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APE

APPUNTI DI ENERGIA

TIDE

TESTO INTEGRATO DEL DISPACCIAMENTO ELETTRICO

June 2024

What is it?

The TIDE (in Italian Testo Integrato del Dispacciamento Elettrico) is a reform aimed at modifying the **Italian electricity dispatch** regulation. It is conceived as a comprehensive document that aims to merge existing regulatory elements (those in Deliberation 111/06) with innovative components. Based on this document, all other fundamental elements for the evolution of the electricity system will then be added, such as the capacity market, or the market for the remuneration of storage system capacity, or the discipline of essential services.

TIDE

APE "capacity market "

APE "market for the remuneration of storage system capacity"

The scopes of TIDE are:

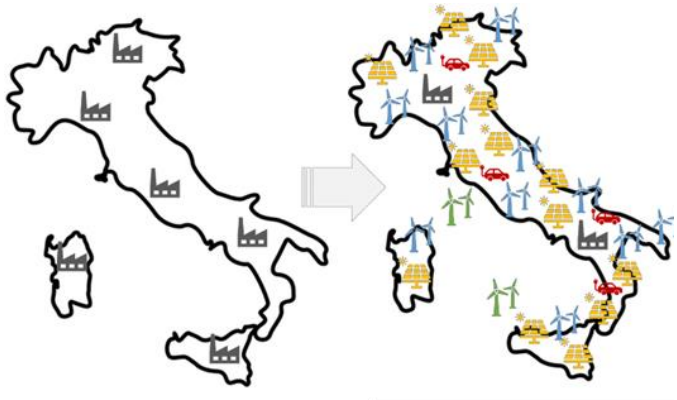
- To **ensure the security of the future electricity system** in an efficient way and at the lowest cost, even in a context characterized by an increasing number of non-programmable renewable power plants and distributed generation.
- To **optimize all regulatory aspects related to dispatching**, considering the changing European regulatory framework, which foresees more unified and integrated markets.

Since 2017, the Italian Regulatory Authority (ARERA) and TSO (Terna) have started several pilot projects – such as the UVAM (Unità Virtuali Abilitate Miste - Mixed Enabled Virtual Units) and the fast reserve (Deliberation 300/2017/R/eel) – to test the provision of innovative ancillary service and open the ancillary service market to new actors. Starting from these experimental results, the new regulatory framework defined by the TIDE definitively breaks down all barriers that prevented all entities and resources from offering their flexibility to the ancillary service market, ensuring an increasingly extensive pool of resources for electricity dispatch.
In July 2023, with Deliberation 345/2023/R/EEL, ARERA approved TIDE.

TIDE will become effective starting from January 1st, 2025.

Context

In the context of energy transition, where achieving the 2030 objectives requires a greater diffusion of non-programmable renewable sources (often small-scale plants spread across the territory) as well as increased integration of electricity markets among European countries, it is necessary to plan a new structure for the electricity markets.



We are facing a gradual transition from a system characterized by a few large programmable plants to a system characterized by plants powered by non-predictable and distributed renewable sources, which feed electricity into distribution networks (initially not designed for energy injection). Thus, there is a shift in the roles of producers and customers as well as the role of Terna (i.e., Italian TSO), which will purchase resources for ancillary services from small-scale plants operating in an aggregated manner.
The new regulatory framework designed by TIDE allows the participation of all different types of units: not only large programmable plants but also renewable plants, distributed generation, and consumption units (thus changing the role of end customers, making them more involved in network dispatch and ancillary service provision).

Main novelties

Picasso Platform

Mari Platform

Terre Platform

Balancing Regulation (UE) 2017/2195

TIDE outlines the new structure of the Italian Ancillary Service Market (Mercato del Servizi di Dispacciamento, MSD).
According to the EU Directive 2019/944, it is divided into two closely connected sub-phases[1]: balancing and redispatching.

Balancing activities are expected to be carried out mainly through **standard balancing products**[2] traded through European platforms (Picasso, Mari and Terre).

A transition from the current mandatory provision of the Frequency Containment Reserves, made by large generation units, to a hybrid mechanism, where the mandatory provision is placed side-by-side with a new market-based procedure.

To ensure the participation of the largest set of units during the provision of ancillary services, the concept of relevance of the PUs[3] (currently coinciding with a nominal power greater than or equal to 10 MVA) will no longer be used. Consequently, in principle, all units can add to their main role (producing or consuming energy) an ancillary role, i.e., the provision of services.

Revision of the taxonomy used to identify and classify individual and aggregates of units: UAS, UVAN, UVAZ, UVN, UVZ, UnAP etc (see the description below).

The new dispatching reform will open the ancillary service markets to all the resources to eliminate all the potential regulatory barriers. This will create a **technology-neutral market**, as suggested by the European policies, where all the resources that can technically provide ancillary services can actually participate.

It will be introduced the possibility to provide ancillary service asymmetrically: hence an enabled unit can provide upward or/and downward services.

To facilitate the coordination between TSO and DSOs, a traffic light approach will be adopted. Therefore, the provision of ancillary service from the distributed energy resources will not negatively affects the distribution grid.

The mathematical models adopted solve the ancillary service markets will be updated considering the most advanced approached available.

As prescribed by the "European Balancing regulation", the definition of imbalances definition will be updated to incorporate the energy activated during all the ancillary service requests. Furthermore, the approach adopted to evaluate the macro-zonal imbalance will be updated to also consider the energy activated during the extraordinary modulation service.

The role of Distribution System Operators (DSO) will strongly change. They will become a neutral facilitator for the provision of ancillary services to the Transmission System Operators (TSO-Terna in Italy). Hence, the DSO will need to verify if the service provision requested by the TSO could negatively affects the distribution grid (i.e., by adopting the traffic light approach). Furthermore, the DSO will be able to acquire local ancillary service to solve congestions or voltage issues on the distribution grid.

[1] *The taxonomy adopted to define the mandatory ancillary service (such as voltage regulation) and the products exchanged in the ancillary service markets have been redefined. In general, the ancillary services are subdivided into ancillary services for frequency regulation, ancillary services nonrelated to frequency, ancillary service for the redispatch (e.g., line congestion) and extraordinary modulation services.*

[2] *Frequency Containment Reserve (FCR), automatic Frequency Restoration Reserve (aFRR), manual Frequency Restoration Reserve (mFRR) e Replacement Reserve (RR).*

[3] *PU: production unit*

Definition of BSP and BRP

Regulation (UE) 2019/943

One of the main novelties that will be introduced by TIDE is the possibility to manage the energy exchanges considering aggregates of energy resources. Hence, two subjects are introduced in the regulatory framework: the Balance Responsible Party (BRP) and the Balancing Service Provider (BSP). Each resource that wants to participate in the energy and ancillary service markets need to define its BRP and BSP.

BSP	BRP
The BSP participates in the ancillary service market to provide ancillary service to the transmission and distribution system operators	The BRP participants in the energy markets and it is responsible for the non-compliance of the power profile defined in the energy markets (i.e., the so-called energy imbalance)
It is responsible for the provision of the ancillary service requested by the TSO	The BRP is the energy trader, hence it is the subject responsible for the so-called "base" power profile, hence the power profile defined in the energy markets.
It offers in the ancillary service market the flexibility of the units that it manages (whether single or aggregated plants) and receives remuneration from Terna during the service provision	The BRP sell and acquires energy in the energy markets (both on the spot and over the counter markets[4]) considering the forecasts of the energy injection and withdraw The TSO evaluates the energy imbalances as the difference between the power declared on the market and the power actually exchanged, considering also the energy exchanged because of the ancillary service provision
Return to the BRP an economic compensation for ancillary service provision[5]	The BRP receives from the BSP the fees and payments for the energy exchanged during the service provision
It is financially liable to Terna for the failure during the ancillary service provision	It is the subject responsible for the imbalance fees
Settles with the units that provided the service the economic countervalue obtained during the service provision	Settles with production units and final customers the economic value of actual energy produced and absorbed

New taxonomy

Within the TIDE, a **new taxonomy** is introduced to identify and classify units and aggregates. The new classification is consistent with the principles of technological neutrality and non-discrimination defined by the European legislation.
The figures[6] below show the classification adopted during the participation in the ancillary service (in blue) and energy (in green) markets.

[4] *In Italy the over-the-counter market it is called: Mercato elettrico a Termine, while the spot market is called: Mercato elettrico a Pronti*
[5] *For example, if an individually enabled generating unit is requested to activate upward flexibility (increase in energy fed into the grid), the BSP receives from Terna the product between the price offered on the ancillary market and the energy activated. In order to compensate the BRP for the increased share of energy supplied, the BSP pays the BRP.*
[6] *PU stand for production unit, CU stand for consumption unit*

Ancillary Service Market Participation

UAS
Unità Abilitate Singolarmente

- Single PU or CU
- Connected to a relevant network node
- Capable to perform nodal ancillary service

UVAN
Unità Virtuali Abilitate Nodali

- Made up of several PUs and/or CUs
- The aggregate of resources must be connected to a relevant network node
- Individual resources should not constitute an UAS
- The aggregate of resources is able to perfom nodal ancillary services
- Managed by a single BSP

UVAZ
Unità Virtuali Abilitate Zonali

- Made up of several PUs and/or CUs
- All the resources must be located in the same market zone
- Individual resources should not constitute an UAS or an UnAP or UVAN
- The aggregate of resources is able to perfom at least one of the zonal ancillary services
- Managed by a single BSP

Energy Market Participation

UAS
Unità Abilitate Singolarmente

- Single PU or CU
- Each production UAS has a specific type (e.g., cogeneration, programmable hydro, etc.)

UnAP
Unità non Abilitate Programmabili

- Single PU or CU
- Connected to a relevant network node
- It is not an UAS or it is not included in a UVAN
- Powered by a programmable source
- It satifies the criteria defined by Terna

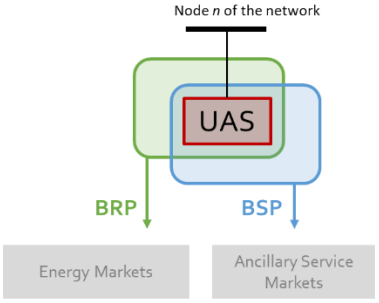
UVN
Unità Virtuali Nodali

- Made up exclusively of several PUs or exclusively of several CUs
- Included in the same UVAN
- Belonging to the same typology
- Managed by a single BRP

UVZ
Unità Virtuali Zonali

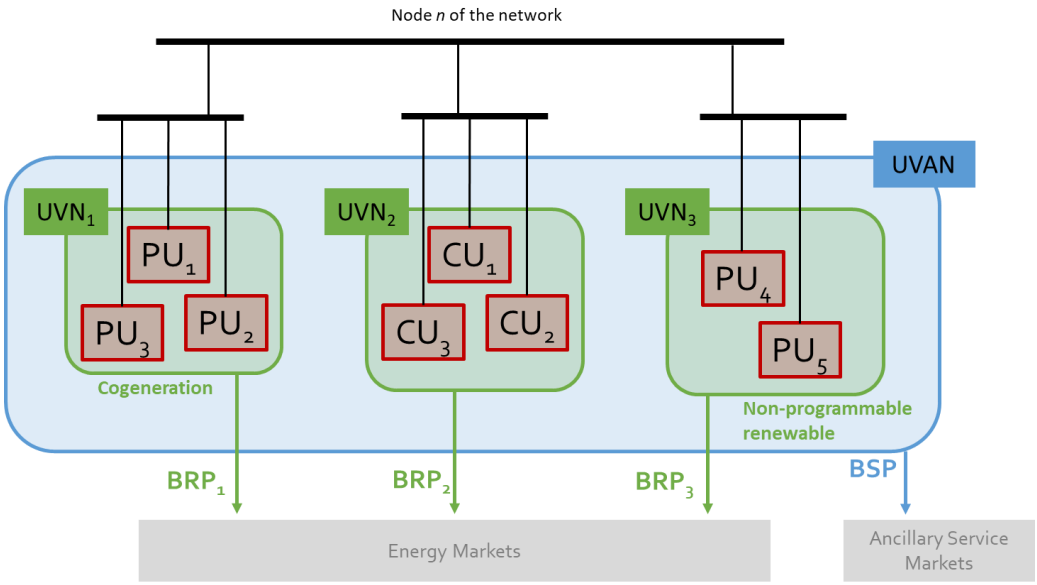
- Constituted exclusively by UPs or by CUs
- It is not an UAS or UnAP and not included in an UVAN
- Located in a single market zone
- Belonging to the same typology
- Managed by a single BRP

UAS (Unit Individually Enabled): it is for example a large thermoelectric or hydroelectric plant. It is reasonable to expect a BRP and a BSP to coincide, but there is the possibility that they are distinct and separate.

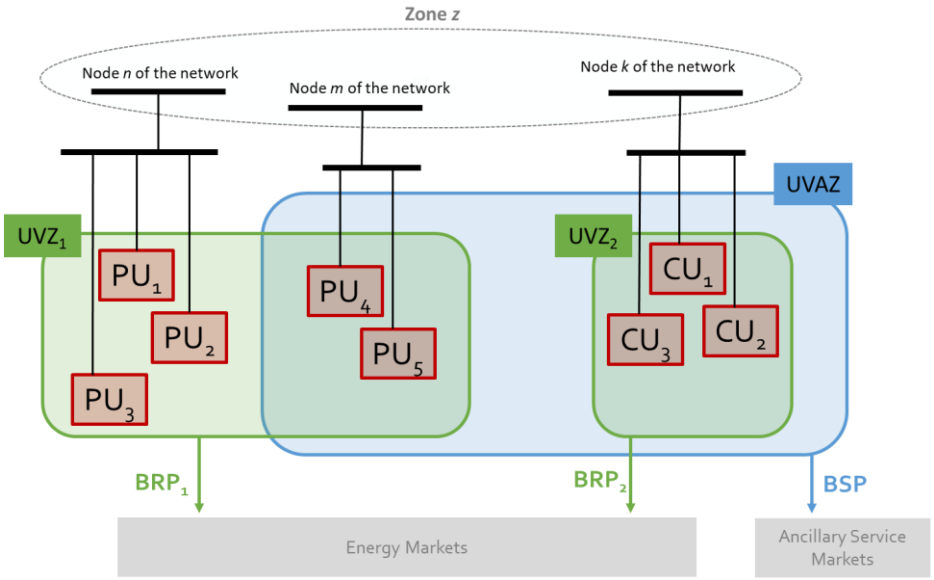


UVAN and UVN (Aggregates of Enabled Nodal Units and Aggregates of Nodal Units): an example of a UVAN could be an industrial plant that has a consumption unit and a production plant sharing the same connection node with the grid. Or a plurality of resources connected on a

distribution network underlying a single node. UVAN is by definition able to offer nodal ancillary services and it is operated by a single BSP.
As far as participation in energy markets is concerned, within each UVAN there may be several UVNs, under the responsibility of different BRPs. In the UVN, it is necessary to distinguish between CUs (withdrawals) and PUs (injections) grouped in turn by type of technologies (e.g., cogeneration plants, renewable resources, etc.).



UVAZ e UVZ (Aggregates of Enabled Zonal Units and Aggregates of Zonal Units): UVAZs are aggregates created for the provision of balancing services (i.e., ancillary services which can be provided in a general node inside a zone), and consequently they may include resources connected to any voltage level within a market zone. As far as participation in energy markets is concerned, individual resources within the UVAZ can be aggregated into different UVZs and managed by different BRPs. The BRP needs to aggregate resources according to consumption or production and for PUs only also according to type.



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