



CLEAN HORIZON

The Energy Storage Experts



Italy: the new frontier of energy storage in Europe

November 5th 2020





ATA Insights Webinar

Italy: the new frontier of energy storage in Europe



Clean Horizon was founded in 2009 and is the world's sole consultancy specifically dedicated to energy storage

MARKET ANALYSIS



Our experts track the development of energy storage markets and related regulations on all continents and leverage this knowledge to develop go-to-market strategies tailored to our customers' needs.

Update from the Field
Monthly analyst notes

CHESS
Storage projects database

TECHNICAL CONSULTING



Relying on CRE-STORE, our dedicated energy storage modeling tool, we act as owner's engineer and lender's engineer for IPPs worldwide.

We also work for national utilities to help them quantify their energy storage master plan.

CRE-STORE
Storage simulation tool



As of July 2020, Clean Horizon has designed more than 1,730 MWh of storage projects



**Energy storage
systems designed**

1730 MWh*

**Projects designed
around the world**

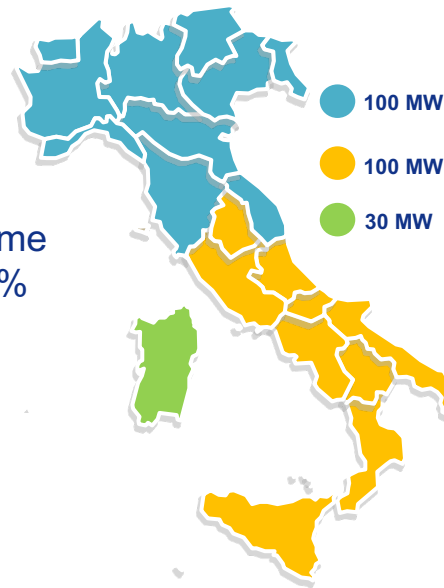
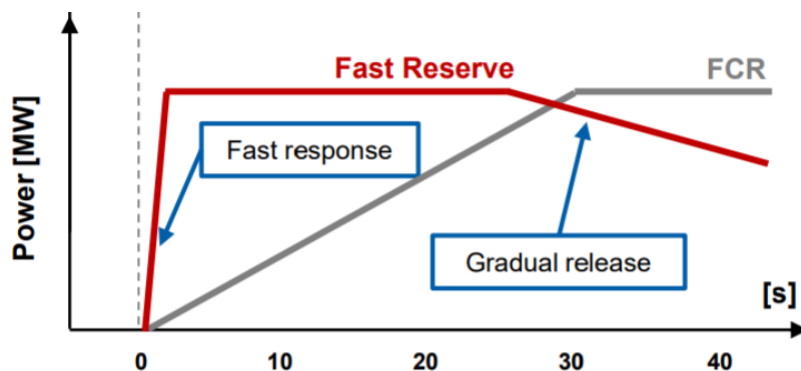
60

**49% of these MWh are built or in the process of being financed*

To prevent future stability issues, Terna decided to purchase 230 MWs of fast reserves in 2020

The Fast Reserve auction is favorable to storage

- Similar to the British Enhanced Frequency Response (EFR) tender, the Fast Reserve service is beneficial for battery storage.
- The bid is open to units ranging from 5 MW to 25 MW
- A single bidder (or bidders belonging to the same group) cannot get assigned with more than 40% of an area's procurement volume

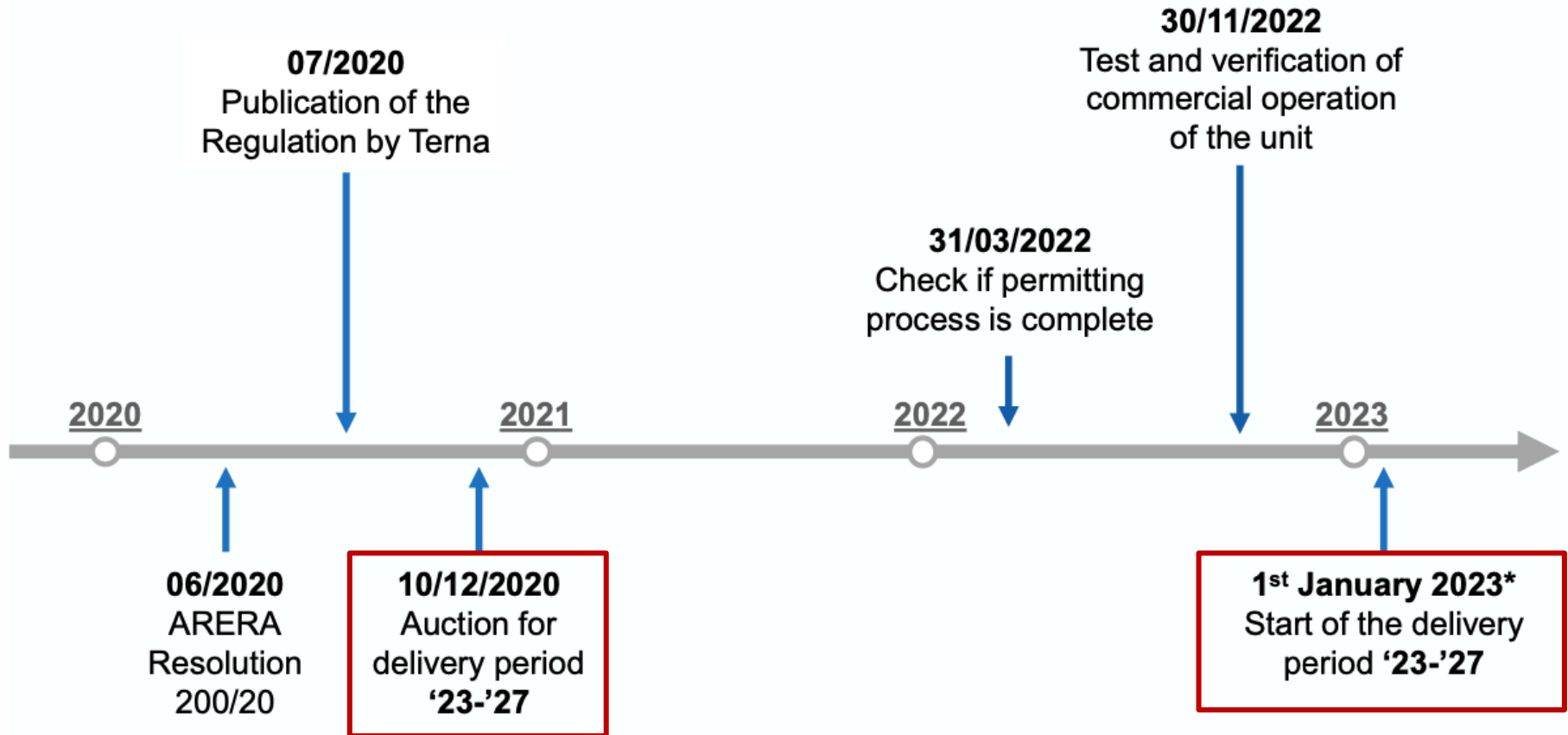


Revenue stacking is possible in hours when no availability for the Fast Reserve service is requested

Capacity market assets are specifically excluded from this tender



Fast Reserve project timeline (source: Terna)



Source: https://download.terna.it/terna/Fast%20Reserve%20-%20Information%20pack_8d82fe02cbed7ad.pdf



The auction clearing price is expected to be low due to required low availability and high level of competition

Upcoming auction features both similarities and differences with previous European auctions

Two auctions for similar services have already taken place in the UK and Ireland :

	UK	Ireland	Italy
Auction year	2016	2019	2020
Auction volume	201 MW	110 MW	230 MW
Storage availability	99.2%	Close to 100%	11%
Average capacity payment	11€/MW/h	9.09€/MW/h	To be auctioned
Corresponding yearly payment	96 k€/MW/year	80 k€/MW/year	To be auctioned
Contract duration	4 years	6 years	5 years

Clean Horizon expects the capacity payments to be **significantly lower** than those in the UK and Ireland.

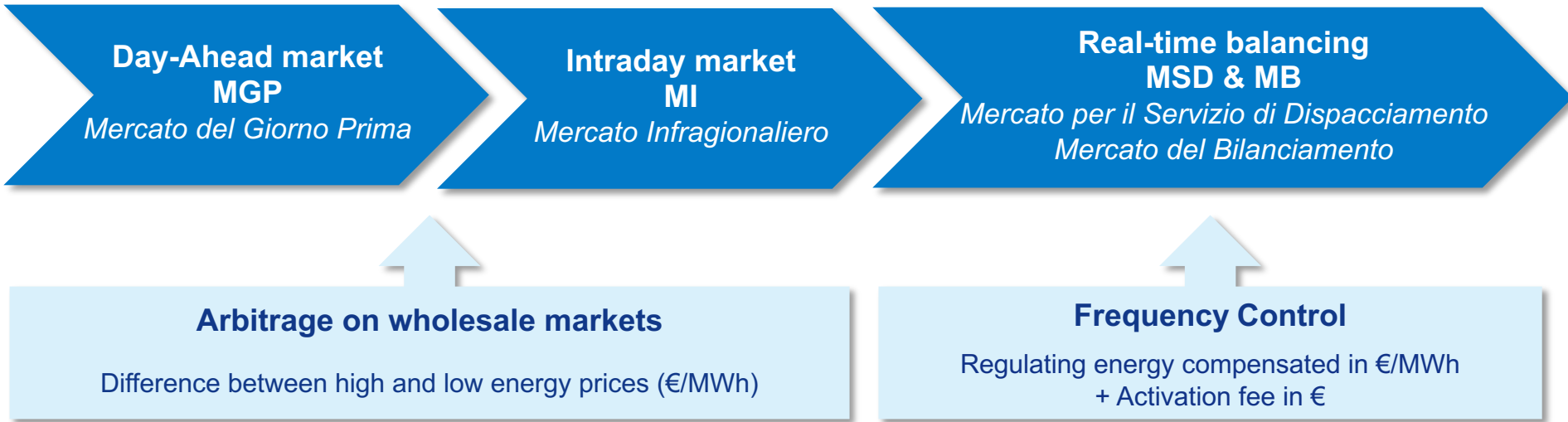
Sources: <http://www.eirgridgroup.com/how-the-grid-works/ds3-programme/ds3-consultations-and-pub/>



So, if the previous revenue is too low, you have to be smart to make a profitable business case

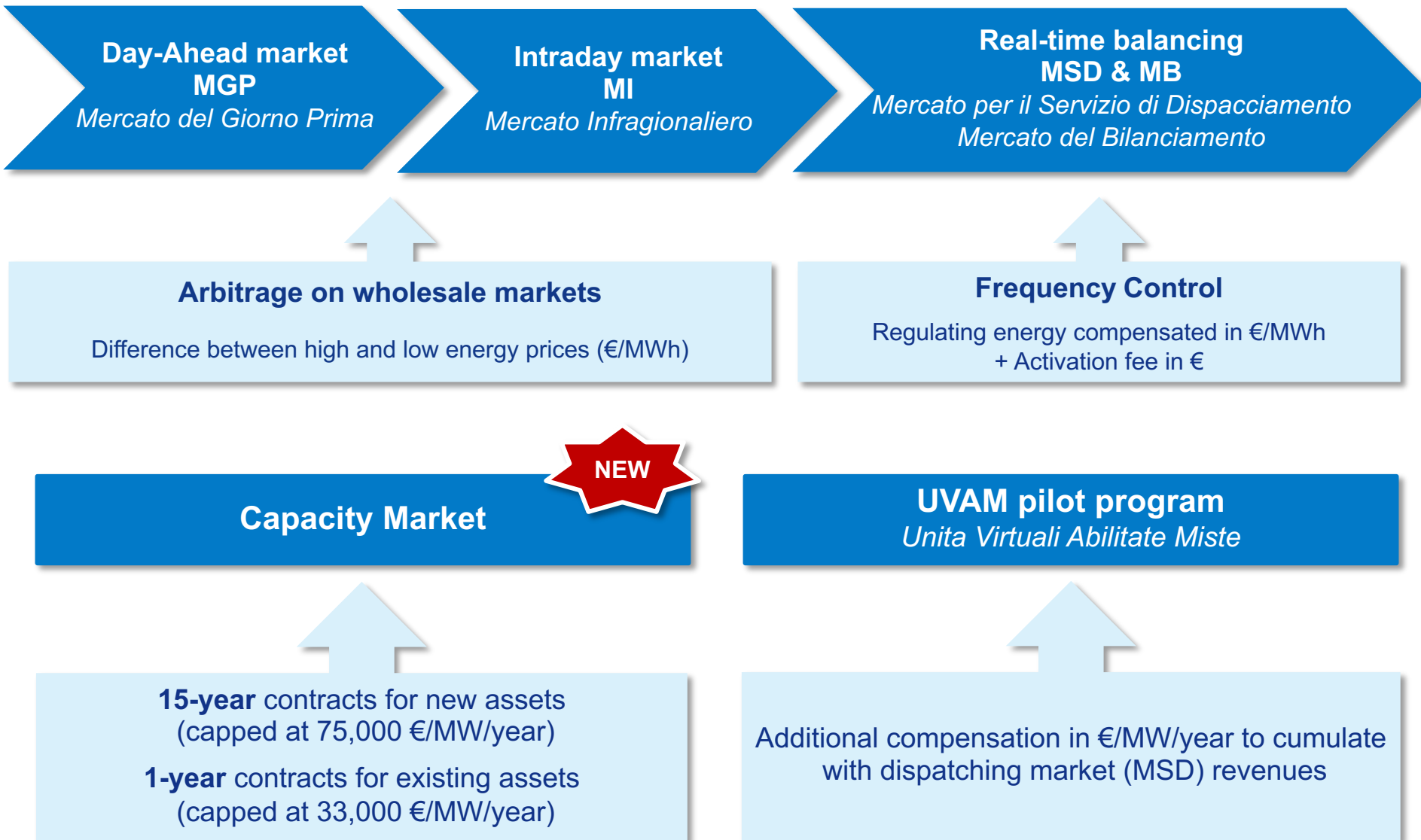


The Italian power market offers a multitude of services that are getting progressively accessible to storage





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Clean Horizon's recommended 4-step methodology to place an optimal bid in the fast reserve auction (please take a screenshot)

1. Compute project costs

- Evaluate CAPEX and interconnection costs
- Evaluate OPEX: O&M costs, grid charges
- Define adequate project sizing



2. Assess additional revenue streams

- When will the system be available (7670 hours)
- What are price forecasts on other markets ? (see previous slide)
- What about capacity market ?
- What is the optimal dispatch of storage on these markets?

The Fast Reserve service requires an availability of 1000 hours/year

Capacity Market revenues can be considered from Year 6



3. Compute needed Fast Reserve revenue to reach target IRR



4. Find optimal Bidding price for Fast Reserve delivery in €/MW/year



Clean Horizon is sticking its neck out: we are banking on storage deployments to reach 1 GW in 2025.

Here is our reasoning

Great Britain's road to 1 GW of storage (summarized heavily...):

- A country with fierce stability issues, characterized by a lot of coal decommissioning
- 4 years after the launch of the 200 MW of EFR program, as ancillary services rules opens up to storage and spreads on the balancing market justify deploying storage, approximately 1 GW is online

Italy's road to 1 GW:

1 Italy does feature inherent lack of flexibility which, just like for Great Britain, is bound to create a positive context for storage

2 By 2023, 230 MW installed for fast reserve, driven by disappearing inertia as 7 GW of coal goes offline

3 In parallel, ancillary services open up slowly to storage **and** Italy features a high-paying capacity mechanism



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Thank you for your attention

Your questions are welcome!

ms@cleanhorizon.com

Direct: +33 6 72 61 27 34

Europe (France)

Clean Horizon Consulting
Paris

europe@cleanhorizon.com

Direct: +33 1 78 76 57 04

Americas (USA)

Clean Horizon Americas
Miami, FL

americas@cleanhorizon.com

Direct: +1 (786) 901-7784

