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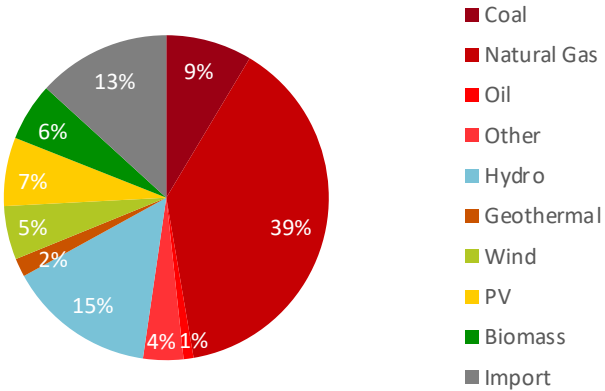
Insights from the innovative UVAM project in Italy:
aggregating distributed flexibility resources

Jan Marc Schwidtal

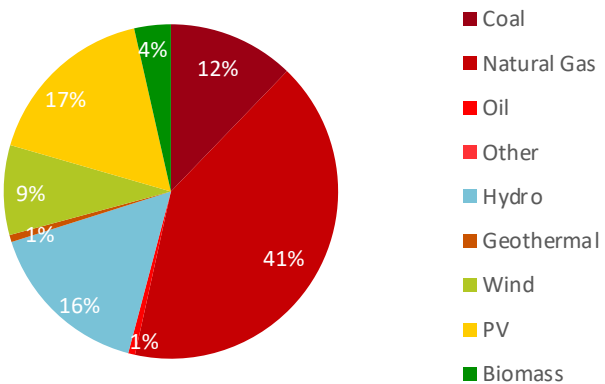
1. The Italian power system
2. The UVA pilot projects
3. A critical review of the UVAM project

The Italian power sector ^[1]

Energy consumption mix 2018



Installed capacity 2018



Overall electricity consumption:

331.891 GWh (2018)

Share of renewable resources:

34,5 % (2018)

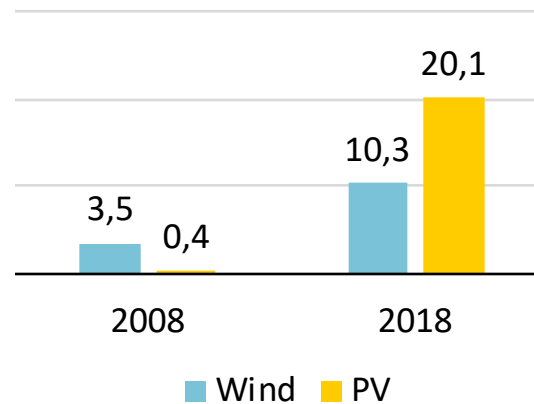
Installed capacity:

118,1 GW (2018)

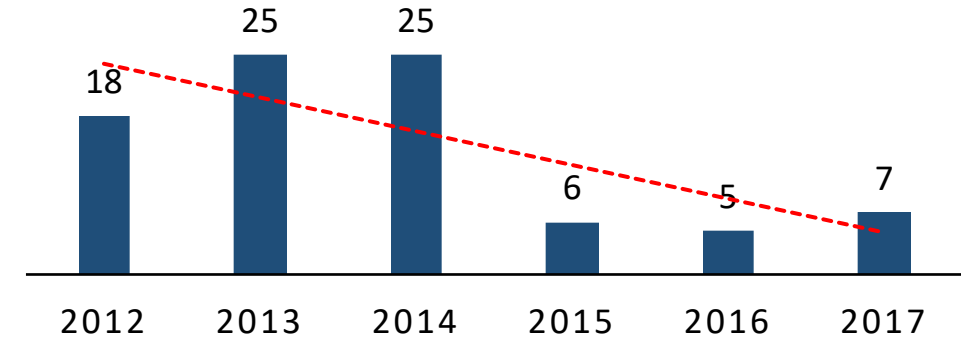
Share of renewable resources:

46 % (2018)

Installed capacity [GW]

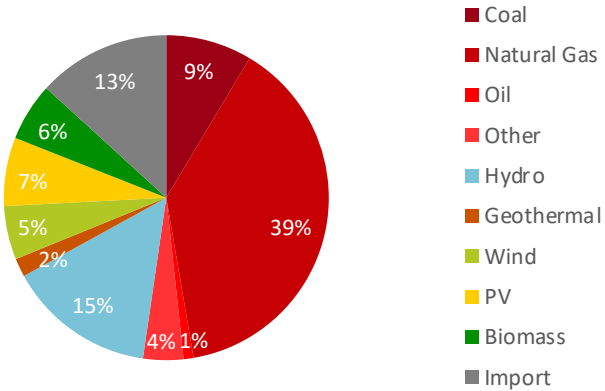


Reserve capacity margin at peak load [GW]

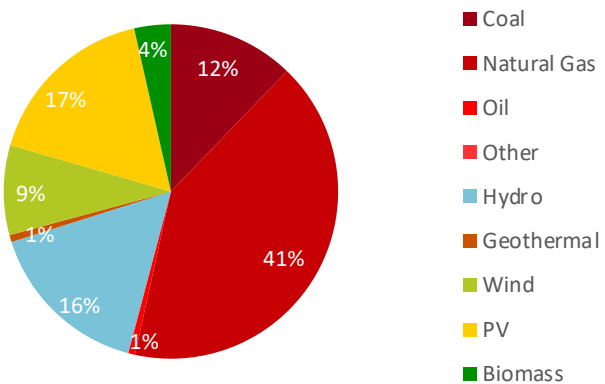


The Italian power sector ^[1]

Electricity consumption mix 2018



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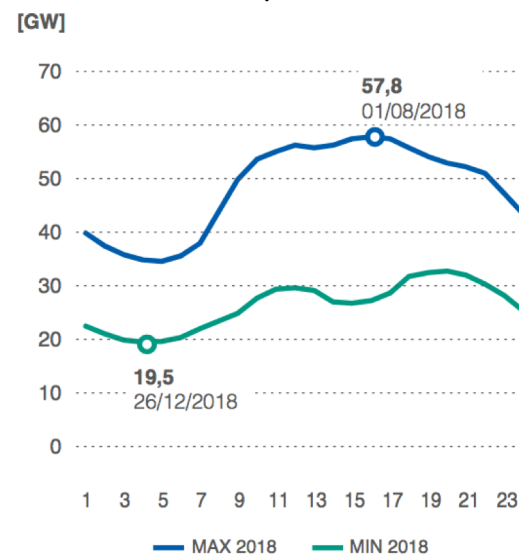
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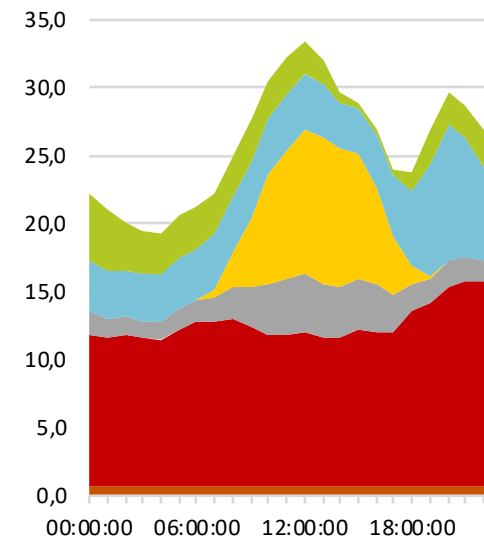
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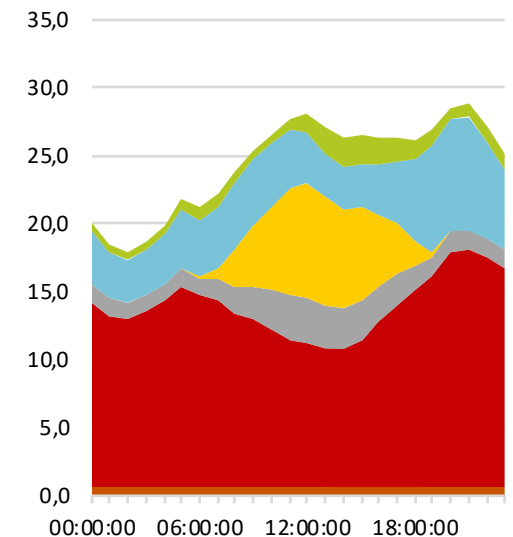
Consumption profiles^[2]:
min / max



Generation profiles:
01.04.2018



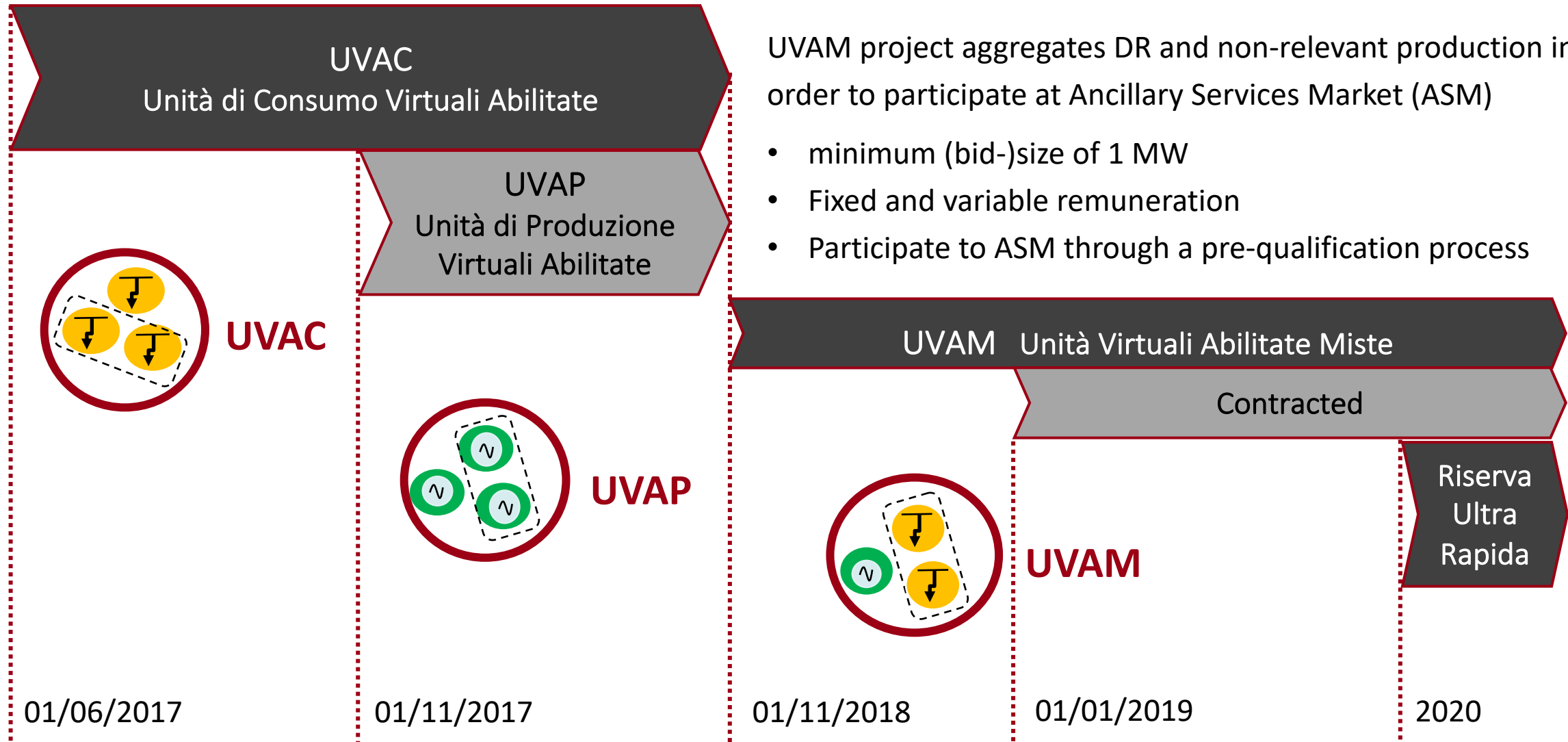
15.08.2018



[1] self elaborated based on data from Terna

[2] taken from Terna, Annual Report 2018.

The UVA pilot projects



Reviewing the UVAM project

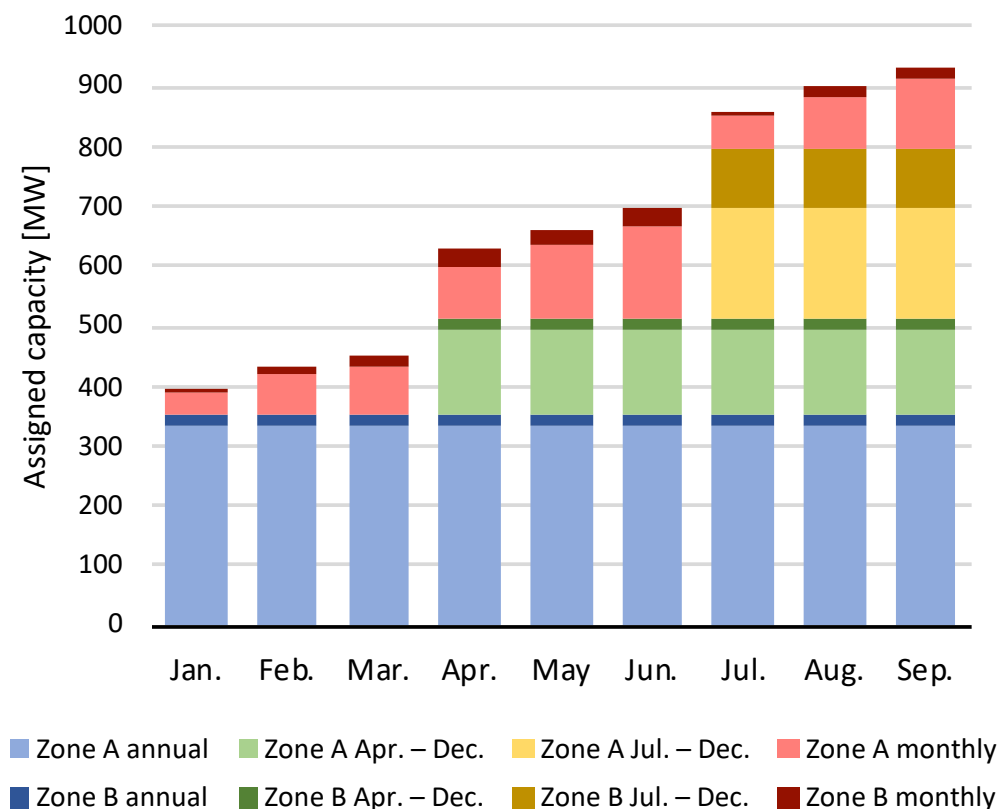


The UVAM project:

- Intends to procure 1.000 MW of distributed flexibility from previously not enabled units
- Integrates this flexibility in the existent ASM with the national TSO as single buyer

In the contracted version:

- Provides a fixed capacity payment through downward auctions with pay-as-bid
price-cap 30.000€/MW
- Provides a variable payment through obligatory ASM participation with pay-as-bid
price-cap 400€/MWh



Source: self-elaborated based on data from Terna

Reviewing the UVAM project



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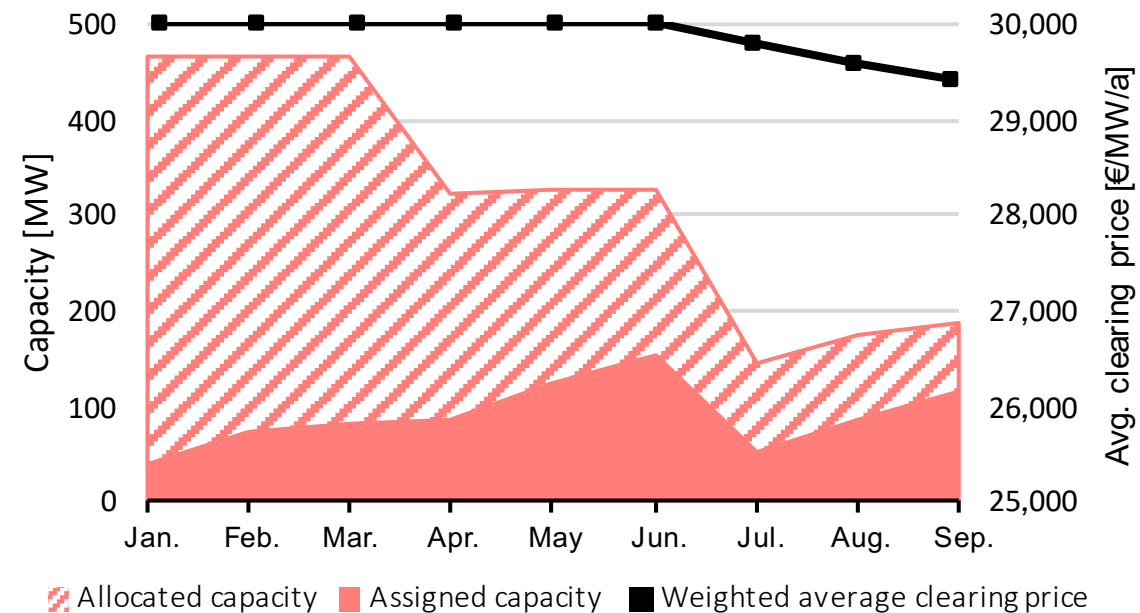
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Development of monthly auctions:

Zone A (north)



Source: self-elaborated based on data from Terna

Reviewing the UVAM project



The UVAM project:

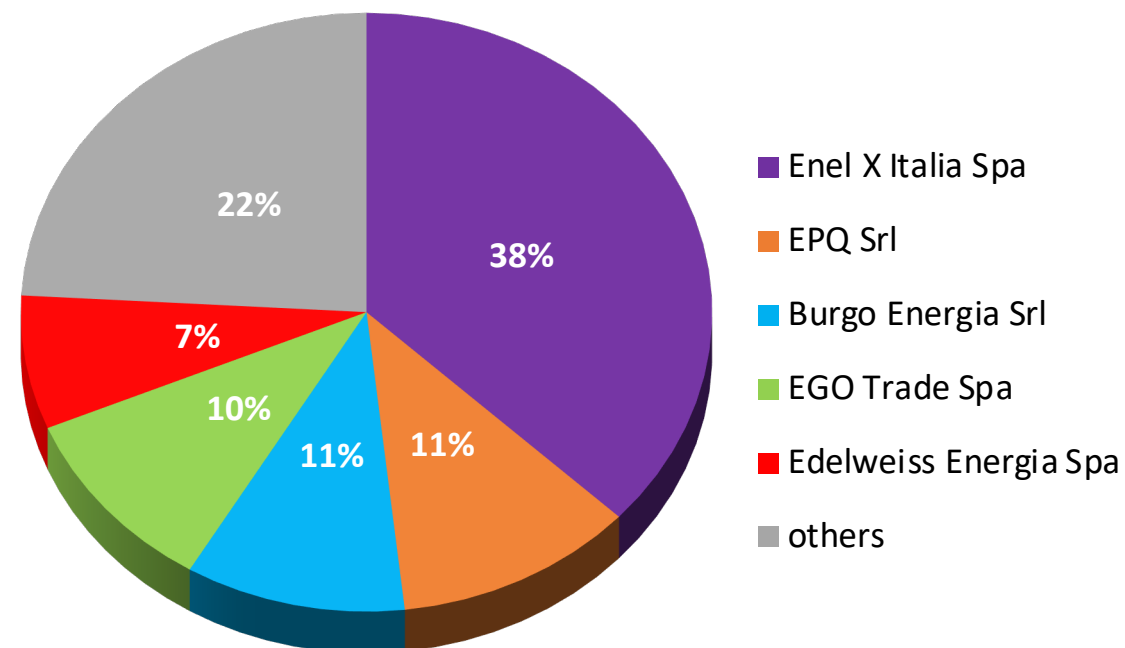
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UVAM constitution:

as of September 2019



Source: self-elaborated based on data from Terna

Reviewing the UVAM project



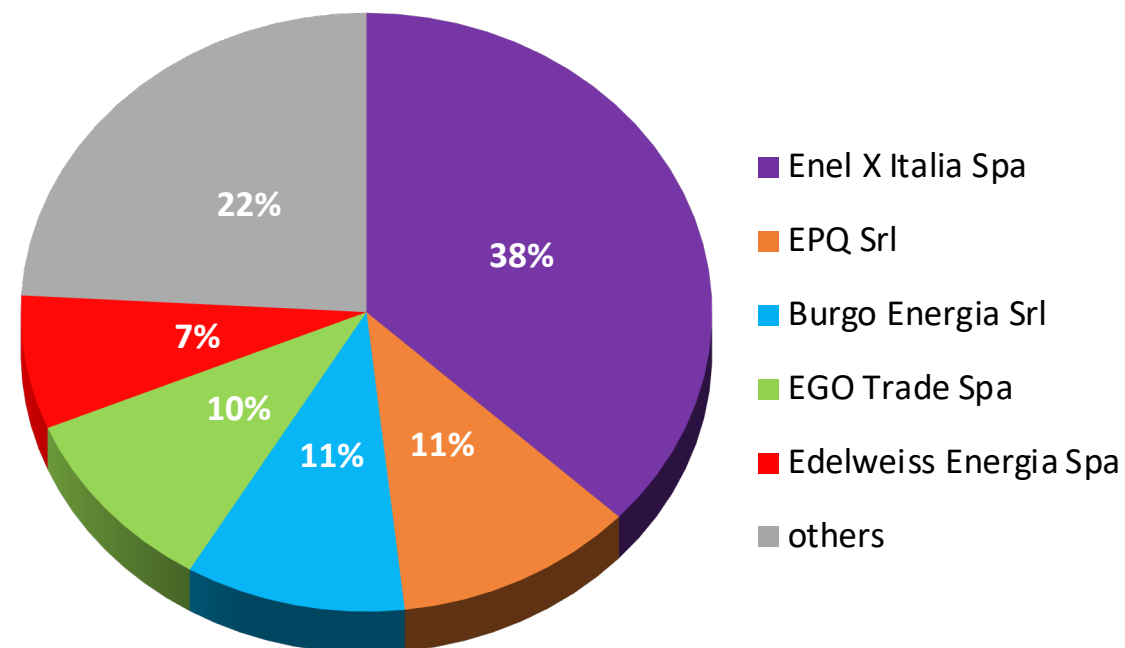
The UVAM project:

as of September 2019

- 156 UVAMs in total with an average size of 7 MW, minimum is 1 MW, maximum 75 MW
- 233 generation assets are present in UVAMs, out of that 63% thermal, 29% hydro and 7% PV
- 148 consumption units are present in UVAMs
- ~ 20% are pure consumption units, ~ 20% pure generation units and ~ 60% mixed
- 71% of all UVAMs consist of one single POD

UVAM constitution:

as of September 2019



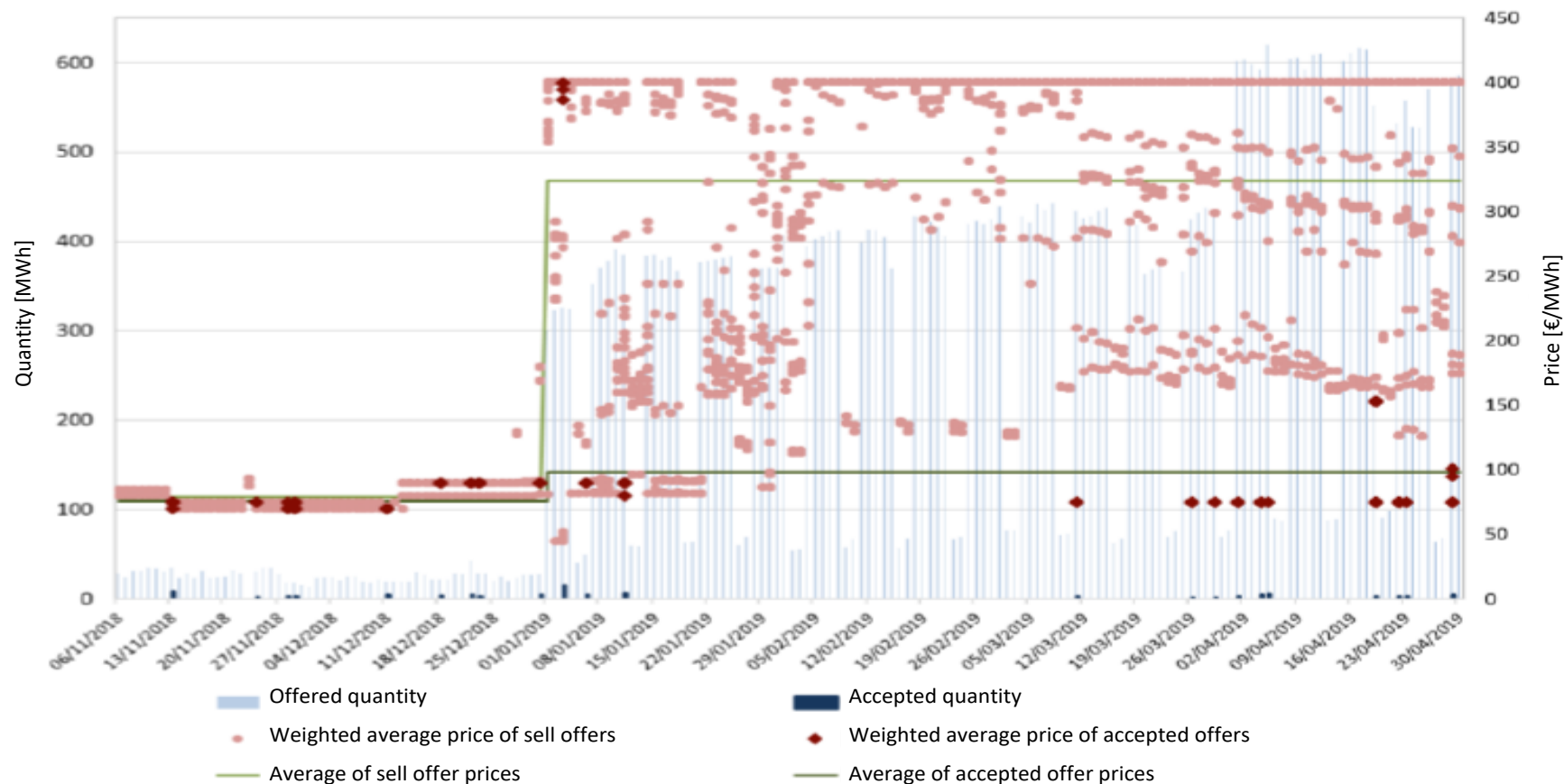
Source: Energy & Strategy Group, "Electricity Market Report", 2019.

Source: self-elaborated based on data from Terna

Reviewing the UVAM project



AS market participation of UVAMs (upward balancing):

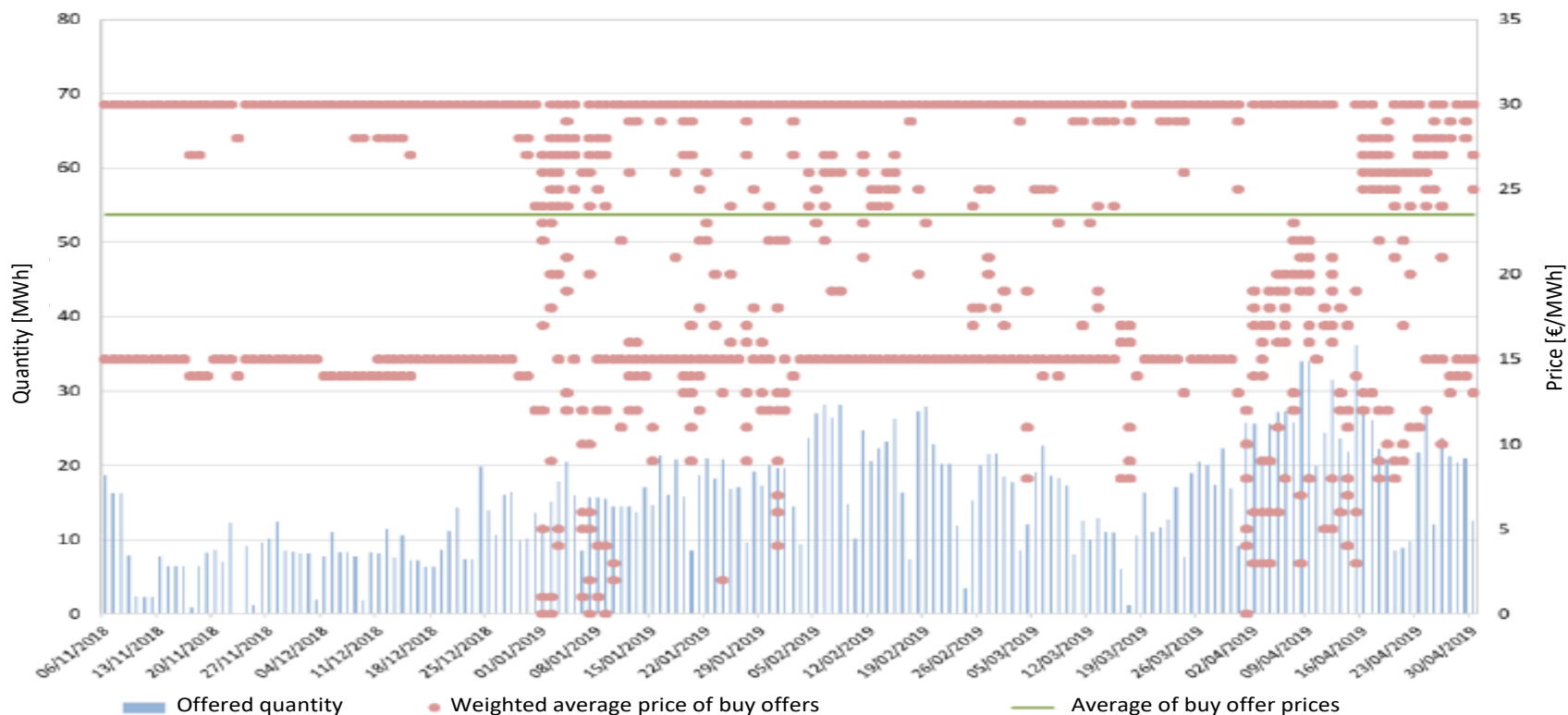


Source: ARERA, “Testo Integrato del Dispacciamento Elettrico (TIDE), 2019.

Reviewing the UVAM project



AS market participation of UVAMs (downward balancing):



Source: ARERA, "Testo Integrato del Dispacciamento Elettrico (TIDE), 2019.

Reviewing the UVAM project



Discussion and critics:

- Encouraging number and quantity of new participants in first distributed flexibility scheme
- Up to now poor participation and performance of UVAMs in ASM though
- Is pilot project really serving its purpose as pilot?
- Fixed payment is considered too low & technical requirements too high entry barriers to involve also small and potentially residential units
- BRP BSP relation is crucial, just got improved by the Italian NRA

Future outlook:

- Ultra rapid reserve as first remunerated “primary reserve” in Italy with 200 MW just announced

- Furthermore proposed:



UVAS (Unità Virtuali Abilitate di Storage)
-> Batteries



UVAR (Unità Virtuali per la Ricarica di veicoli elettrici) -> e-mobility



UCMC (Unità di Consumo per il Mercato di Capacità) -> Demand-side management for capacity market

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Thank you for your kind attention!
Questions? Comments?

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