ARERA
Autorità di Regolazione
per Energia Reti e Ambiente

Grid constraints in DSO's networks: Italian experience

Clean energy for EU islands

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345/2023/R/ee	end of revision processes of electricity dispatching regime regulation (instead of experimental) for TSO

The problem in a slogan

To preserve the right to turn on the light at will, we should build a new world where turning it off is an opportunity[1]

[1] Proposed during Resolution 345/2023/R/eel public presentation

General principles

- All resources connected to the grid can (in principle) assume a double role:
  - "main role" produce or consume energy
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- Technological neutrality: no advantages related either to the kind of technology, or to being a production plant or a consumer
- Removal of undue barriers (they are usually arising from how ancillary services have historically been provided). For example, are eligible for balancing market:
  - units that can offer only a single ancillary service (not only big units capable of providing bundled ancillary services)
  - units that can offer "upwards" or "downwards" services only (asymmetric mode)
  - all units, without power limit (historically 10 MVA minimum)

DSOs' Pilot Projects: what are we experimenting?

- What? Technical and regulatory solutions to enable the DSOs to buy "local ancillary services"
- Why? Observed phenomena of overloads and local congestions (still limited)
- Where? DSOs identify areas are where these phenomena are occurring more frequently

An important *trade-off*

network development $\Longleftrightarrow$ enabling distributed resources to provide ancillary services

DSO responsibilities

- Identification of the ancillary services and their characteristics, the objectives they serve, the corresponding needs
- The identification of the network model, with an appropriate level of detail to possible aggregation boundaries so that within them a specific service can be provided interchangeably by production and/or consumption units (individual or aggregated)
- Identification of the solutions to be tested for the provision of each service, the competitive procedures (includes forms of forward procurement)
- Identification lack of liquidity situations; any "non-market" solution may be evaluated on a case-by-case basis
- estimation of the costs of experimentation, as well as possible alternatives, including upgrade and development of the network
- Definition of criteria of eligibility and accreditation procedures

DSO responsibilities

- Commitment of DSO to cooperate with other DSOs and the TSO
- Identification of one or more indicators that can be taken to assess the results of the experimentation;
- Identification of technical solutions for the interface and communication channels between the involved parties (DSO, BSP, and users); preference for open, modular and non-proprietary solutions
- Assessment of solutions already adopted and tested nationally and internationally for similar needs
- Pursuit of possible European funding opportunities
- Consultation of the proposed regulation
- Technical report illustrating the project, providing reasons for all choices made, and highlighting the outcomes of all preliminary activities

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- observability: provide the TSO, the DSO and the BSP with technologies needed to know in real-time all available resources, their current and expected service status

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- technology standards: definition of open-source and scalable solutions

First auction for local ancillary services

- 22nd november 2023: first auction for local ancillary services (Rome distribution network)
- Accepted offers: 3 MW, 11 BSPs
- Delivery period: February to April 2024 (3 months)
- Availability price: 25'508 €/MW/year[2]
- Price for upwards modulation: 307.2 €/MWh
- Number of units: $\approx$ 60, $\approx$ half LV, half MV
- Kind of resources: cogenerators, storage of telephone plants (antennas), EV charge stations, home storage (with solar panels)

[2] Actual value for the 3 months is 25'508 divided by 4

The End