 3): technical reference standards

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Art. 1, scope and purposes:

- Scope now explicitly includes "**the integration of electric-vehicle charging infrastructure**", inserted after the reference to renewable sources
- This is the legal basis for Chapter 6 of Annex 1 (Tables 4, 5, 6)
- Article 1 concerns the **scope** and **purpose** of the **rules governing** the **energy performance** of buildings.
- The decree updates the previous Ministerial Decree of 26 June 2015, which establishes how building energy performance is calculated and **which minimum energy-efficiency requirements must be met**.

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What does Article 1 mean in practice?

Article 1 of the 2025 decree amends Article 1 of the 2015 decree. Its main change is to explicitly include the integration of **electric-vehicle charging infrastructure** among the matters covered by the building energy-performance framework, alongside the **use of renewable energy sources**.

In practical terms, it establishes **the general purpose** and scope of the rules that govern energy performance in buildings, including:

- **Energy efficiency:** the energy-performance standards buildings must satisfy.
- **Renewable energy:** consideration of renewable energy sources in building design and renovation.
- **Electric-vehicle charging infrastructure:** recognition of charging infrastructure as part of the regulatory framework.

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What does Article 1 mean in practice?

Important distinction:

Article 1 **does not**, by itself, **set a specific number of charging points** or require every existing building to install an electric-vehicle charger. It adds charging infrastructure to the scope of the existing framework; the concrete obligations depend on the **applicable provisions** and the **type of building** or project.

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Art. 2, Definitions:

Article 2 of the Italian Interministerial Decree of 28 October 2025 concerns modifications to Article 2 (“**Definitions**”) of the previous Ministerial Decree of 26 June 2015 on minimum energy-performance requirements for buildings.

In simple terms, it **clarifies existing technical terminology** and **introduces two additional definitions** relevant to assessing building energy performance.

The main changes in Article 2:

1. **Opaque part of the building envelope**; the wording is broadened from “opaque wall” (parete opaca) to “opaque part of the building envelope” (parte opaca dell’involucro edilizio). This better covers non-transparent building elements such as walls, roofs and floors.
2. **Solar reflectance**; the term “solar” is added to “reflectance,” clarifying that the relevant property is the surface’s ability to reflect solar radiation.

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Art. 2:

The main changes in Article 2:

3. **Adjacent parking area (parcheggio adiacente all'edificio):** a parking area is defined as one belonging to the same owner or some of the same owners as the building, which shares a side or corner with the building's plot, or has technical systems in common with the building.

4. **Thermal bridge (ponte termico):** a zone in the building envelope where additional heat loss occurs because of construction, structural or geometric discontinuities, or materials with different thermal conductivities. The definition refers to standard UNI EN ISO 10211.

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Art. 2:

Why does this matter in practice?

Article 2 helps architects, engineers and energy assessors **apply consistent definitions** when calculating building energy performance. In particular, defining an adjacent parking area may be relevant when assessing requirements related to electric-vehicle charging infrastructure, while defining thermal bridges helps clarify the treatment of heat losses in the building envelope.

In short: Article 2 is primarily **a technical clarification of terminology**, rather than a standalone set of new energy-efficiency limits.

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Why thermal bridges are the big technical novelty?

- They enter the **calculation** and the limit **values** (Table 5-bis of Appendix A gives linear transmittances ψ)
- **Second-level renovation** checks use **U including thermal bridges**

	$\psi_{int}[W.m^{-1}.K^{-1}]$					$\psi_{est}[W.m^{-1}.K^{-1}]$				
Climatic zone	**A-B**	**C**	**D**	**E**	**F**	**A-B**	**C**	**D**	**E**	**F**
Types of thermal bridges										
Balcony attachment	0.57	0.46	0.44	0.40	0.39	0.39	0.32	0.32	0.29	0.29
Windowsill	0.10	0.09	0.10	0.10	0.11	0.10	0.09	0.10	0.10	0.11
Window/door frame reveal	0.07	0.07	0.08	0.08	0.08	0.07	0.07	0.08	0.08	0.08
Window/door lintel	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Window shutter box	0.28	0.25	0.21	0.22	0.23	0.28	0.25	0.21	0.22	0.23

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Why thermal bridges are the big technical novelty?



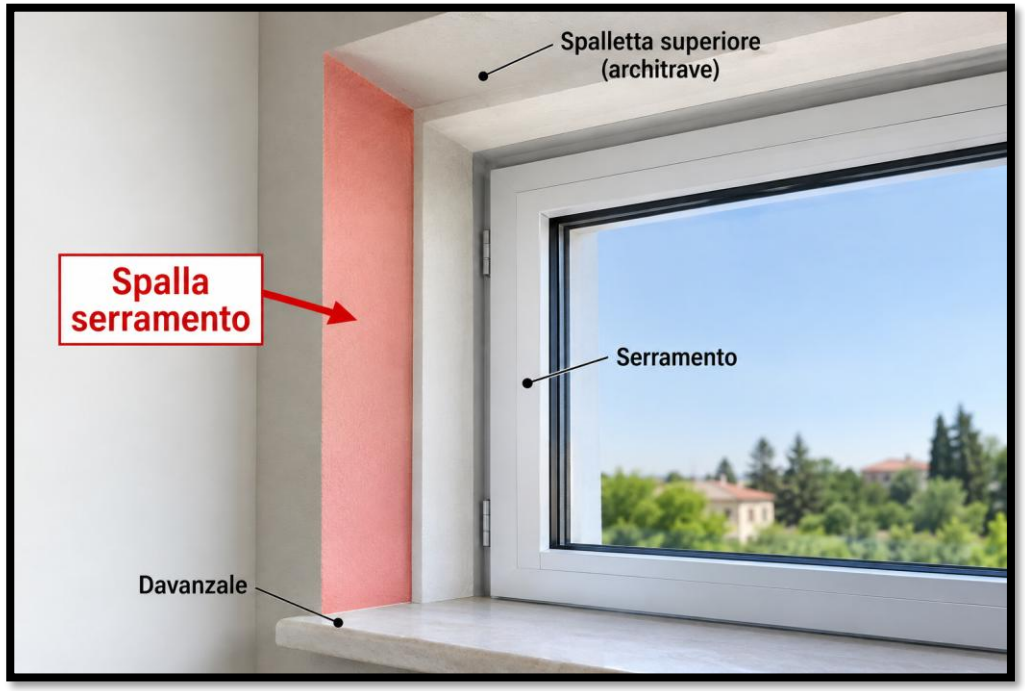
Balcony attachment (aggancio balcone)



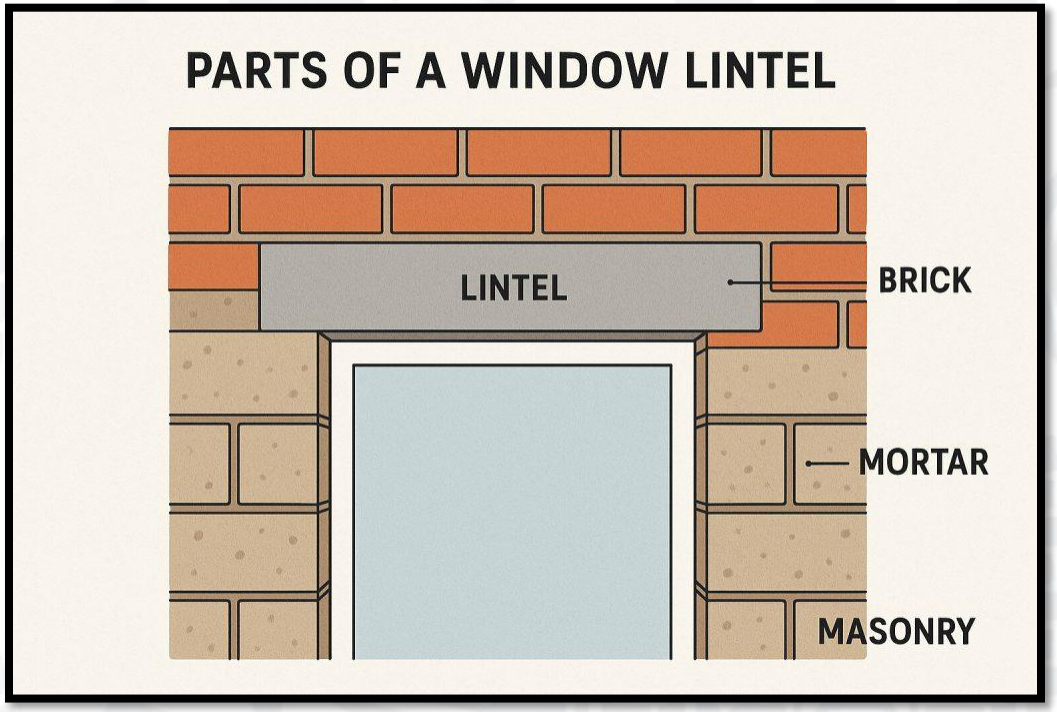
Windowsill (davanzale serramento)

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Why thermal bridges are the big technical novelty?



Window frame (spalla serramento)



Window lintel (architrave serramento)

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Why thermal bridges are the big technical novelty?



Window shutter box (cassonetto serramento)

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Art. 3: calculation standards

- Art. 3, **Criteria** and **methods** for **calculating the energy performance of buildings**: which calculation methods and technical standards must be used (the UNI/TS 11300 series, UNI EN 15193, and so on).
- Repealed: letter a) of paragraph 1, and paragraphs 2 and 3
- f) UNI/TS 11300-5: primary energy and renewable share
- g) UNI/TS 11300-6: lifts, escalators and moving walkways
- h) UNI EN 15193: lighting energy requirements

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Art. 4, General criteria and requirements for the energy performance of buildings:

- The **requirements** buildings must meet, **including how the reference building is used**. In the update, paragraph 2 is repealed.
- Art. 4: paragraph 2 repealed
- Art. 5: paragraph 1 replaced. **Operation**, **management**, **control**, **maintenance** and inspection of **thermal systems** are governed by DPR 74/2013 and the provisions under Art. 4(1-quinquies) of D.Lgs. 192/2005

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Art. 6 and Art. 7, Calculation tools:

- Art. 6(2): the reference to the **Ministry of Economic Development** and the **former environment ministry** is **replaced** by the **Ministry of Environment and Energy Security**
- Art. 7: paragraph 4 repealed. Paragraph 5 now says updates to the technical standards apply **180 days** after their publication (The earlier rule was 90 days.)
- Art. 7: the **software** and **tools** that may be used, and the **rules** they must follow.
- For software and certifiers: calculations started before that date can still use the previous version

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Annex 1, Chapter 1: common framework

1. Common **framework** and **classification**
2. Common **requirements**
3. **New buildings** and **first-level major renovations**, NZEB
4. **Second-level major renovations**
5. Energy **requalification**
6. **EV** charging
7. Summary table (Table 7)

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What "energy performance" means? (para 1.1)

- **Annual global primary energy need** for a standard use of the building
- Covers **heating, cooling, ventilation** and **domestic hot water**
- In non-residential buildings, also **lighting** and **lifts**/escalators

How it is calculated?

- By the UNI and CTI standards, aligned with CEN standards
- **Monthly** calculation intervals
- **Primary energy** per energy service
- The same monthly method is used for renewable energy produced on site

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Rules for on-site renewable energy: the five conditions

- Only against the **same energy** carrier (electricity against electricity, heat against heat)
- Only **up to full coverage** of the corresponding need
- The monthly **surplus** exported **does not count**
- The **surplus** of one month **cannot cover** a month with a deficit
- **Renewable electricity** cannot offset Joule-effect **heating**

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What on-site PV can cover?

- Boiler: only the **auxiliary** electricity
- Electric heat pump: all its electrical consumption, **excluding** backup resistance heaters
- Controlled mechanical ventilation (VMC): the electrical **auxiliaries**
- **Non-residential**: also lighting and lifts/escalators

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Example: PV offset by month

Month A:

need 400 kWh electricity, PV produces 600 kWh. **Counted 400 kWh**; the 200 kWh surplus is exported and **ignored**

Month B:

need 500 kWh, PV produces 150 kWh. **Counted 150 kWh**; the earlier surplus cannot help

Result:

annual benefit is the **sum** of the **monthly minimums**, **not annual production minus annual need**

- **Shared renewable plants:** For **centralized plants** or plants serving several services/units, renewable energy is allocated **per service** and **per unit in proportion to their thermal needs** at generator output, or to their electrical needs.

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primary energy conversion factors

Carrier	$f_{P,nren}$	$f_{P,ren}$	$f_{P,tot}$
Natural gas	1.05	0	1.05
LPG	1.05	0	1.05
Diesel / fuel oil	1.07	0	1.07
Coal	1.10	0	1.10
Solid biomass	0.20	0.80	1.00
Liquid/gaseous biomass	0.40	0.60	1.00
Grid electricity	1.95	0.47	2.42
District heating	1.5	0	1.5
Municipal solid waste	0.2	0.2	0.4
District cooling	0.5	0	0.5
Solar thermal	0	1.00	1.00
Electricity: PV, mini-wind, mini-hydro	0	1.00	1.00
Thermal energy from the external environment, Free cooling	0	1.00	1.00
Ambient energy (heat pump)	0	1.00	1.00

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Which factor for which purpose?

- Design verification of **minimum requirements**: both **total** and **non-renewable** primary energy
- Building **classification** (APE): **non-renewable** primary energy only
- A carrier not listed: use the **most similar** one in Table 1 (the table in the previous slide)

Worked example: converting final energy

- 1,000 kWh of natural gas gives 1,050 kWh primary (all non-renewable)
- 1,000 kWh of grid electricity gives 1,950 nren, 470 ren, 2,420 tot
- Heat pump delivering 10,000 kWh heat at seasonal COP 3: electricity 3,333 kWh gives 6,500 kWh nren; the ambient heat (about 6,667 kWh) is counted as renewable by convention

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Worked example: converting final energy

The example is a calculation of primary energy, split into non-renewable (nren) and renewable parts. The conversion factors come from Table 1 of the new Annex 1.

Step 1: electricity needed

- COP 3 means the pump delivers 3 kWh of heat for each 1 kWh of electricity it uses.
- 10,000 ÷ 3 = 3,333 kWh of electricity from the grid.

Step 2: ambient heat

- The pump delivers 10,000 kWh of heat in total and 3,333 kWh of that is the electricity itself. The other 10,000 − 3,333 = 6,667 kWh is heat drawn from the outside air, ground or water.

Step 3: apply the primary energy factors

- In Table 1, grid electricity has $f_{P,nren} = 1.95$, $f_{P,ren} = 0.47$ and $f_{P,tot} = 2.42$. Thermal energy taken from the environment by a heat pump has $f_{P,nren} = 0$ and $f_{P,ren} = 1.00$.

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Worked example: converting final energy

Item	kWh	$f_{P,nren}$	$f_{P,ren}$	nren	ren
Grid electricity	3,333	1.95	0.47	**6,500**	1,567
Ambient heat	6,667	0	1.00	0	**6,667**

So the 6,500 kWh nren in the example is 3,333 × 1.95.

The ambient heat adds nothing to the non-renewable figure because its factor is zero.

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Classification of buildings by their intended use



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Para 1.2: classification by intended use

- Buildings are classified under Art. 3 of DPR 412/1993 (categories E.1 to E.8)
- Mixed buildings: **each part** is assessed in its own category
- The building is classified by **dominant use** in terms of conditioned volume
- Fire-prevention rules always remain applicable

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Exclusions (para 1.4.3)

Minimum requirements do not apply to:

- Repairs of finishing layers with **no thermal effect** (e.g. painting), or plaster repairs **under 10%** of the gross dispersing surface
- **Maintenance** of existing systems that **replaces nothing**

Special rules:

- Internal or cavity insulation: the Appendix B U-limits (Tables 1-4) are increased by 30%
- If a layer is rebuilt only because the system needs it (e.g. a floor for underfloor heating), no U-limit applies

Example: a 1,200 m² gross envelope with 90 m² of plaster repair is 7.5%, so it is excluded. With 130 m² it is 10.8%, so the intervention is no longer excluded.

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Law 9 January 1991, n. 10

Title and purpose

- Norme per l'attuazione del Piano energetico nazionale in materia di uso razionale dell'energia, di risparmio energetico e di sviluppo delle fonti rinnovabili di energia
- It is the **founding Italian law** on **energy saving** in buildings. The "verifiche ex Legge 10" you hear about in practice are the checks now defined by DM 26/6/2015 as updated by the 2025 decree.

Why it still matters in 2026?

- **Parts** of it have been **replaced** by D.Lgs. 192/2005 and later decrees (for example, energy certification)
- **Its core obligations remain**: the technical report, renewables in buildings, and the energy manager
- The **2025 decree** still **cites** it directly.

Italian interministerial Decree 28 October 2025, the minimum requirements

Where the 2025 decree cites Law 10/1991?

- Annex 1, 2.2: the design report must be completed, for public bodies under the Art. 19 obligation, with a verification statement from the energy manager (Responsabile per la conservazione e l'uso razionale dell'energia), "ai fini della più estesa applicazione dell'art. 26, comma 7"
- DPR 412/1993 itself is the regulation issued under Art. 4, paragraph 4 of Law 10/1991

Art. 26(7): renewables in buildings

- Public and private buildings, whatever their use, must meet their **energy need by favoring renewable** or assimilated sources, **unless** technical or economic obstacles prevent it
- Today this principle is made concrete by D.Lgs. 199/2021, Annex 3, which Annex 1, 3.3(6) and 3.4 of the 2025 decree call up.

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The technical report (relazione tecnica):

- Designer's report proving compliance with the energy-saving rules
- **In the 2025 decree**: Annex 1, 2.2 says the designer must include all calculations and checks in it, using the scheme from the ministerial decree under Art. 8 of D.Lgs. **192/2005**
- It was historically deposited with the municipality with the start-of-works notice (Law 10 Art. 28)

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Example: when the report is simplified

- Replacing windows only: the report may be partial (windows' air permeability and U-value, check against Appendix B Table 4, solar factor check against Table 8)
- With a contractor's declaration plus CE marking, it can even replace the full report (Annex 1, 2.2 paragraphs 4-5)
- Boiler replacement: a report is needed only if the fuel or generator type changes, or the power exceeds the threshold in the DM 37/2008 (paragraph 2). Gas condensing replacing a traditional gas boiler is not a change of type.

Italian interministerial Decree 28 October 2025, the minimum requirements

The energy manager (Art. 19):

- Public and private bodies with energy consumption above set thresholds must appoint a Responsabile per la conservazione e l'uso razionale dell'energia
- Annex 1, 2.2 uses this figure: in bodies under that obligation, the designer's report is integrated with the manager's attestation

Level	Instrument	Role
Framework law	L. 10/1991	principles, obligations, report
Building energy law	D.Lgs. 192/2005	definitions, certification, EU transposition
Minimum requirements	DM 26/6/2015, as updated by DM 28/10/2025	calculation methods and limit values
Climate and use	DPR 412/1993	zones, categories, system rules

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Section recap:

"Is a building in zone E treated the same as one in zone C?“

- Same law and method, different limit values.

- Law 10/1991 sets the obligations; the decree sets the numbers; DPR 412 supplies the two inputs that select the numbers: **climate zone** and **building category**.

DPR 26 August 1993, n. 412

Title and scope

- Regolamento recante norme per la progettazione, l'installazione, l'esercizio e la manutenzione degli impianti termici degli edifici ai fini del contenimento dei consumi di energia, in implementation of Art. 4(4) of Law 10/1991.
- The Italian DPR 26 August 1993, No. 412 classifies buildings according to their intended use and municipalities according to their climatic characteristics, and why these classifications matter when applying the minimum energy-performance requirements under the Interministerial Decree of 28 October 2025.
- In the 2025 decree it matters for **Art. 2 (zones)** and **Art. 3 (categories)**

Legal framework and climatic zones:

- DPR 26 August 1993, No. 412.
- Article 2: climatic zones and degree-days.
- Article 3: classification of buildings according to intended use.
- Article 9: operating periods and daily operating limits for heating systems.
- Related framework: Law 10/1991, Legislative Decree 192/2005 and the updated Minimum Requirements Decree.

DPR 26 August 1993, n. 412: climate zones-Art. 2:

What a degree-day is?

- Degree-days quantify the severity of the heating climate according to a conventional calculation.
- Sum, over the days of the year, of the positive difference between the **indoor reference** temperature (20 °C) and the **mean daily outdoor** temperature
- It measures **heating demand**: more degree-days means a colder climate

$$GG = \sum_{d \in P} \max(0, T_i - T_{e,d})$$

Where:

- T_i: conventional indoor reference temperature (fixed at 20 °C- it's not a design setpoint).
- $T_{e,d}$: mean outdoor temperature for day d.
- *P*: the conventional annual heating period of the climatic zone.

DPR 26 August 1993, n. 412: climate zones-Art. 2:

Example: degree-days

$$GG = \sum_{d \in P} \max(0, T_i - T_{e,d})$$

- Four days with mean outdoor temperatures 5 °C, 10 °C, 18 °C, 22 °C
- Differences from 20 °C: 15, 10, 2, and 0 (the last is negative, so it is ignored)
- Total = 27 degree-days for these four days
- A municipality's value is this sum over the whole year

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DPR 26 August 1993, n. 412: climate zones-Art. 2:

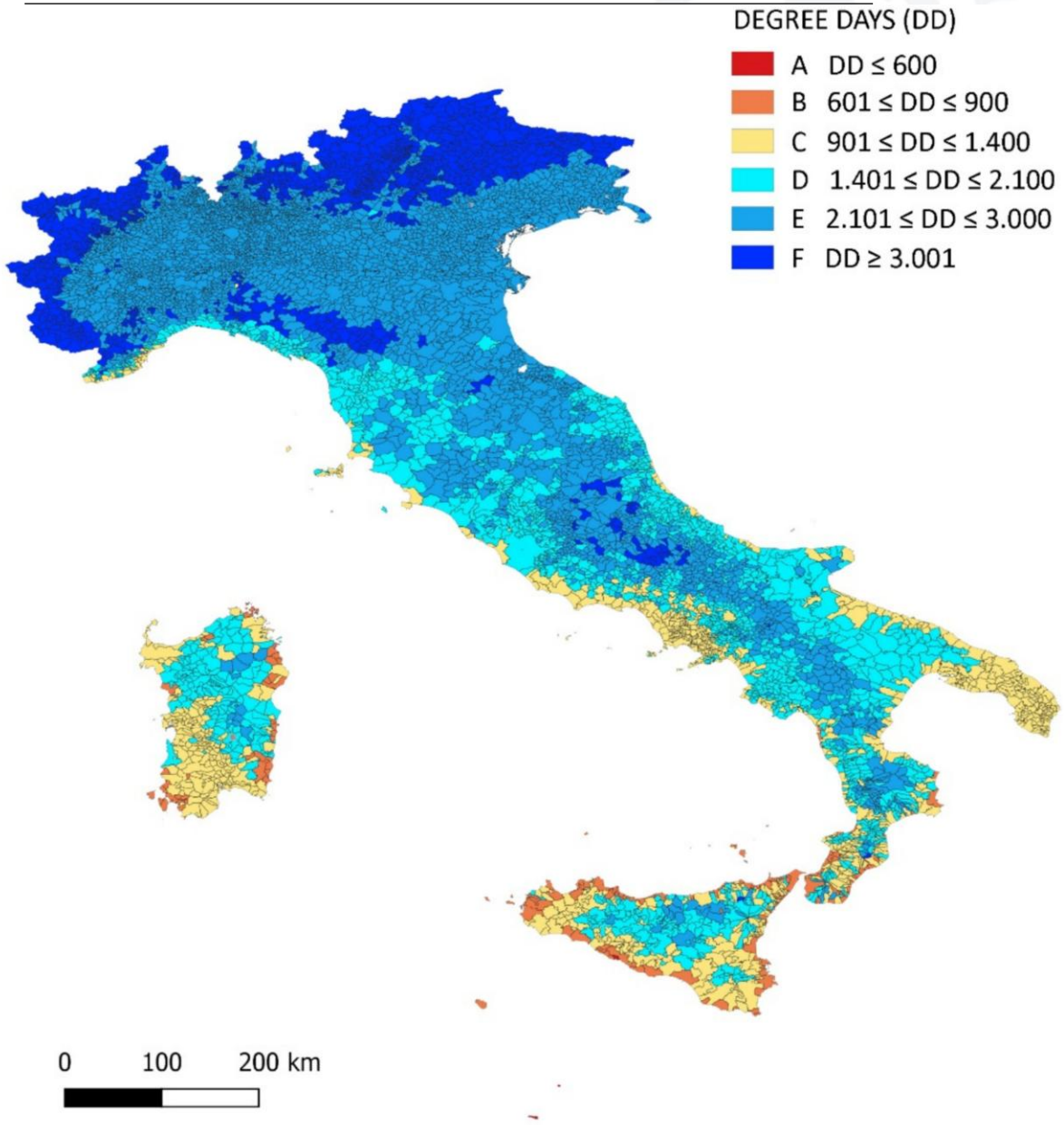
The six zones:

Zone	Degree-days (GG)	General interpretation
A	≤ 600	Very mild heating climate
B	> 600 to 900	Mild
C	> 900 to 1,400	Moderately mild
D	> 1,400 to 2,100	Intermediate
E	> 2,100 to 3,000	Cold
F	> 3,000	Very cold

The zone is set by degree-days, **independently of geographic location**.

DPR 26 August 1993, n. 412: climate zones-Art. 2:

The six zones:



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DPR 26 August 1993, n. 412: climate zones-Art. 2:

Heating period and daily hours (standard values)

Zone	Period	Max hours/day
A	1 Dec - 15 Mar	6
B	1 Dec - 31 Mar	8
C	15 Nov - 31 Mar	10
D	1 Nov - 15 Apr	12
E	15 Oct - 15 Apr	14
F	no limit	no limit

mayors may extend within the rules. Some years brought temporary emergency reductions.
(for example the 2022 measure)

DPR 26 August 1993, n. 412: climate zones-Art. 2:

Annex A of DPR 412/1993:

- Table of degree-days and zone for every Italian municipality
- Changed over time by ministerial decrees (for example the 2001 decrees correcting individual municipalities)
- Always take the zone from the current table, not from memory

Worked example: finding the zone

- A municipality with 2,938 GG: it falls in "> 2,100 and ≤ 3,000", so **zone E**
- One with 3,001 GG: "> 3,000", so **zone F**
- One with exactly 2,100 GG: "≤ 2,100", so **zone D**
- **Boundary values** belong to the **lower zone**

DPR 26 August 1993, n. 412: climate zones-Art. 2:

Recommended procedure:

1. Identify the exact municipality where the building is located.
2. Find its entry in the current official table.
3. Record both the degree-day value and the climatic zone.
4. Retain the source in the project file.
5. Check for applicable municipal or regional provisions.

❑ Do not assume the zone from latitude, province, altitude or a nearby city alone.

DPR 26 August 1993, n. 412: climate zones-Art. 2:

How the 2025 decree uses the zone?

Zones select the limit value in almost every table:

- Appendix A, Table 1, wall U-value of the reference building (W/m²K): A and B 0.43; C 0.34; D 0.29; E 0.26; F 0.24
- Appendix A, Table 10, H'T limit by zone and S/V
- Appendix B, Table 1, maximum wall U-value for existing buildings: A and B 0.40; C 0.36; D 0.32; E 0.28; F 0.26
- Note the A and B zones are always grouped in the tables

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DPR 26 August 1993, n. 412: climate zones-Art. 2:

Example:

same wall, two zones

- New building, wall U = 0.30 W/m²K
- In zone C the reference building has 0.34, so it is below the reference value
- In zone E the reference is 0.26, so it is above it (the full verification uses the H'T and EP indices, not the wall alone; this shows how the benchmark moves)

Other zone-dependent triggers

- Annex 1, 3.3(5): the 0.8 W/m²K limit for separating structures applies in zones C, D, E and F
- Annex 1, 3.3(4)(b): summer checks apply in all zones except F, where mean monthly irradiance in the sunniest month is ≥ 290 W/m²

DPR 26 August 1993, n. 412: climate zones-Art. 2:

Climatic zone versus building performance

Two buildings in the **same climatic zone** may have very **different energy consumption** because of differences in:

- Surface-to-volume ratio.
- Insulation and thermal bridges.
- Window area, orientation and solar shading.
- Air infiltration and ventilation.
- Heating-system efficiency and controls.
- Occupancy and operating schedules.

❑ climatic classification establishes a common regulatory reference. It does not replace the building-specific energy calculation.

DPR 26 August 1993, n. 412: building categories Art. 3:

Why classification matters?

- Annex 1, 1.2: buildings are classified per Art. 3 of DPR 412
- The **category changes** the indices to calculate, the limits, and the exceptions

Category	Use
E.1	Residential, with sub-categories
E.2	Offices and similar
E.3	Hospitals, clinics, nursing homes
E.4	Recreational, associative or worship activities
E.5	Commercial activities
E.6	Sports activities
E.7	School activities of all levels
E.8	Industrial and craft activities

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DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.1: Residential buildings



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.1: Residential buildings

- E.1(1): permanent residences, including colleges, convents, prisons, barracks
- E.1(2): seasonal or occasional residences (holiday and weekend homes)
- E.1(3): hotels, guesthouses and similar

- ❑ The exact classification should follow the regulatory definition, not just the building's everyday description.
- ❑ a private apartment, a holiday home and a hotel may all provide accommodation, but their operating patterns and regulatory subcategories differ.

DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.2: offices and similar buildings



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.2: offices and similar buildings

E.2 covers public or private offices, whether freestanding or adjoining industrial or craft buildings, provided the relevant separation conditions in Article 3 are satisfied. Typical examples include:

- Municipal offices.
- Professional practices.
- Corporate headquarters.
- Administrative departments.
- Office accommodation within a larger complex.

❑ offices can have substantial equipment and lighting loads. Their operating hours may also differ considerably from residential buildings. When modelling the building, the designer should establish realistic occupancy, lighting, equipment and ventilation assumptions.

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DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.3: hospitals, clinics and care facilities



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.3: hospitals, clinics and care facilities

E.3 includes hospitals, clinics, nursing and care facilities, and the other care-related establishments specified in Article 3:

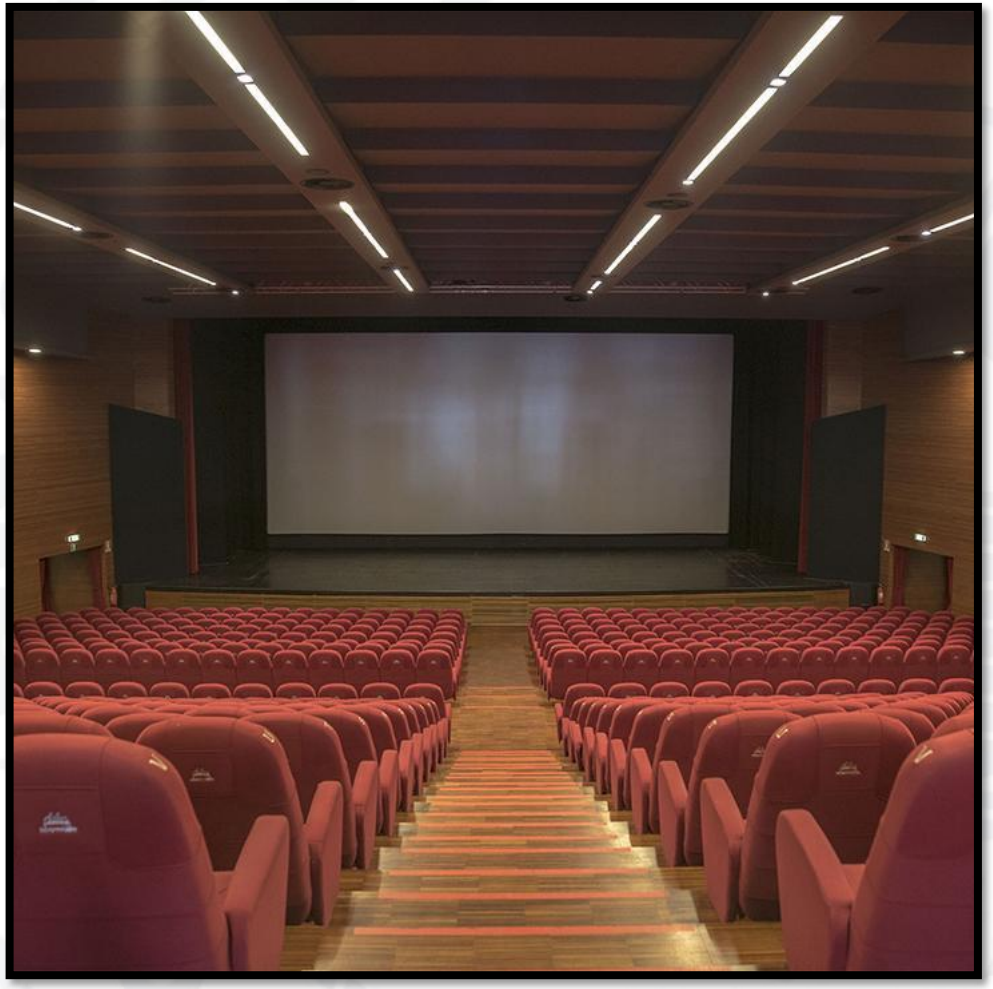
- Hospitals and clinics.
- Residential care facilities.
- Facilities for older people.
- Certain protected accommodation and rehabilitation facilities.

These buildings may require special attention to:

- Continuous or extended operating hours.
- Ventilation and indoor environmental conditions.
- Domestic hot water and specialist services.
- Differing temperature requirements between rooms.
- The interaction between energy requirements and healthcare needs.

DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.4: recreational, associative and religious buildings



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.4: recreational, associative and religious buildings

E.4 includes several different uses:

- E.4(1): cinemas, theatres and conference or meeting halls.
- E.4(2): exhibition spaces, museums, libraries and places of worship.
- E.4(3): bars, restaurants and dance halls.

The precise category matters because the occupancy pattern, internal gains and ventilation requirements can differ substantially. Examples:

- A cinema may have high occupancy for limited periods.
- A museum may require stable environmental conditions for collections.
- A restaurant may have substantial ventilation and hot-water demand.
- A place of worship may be occupied intermittently, with high short-duration heating loads.

DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.5: commercial buildings



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.5: commercial buildings

E.5 covers commercial activities such as:

- Retail shops.
- Wholesale or retail sales warehouses.
- Supermarkets.
- Exhibition and sales spaces.

Relevant energy considerations include lighting, refrigeration where applicable, opening hours, ventilation and customer occupancy.

Example: a supermarket with refrigerated display cases has a different energy profile from a small clothing shop, even though both may fall within E.5.

For the energy calculation, the designer should distinguish building services from process-related or specialist equipment where the applicable calculation method requires this distinction.

DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.6: sports facilities



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.6: sports facilities

E.6 includes:

- E.6(1): swimming pools, saunas and similar facilities.
- E.6(2): gyms and similar sports facilities.
- E.6(3): support services for sports activities.

The energy profile can be dominated by different services depending on the facility.

Facility	Important energy considerations
Swimming pool	Water heating, humidity control, ventilation and evaporation
Gym	Ventilation, occupancy peaks, showers and domestic hot water
Sports support areas	Changing rooms, showers, lighting and intermittent heating

DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.7: educational buildings



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.7: educational buildings

E.7 includes schools at all levels and similar educational establishments. Examples include:

- Primary schools.
- Secondary schools.
- Universities and teaching buildings.
- Other qualifying educational facilities.

Key considerations include:

- Occupancy during teaching hours.
- Ventilation and indoor air quality.
- Lighting and daylight control.
- Heating schedules and zonal control.
- Periods of reduced use, including holidays.

DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.8: industrial and craft buildings



DPR 26 August 1993, n. 412: building categories Art. 3:

Sub-categories- E.8: industrial and craft buildings

E.8 covers industrial and craft buildings and similar uses.

Examples may include **factories**, **workshops** and **production buildings**, subject to the precise statutory definition.

A critical distinction is between:

- Building services: heating, cooling, ventilation, lighting and other relevant services.
- Production processes: energy used directly by industrial equipment or processes.

The energy calculation must follow the applicable technical method and the actual scope of the building's services.

Certain provisions of DPR 412/1993 also address specific temperature-related exceptions for E.8 buildings. These must not be confused with a general exemption from building energy-performance requirements.

DPR 26 August 1993, n. 412: building categories Art. 3:

Comparison: all categories at a glance

Category	Example	Typical modelling concern
E.1	Apartment building	Domestic hot water and residential schedules
E.2	Office	Lighting, equipment and working hours
E.3	Care facility	Continuous operation and specialist conditions
E.4	Restaurant	Ventilation, occupancy and hot water
E.5	Supermarket	Lighting, opening hours and refrigeration
E.6	Swimming pool	Humidity and water heating
E.7	School	Teaching schedules and ventilation
E.8	Workshop	Process energy versus building services

DPR 26 August 1993, n. 412: building categories Art. 3:

How the decree singles out categories?

- Reference to "E.1, except colleges, convents, prisons, barracks, and E.1(3)": used for the summer solar area limit (Table 12 gives < 0.030 for these; < 0.040 for all other buildings) and for lighting and transport indices
- EPL (lighting) and EPT (lifts/escalators) are not calculated for E.1, except for those exceptions
- E.6 and E.8 are exempt from the summer thermal-mass check (3.3(4)(b))
- E.8 is exempt from the U and solar-factor checks on windows in requalification (5.2(1)(c)-(d))

DPR 26 August 1993, n. 412: building categories Art. 3:

Worked example:

ordinary flat

- A block of flats is E.1. Lighting and lift indices are not calculated, and the summer solar-area limit is 0.030.

Office

- An office building is E.2. EPL and EPT are calculated; the solar-area limit is 0.040; BACS class B is mandatory for new non-residential buildings (3.2(13)).

DPR 26 August 1993, n. 412: building categories Art. 3:

Mixed-use buildings and practical application

Buildings containing more than one use

- Parts belonging to different categories are assessed separately, each in its own category
- The building is evaluated and classified by the prevailing use in terms of conditioned volume
- Fire-prevention rules still apply

Worked example: mixed use

- Building: 6,000 m^3 conditioned, of which 4,200 m^3 flats (E.1) and 1,800 m^3 shops (E.5)
- Prevailing use: E.1 (70% of the volume)
- Calculation: flats as E.1, shops as E.5. The building's label follows E.1

DPR 26 August 1993, n. 412: building categories Art. 3:

Mixed-use buildings and practical application

Examples include:

- Shops on the ground floor and apartments above.
- Offices attached to a factory.
- A hotel with a restaurant and conference facilities.
- A school with a sports hall.
- A commercial building containing offices and retail spaces.

The designer should establish:

1. Which parts are functionally identifiable.
2. Which use category applies to each part.
3. Whether services are shared or independent.
4. How the applicable calculation method handles the different zones and services.

DPR 26 August 1993, n. 412: building categories Art. 3:

Mixed-use buildings and practical application

Consider a building with a shop on the ground floor and six apartments on the upper floors.

Ground floor: retail shop

Likely category: E.5

Determine opening hours, lighting, ventilation and the heating/cooling services serving the shop.

Upper floors:apartments

Likely category: E.1(1)

Determine residential occupancy, domestic hot water demand, heating controls and the services serving the apartments.

If the entire building has one central heating plant, can we simply model it as a single residential building?

not without checking the different uses, thermal zones, shared systems and the applicable calculation rules. A common plant does not automatically eliminate the need to distinguish the building's uses.

DPR 26 August 1993, n. 412: building categories Art. 3:

Mixed-use buildings and practical application

Use this workflow before starting the calculation.

1. Survey the building

Plans, surfaces, uses, operating schedules and existing systems

2. Identify the use categories

E.1–E.8, including applicable subcategories

3. Map thermal zones and services

Shared and independent systems, control zones and service boundaries

4. Select the applicable calculation and verification route

Use the current decree and the relevant UNI/TS 11300 methods

DPR 26 August 1993, n. 412: building categories Art. 3:

How the classification connects to the 2025 decree

DPR 412/1993 provides the building-use categories and climatic-zone framework. The updated Minimum Requirements Decree establishes the energy-performance requirements and their application.

For a real project, follow this sequence:

- Establish the applicable regulatory version and relevant transition provisions.
- Identify the municipality and climatic zone.
- Classify the building's intended use.
- Determine whether the project is a new construction, a first- or second-level major renovation, or an energy requalification.
- Identify the applicable requirements, tables and calculation methods.
- Document the resulting checks.

❑ Climatic zone and intended use are important inputs, but neither one alone determines the full set of requirements.

Common classification mistakes

Mistake	Correct approach
Assuming the zone from the city or region	Check the official municipal entry
Treating all residential accommodation identically	Check the relevant E.1 subcategory
Classifying a mixed-use building under only one category without analysis	Assess separately identifiable parts
Assuming an industrial building is automatically exempt	Check the specific statutory provisions
Using the climatic zone as the building's energy class	Treat them as different concepts
Choosing a requirements table before classifying the intervention	Establish the intervention category first

Change of use:

- Annex 1, 1.3(3): a simple change of use is not equated to a new building
- But if works fall under another case of the decree, the corresponding requirements apply
- Recovering unheated volume or changing use (attic, store, warehouse) counts as an extension if it exceeds 15% of the existing conditioned volume or 500 m^3

Module recap and a practice exercise

- Zones come from degree-days; categories come from use; both select limits
- Exercise: a new three-storey building has 8,000 m^3 of offices (E.2) and 500 m^3 of a ground-floor café (E.4(3)), in a municipality with 2,450 GG. Answer: zone E; E.2 prevails; café assessed separately; solar-area limit 0.040 for the whole.

DPR 26 August 1993, n. 412

Exercise

1. A municipality has 2,800 degree-days. Which climatic zone applies?

Zone C

Zone D

Zone E

Zone F

2. A building is used as a supermarket. Which category is generally relevant?

E.2

E.5

E.7

E.8

DPR 26 August 1993, n. 412

Exercise

3. A building contains a shop and apartments in separately identifiable parts. What is the correct starting point?

Classify everything as E.1

Classify everything as E.5

Consider the parts separately under their respective categories

Ignore intended use if the heating system is shared

4. Does Zone E mean that a building is energy class E?

Yes

No

5. Where should the designer check a municipality's official degree-days?

A nearby municipality's website only

The current official municipal table in Annex A to DPR 412/1993 and applicable updates

The building's cadastral category

The heating generator's data plate

Italian interministerial Decree 28 October 2025, the minimum requirements

Establish the project's legal pathway:

Start with the intervention, not the equipment

Before selecting insulation thicknesses, a heat pump or a renewable-energy system, establish:

- What work is actually proposed?
- Which parts of the building envelope are affected?
- Which heating or cooling systems are being renovated?
- Is the intervention limited to a single unit or does it concern the whole building?
- Which building title and project dates apply?

❑ These facts determine the applicable requirements. The official decree and its annexes are the controlling sources.

Italian interministerial Decree 28 October 2025, the minimum requirements

The principal intervention pathways:

Path A

New construction and interventions assimilated to new construction

Apply the requirements prescribed for this category, subject to the decree's specific definitions and exceptions.

Path B

Major renovation, first level

More than 50% of the gross dispersing envelope is affected, and the thermal system serving the whole building is also renovated for winter and/or summer climate control.

Italian interministerial Decree 28 October 2025, the minimum requirements

The principal intervention pathways:

Path C

Major renovation, second level

More than 25% of the gross dispersing envelope is affected, but the conditions for a first-level major renovation are not met.

Path D

Energy requalification

An intervention that falls within the decree's definition of energy requalification but does not qualify as new construction or major renovation. The specific requirements depend on the elements or systems being upgraded.

Italian interministerial Decree 28 October 2025, the minimum requirements

New construction and demolition/reconstruction:

- The decree treats buildings whose qualifying **building title** was **requested** after its entry into force as **new construction**. **3 June 2026**
- **Demolition** and **reconstruction** are assimilated to **new construction** under the decree's provisions, regardless of the building title required.
- Consequently, **retaining the same address** or rebuilding on the same plot **does not**, by itself, make a project an **ordinary renovation**.