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APE

APPUNTI DI ENERGIA

AN UPDATE ON THE ITALIAN CAPACITY MARKET

June 2026

Overview

*For further details on the basic functioning of the **Italian Capacity Market**, readers may refer to the previous edition of Appunti di Energia dedicated to this topic.*

The **capacity market** is the instrument designed to ensure the adequacy of the electricity system, namely the availability of sufficient generation capacity, imports, and storage resources to meet electricity demand at all times and in every area of the country, with an appropriate reserve margin. Unlike energy markets, where electricity that is produced or consumed is traded, the capacity market remunerates the availability of capacity: operators selected through auctions receive **a premium in exchange for committing to making their capacity available** during periods that are relevant for system security.

Aspects	Key elements
Benefits	For producers: greater certainty over future revenues
	For consumers: mitigation of the risk of price spikes
Procedure	Competitive auctions
Participants	Dispatchable and non-dispatchable generation units
	Eligible consumption units
Requirements	*Existing* or *new capacity*, according to the eligible categories
	Compliance with the applicable emission limits
Functioning	Entitlement to a fixed annual premium
	Obligation to offer capacity
	Obligation to return revenues exceeding the *strike price*
Duration	Existing capacity: contracts referring to a single delivery year
	New capacity: multi-year contracts up to 15 years

*The **strike price** is the threshold value used to limit excess profits: market revenues above this price must be returned to Terna. The price is set based on the standard variable cost of an open-cycle gas turbine plant fueled by natural gas.*

Adequacy of the Italian Electricity System

Terna: Adequacy Report 2025

APE on Adequacy

Terna's *2025 Italy Adequacy Report* analyses the expected evolution of the Italian electricity system, with reference to the 2030 and 2035 target years, in order to assess whether the available resources are sufficient to meet electricity demand in every hour and in every market zone. Adequacy is assessed using probabilistic indicators, including **LOLE (*Loss of Load Expectation*)**, i.e. the expected number of hours in which energy not supplied occurs, and **EENS (*Expected Energy Not Supplied*)**, i.e. the expected amount of demand not served.

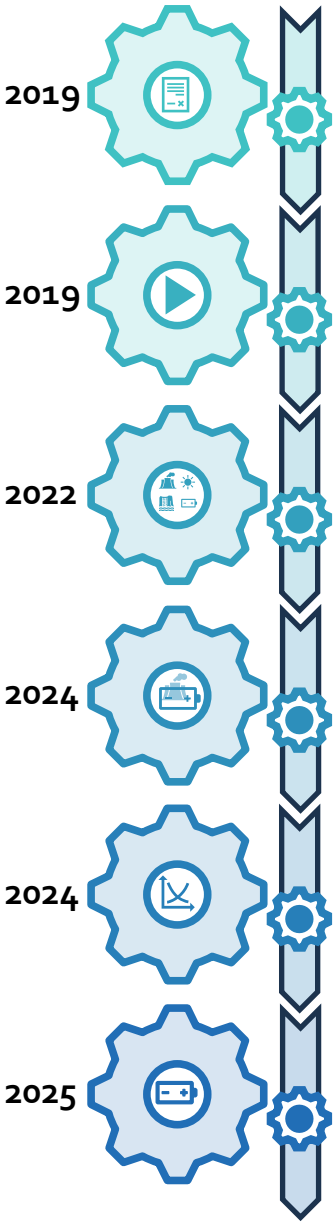
The report highlights how the growth of non-dispatchable renewable energy sources is profoundly changing the operation of the electricity system. On the one hand, the increase in photovoltaic and wind capacity contributes to decarbonization and reduces dependence on fossil fuels; on the other hand, it makes system operation more complex, as generation variability increases and resources capable of ensuring adequacy and flexibility during critical hours become ever more necessary. According to Terna's data, between the beginning of 2022 and the end of 2025, 23.3 GW of new photovoltaic and wind plants entered into operation.

In this context, the role of thermoelectric power plants remains significant. Greater penetration of renewables reduces the operating hours of gas-fired plants and may therefore undermine their economic sustainability. Terna's analysis shows that, in the absence of adequate long-term

signals, **a significant share of dispatchable capacity could become economically unsustainable**. If this capacity were decommissioned, the electricity system might no longer have the resources needed to comply with adequacy standards, as written in Terna's *2025 Italy Adequacy Report*.
The report emphasizes that **imports** are a useful resource for the adequacy of the Italian electricity system, but cannot be considered fully guaranteed, as they **depend on the availability of capacity in neighboring countries**. This availability is in turn linked to the actual and timely development of the new dispatchable capacity indicated in national energy and climate plans, which is not always supported by sufficient implementing instruments. Against this background, Terna's *2025 Italy Adequacy Report* confirms the role of the Capacity Market as a necessary instrument to ensure available resources and system security during critical periods.

Timeline

*To learn more about the phases of the capacity market (**main auction**, **adjustment auction** and secondary market) see the APE on the capacity market.*



The Italian Capacity Market is established

With the Ministerial Decree of 28 June 2019, following clearance by the European Commission, the final design of the Italian Capacity Market is defined.

Main auctions for delivery years 2022 and 2023

The first two main auctions are held between 6 and 29 November 2019, respectively for delivery years 2022 and 2023, marking the operational launch of the mechanism. In both auctions, all offered capacity is accepted.

Main auction for delivery year 2024

A distinction is introduced between new authorized and non-authorized capacity, together with increased attention to the contribution of different technologies, with storage systems beginning to emerge more clearly.

Main auction for delivery year 2025

The auction for 2025 shows the first significant change in the technological mix of new capacity: electrochemical storage systems account for more than half of the new awarded capacity.

Main auction for delivery year 2026

The auction held on 18 December 2024 confirms the now consolidated functioning of the market, with existing capacity volumes fully awarded. Premiums are updated compared with previous auctions.

Main auction for delivery year 2027

Further increase in new capacity, largely consisting of storage systems.

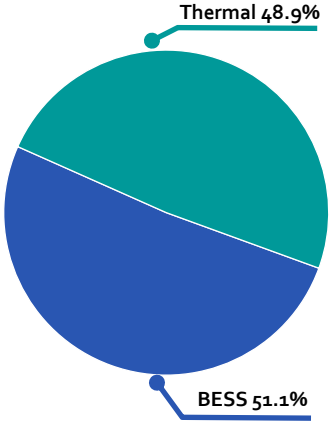
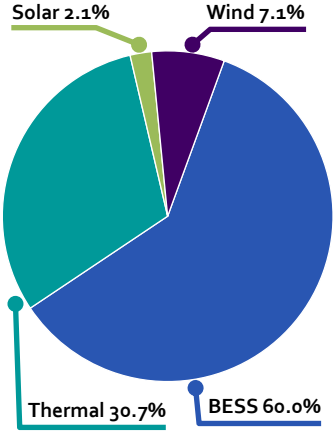
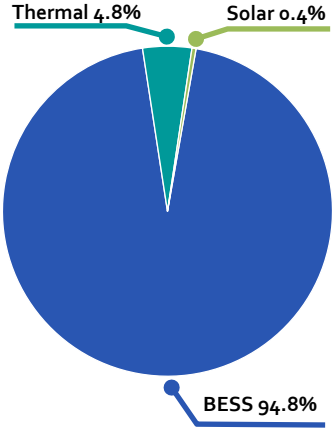
Auction Results

Terna: main auction 2025 results (in Italian)

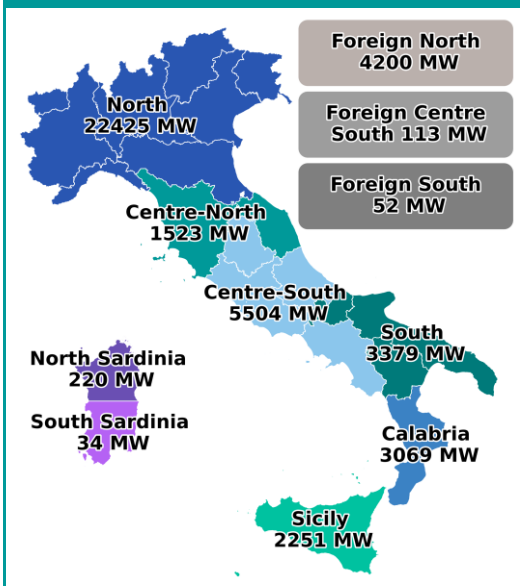
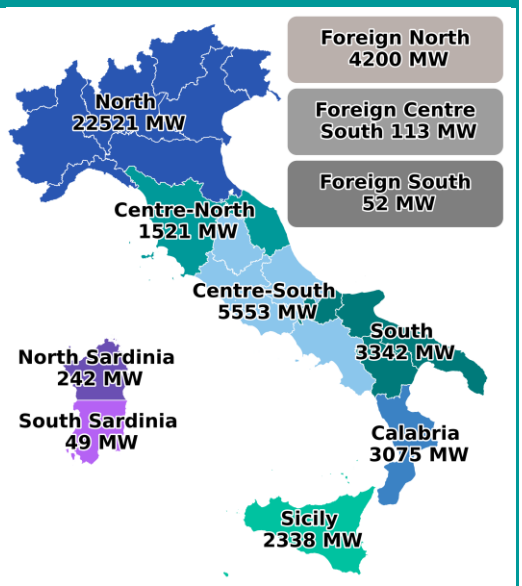
Terna: main auction 2026 results (in Italian)

Terna: main auction 2027 results (in Italian)

In the auctions for delivery years 2025, 2026 and 2027, the prevailing share of awarded capacity was represented by existing capacity: in each auction, approximately **38 GW were awarded to existing capacity**, while **new authorized capacity amounted to only a few hundred MW**.
In terms of the technological composition of new capacity, a gradual shift can be observed compared with the first auctions, in which thermoelectric plants played a significant role. Year after year, electrochemical storage systems have gained an increasing share, as shown in the table below, which reports the auction results in terms of percentage share by technology.

Main Auction 2025	Main Auction 2026	Main Auction 2027
		

The geographical distribution of awarded capacity has remained mostly stable over the years, with allocations mainly concentrated in the North and connected foreign zones:

Main auction 2026	Main auction 2027
	

In the last three main auctions, the remuneration premiums awarded to operators followed the progression below:

- for delivery year **2025**, existing capacity received a premium of €45,000/MW/year, while new authorized capacity received €67,500/MW/year, reflecting a differentiation designed to incentivize investments in new plants.

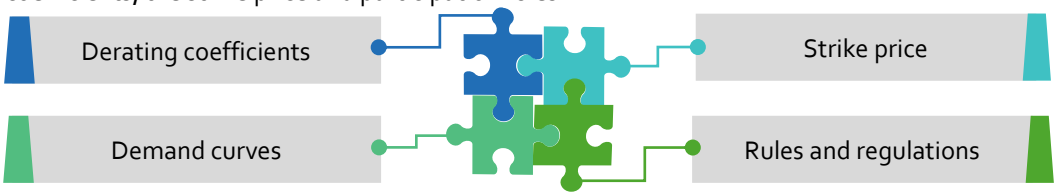
- For **2026**, the premium for existing capacity increased to €46,000/MW/year, while new capacity received a premium of €56,160/MW/year.
- In the auction for **2027**, for the first time, both existing and new capacity were awarded the same premium of €47,000/MW/year, with the premium for new capacity decreasing, indicating growing competition among new players.

Updates for the 2028 main auction

Terna's public consultations on Capacity Market 2028

ARERA: DCO 141/2026/R/eel (in Italian)

The launch of a new main auction of the Capacity Market requires the definition of several regulatory and technical "building blocks". In 2026, the auction for delivery year 2028 is expected to take place, requiring the update of parameters such as adequacy requirements, derating coefficients, the strike price and participation rules.



The puzzle of the new main auction for 2028 has begun to take shape through two parallel public consultations. **Terna** focused on the rules governing the mechanism and on how to assess the contribution of different technologies, particularly storage and solar systems. **ARERA**, instead, addressed the issue of the strike price, consulting operators on the standard specific consumption of natural gas to be used for its calculation: this is a technical parameter that contributes to defining the mechanism for returning revenues when energy prices exceed certain thresholds.

Demand Curves and Data Centers

Terna: 2025 Development Plan

Decreto Bollette (in Italian)

Terna defines demand curves through probabilistic simulations of the electricity system, taking into account load, generation, interconnections between areas, and exchange limits. Updating the demand curve is particularly relevant in a context where expected electricity requirements may be affected by new forms of consumption. Among these, data centers are attracting increasing attention: they are potentially very significant electricity loads, geographically clustered and characterized by consumption profiles that tend to be constant. As indicated by Terna in its 2025 Development Plan, connection requests from data centers amounted to 30 GW in December 2024, and **the installed capacity of these centers could grow significantly in the coming years**.

A further aspect linking capacity and data centers concerns the use of water resources. The experience of 2022, marked by drought, a sharp reduction in hydropower production and increased pressure on thermoelectric generation at very high gas prices, showed how water availability can also affect electricity system security. Against this background, the growth of data centers makes not only the amount of energy absorbed relevant, but also the technological solutions used to manage these loads. In particular, measures aimed at **improving the efficiency of cooling systems** are also of interest for the capacity market.

For the demand curve, some implications of the *Decreto Bollette* (the Italian Energy Bills Decree) are also relevant, as it may lead to a reduction in domestic absolute electricity prices. In this context, all else being equal in foreign markets, electricity produced in Italy becomes relatively more competitive compared with prices in neighboring countries, making exports more economically attractive. This increased attractiveness translates into a rise in overall demand addressed to the national electricity system: domestic demand would in fact be supplemented by a **higher share of foreign demand**.

For the purposes of the capacity market, these aspects are important because a structural increase in load may change the level of capacity required to meet adequacy standards.

BESS and derating coefficients

BESS: Battery Energy Storage System

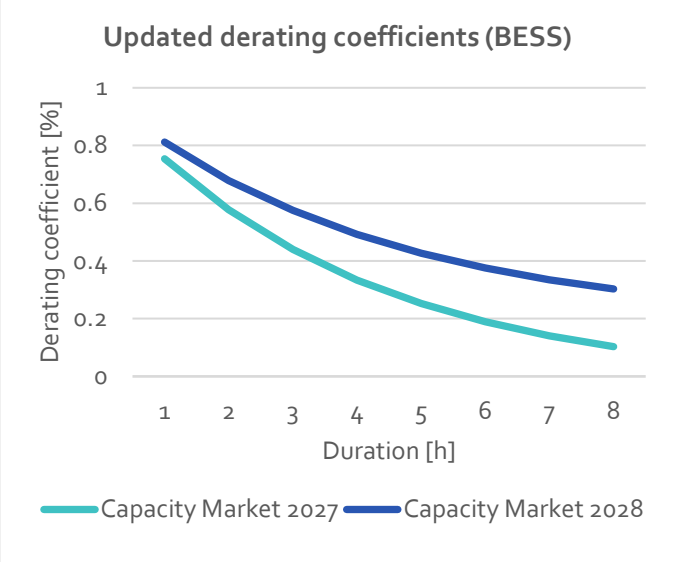
*The **derating coefficient** is used to convert the nominal capacity of a resource into **Capacity Available in Probability (CDP)**. In this way, different technologies can be compared based on their expected contribution to meeting system needs during critical hours.*

$CDP = P \cdot (1 - c)$, *where P is the installed capacity and c is the derating coefficient.*

One of the main topics of the public consultation launched by Terna in February 2026 concerns the update of the derating coefficients applied to storage systems, particularly electrochemical batteries (*BESS*), for the purposes of participation in the Capacity Market. In the case of storage systems, their contribution to adequacy depends on:

- **installed capacity;**
- **discharge duration;**
- **the state of charge available during critical periods;**
- **the overall penetration level of the technology in the system.**

The contribution to adequacy is particularly relevant in areas where the availability of energy to be absorbed in the hours preceding critical events may be limited: in the absence of sufficient generation surplus, a battery may not be fully charged when the system needs it. Therefore, **a growing number of batteries does not automatically imply a proportional increase in capacity useful for adequacy purposes**: as BESS deployment increases, their marginal contribution may decline, because during critical hours not all units may necessarily be fully charged and available.



For this reason, in the proposal for the 2028 main auction, Terna pictured a revision of the *derating coefficients* for storage systems. Lower coefficients reduce the *CDP* recognized for the same installed capacity and may therefore affect both the economic participation of BESS projects and the overall volume of capacity available in the auction. In parallel, Terna also proposes **updating the derating coefficients for solar energy systems**, recognizing that the contribution of non-dispatchable renewable sources to adequacy depends on their actual production profile during critical hours and on their increasing integration into the electricity system.

This issue is part of a broader framework of coordination between the Capacity Market and other forward-looking instruments, particularly **MACSE**, which is dedicated to the procurement of electricity storage capacity. The proper definition of derating coefficients therefore becomes one of the key elements to avoid overlaps between different instruments and to value the contribution of storage systems to system security in a consistent manner.

Terna: updating the derating coefficients for 2028 (in Italian)

APE on MACSE

Flexibility regarding the delivery period

A further aspect covered by Terna's consultation concerns the introduction of greater flexibility in the commissioning deadlines for new capacity awarded through the dedicated market . The proposed amendments to the rules for delivery year 2028 address the way in which new capacity may fulfil the obligations undertaken in the auction, allowing broader margins in the management of plant development timelines and subsequent post-auction nomination procedures.

This issue is significant because the development of new capacity may be subject to approval, construction, and connection timelines that operators cannot always fully control. Greater flexibility may therefore reduce the risk that non-structural delays jeopardize participation in the mechanism or lead to the loss of contractual obligations, while keeping unchanged the main

objective of the Capacity Market: ensuring that the required capacity is actually available in the delivery year.
In this context, flexibility in commissioning deadlines should not be seen as a weakening of Capacity Market obligations, but rather as an attempt to make the mechanism more consistent with the actual timelines of investment development. The aim is to support the development or renewal of the required capacity, while maintaining a balance between system reliability and the sustainability of permitting and construction processes.

The author of the report is:

Paola Ferrari

Researcher in the Department of Energy Systems Development in the Energy Market Regulation research group.
After completing a Master's degree in Mathematics, she obtained a Ph.D. in "Computer Science and Computational Mathematics".

appuntidienergia@rse-web.it

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