

Demand Response in Electricity Markets

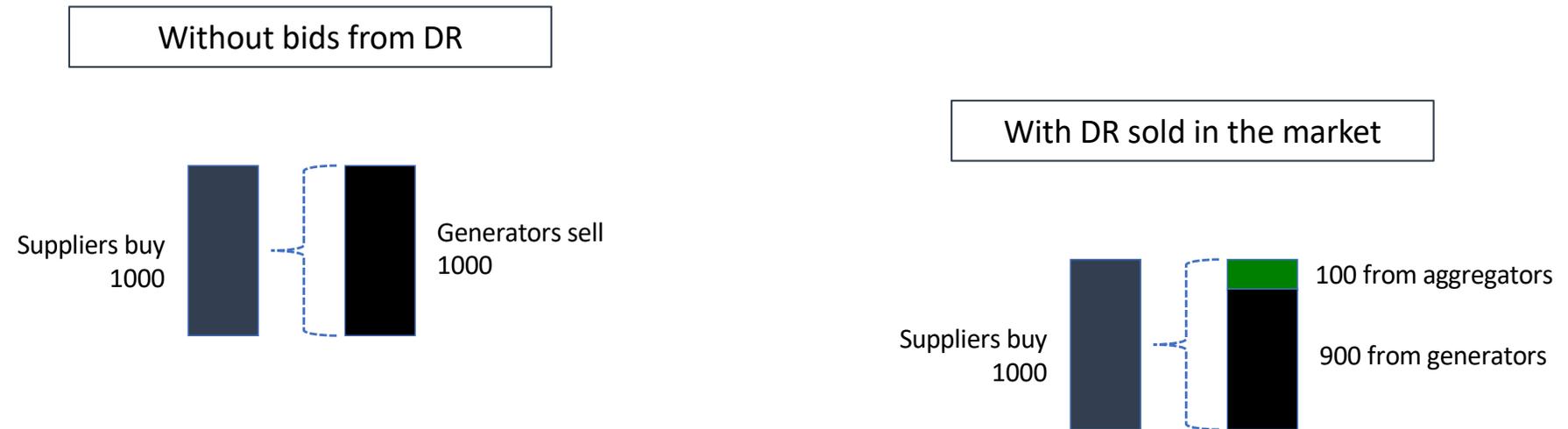
Elements for
Elia Think Tank

Brussels, December 2025

DR to quickly meet needs at scale

- Demand Side Management for
 - Security of supply
 - Better use of renewables
 - Manage scarcity, be it by reducing or shifting loads to periods of abundant clean energy
- How to?
 - MW: from large industrial consumers, to all flexible appliances in buildings
 - MWh: from rare activation (emergencies...) to daily use vs renewables
 - Electrification of heating/cooling and transport: heat pumps, e-Vs,...
 - Provide automation and operation to (sm)all consumers
 - From reserves and services to SOs, to wholesale market
 - Provide revenues to DR operators via the market
- Benefits for all via the market

Selling DR in the wholesale market



- DR bids selected by the market only if cheaper than generators'
- Market settles at a lower price => reduced sourcing costs for all suppliers
- DR sold instead of production: electricity not sold and not produced
- Same volume bought (900+100), but less revenues

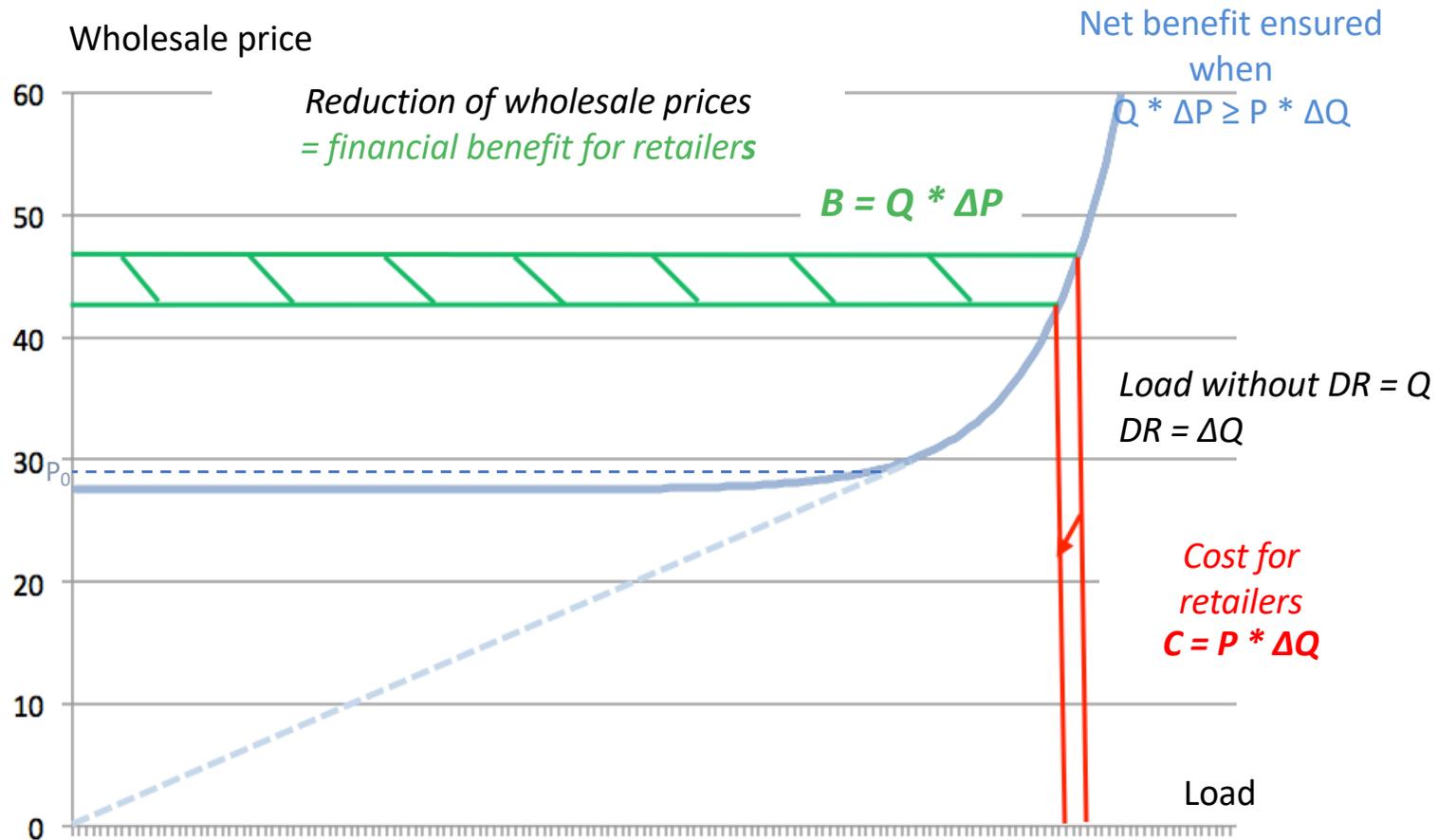
Benefits for all suppliers

« Cost » for suppliers

[Due to "correction", BRP deprived of positive imbalance and related payment, but receive compensation]

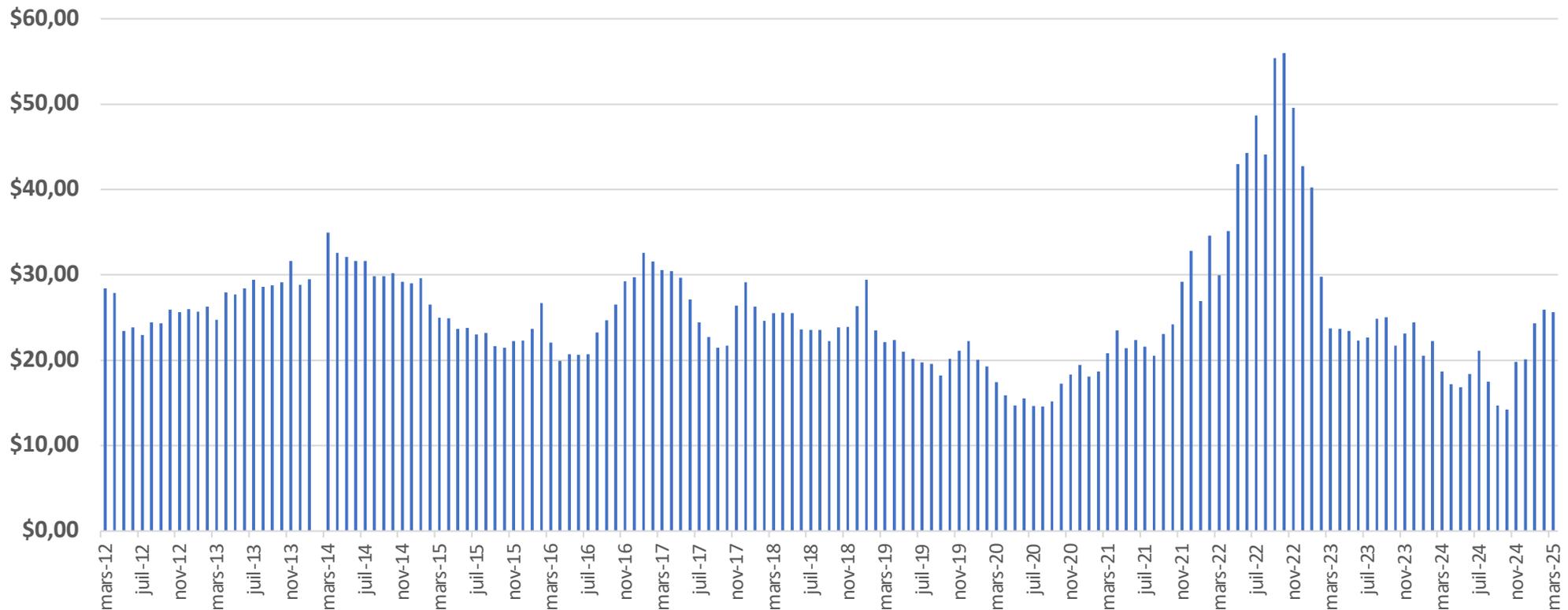
Net benefits shared thanks to mutualised compensation, no hurdle on DR

Experience from the US net benefits test



- DR allowed to participate only when price above a threshold
- Calculated monthly

Results of net benefit tests: threshold in a fairly low range (20-30 \$/MWh)



Source: [PJM](https://www.pjm.com/-/media/markets-ops/demand-response/net-benefits/net-benefits-historical-results.ashx)

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- Confirms that DR usually benefits all consumers

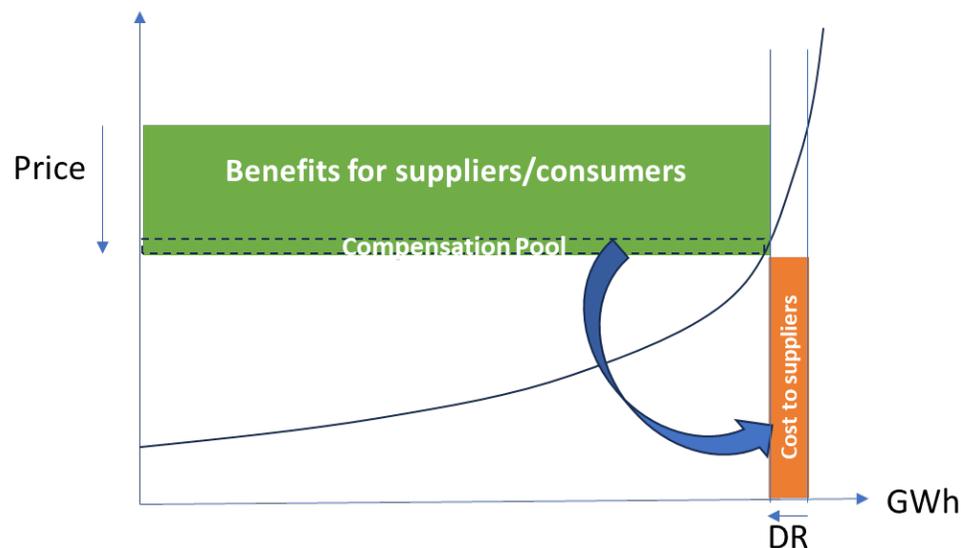
The EU Clean Energy Package set the scene with 3 obligations for Member States

- *Obligation:* DR to participate in all markets alongside production, without discrimination
 - Wholesale markets: day-ahead, intra-day, long term
 - All ancillary services to SOs
- *Obligation:* DR and supply are separate
 - Art. 13: independently from their supply contract
 - Art. 17: no prior agreement from other market parties
- *Obligation:* DR to bear the same balance responsibility as producers
 - To deliver volumes sold (Recital 15 of regulation)
 - ... or pay imbalance charges for the difference
 - Definition of “allocated volume” for DR aggregators
 - No obligation to use smart meters: may use DMDs (art.7b introduced by Regulation(EU)2024/1747) and a quality assurance approach (QA)

And also options for Member States

- *Option*: choice of model for balance responsibility of third parties i.e. suppliers
 - Models where imbalances are settled (i.e. uncorrected)
 - ... or where perimeter corrections are introduced (hence DR neutral for BRPs... but not for suppliers)
- *Option*: to grant suppliers or BRPs a compensation \leq costs incurred during activation
- *Obligation*: not to create a barrier for DR; + *Option*: to spread the burden among electricity undertakings
 - + obligation of no discrimination (art.17.1) => no charge on DR
- *Option*: (“the safety net”) to take into accounts the benefits of DR
 - => exception allowing to charge DR but...
 - + *Obligation*: only if and to the extent that benefits do not exceed costs
 - = Political safeguard: all consumers will always benefit (≥ 0) from DR

Mutualisation of compensation = mutualisation of net benefits



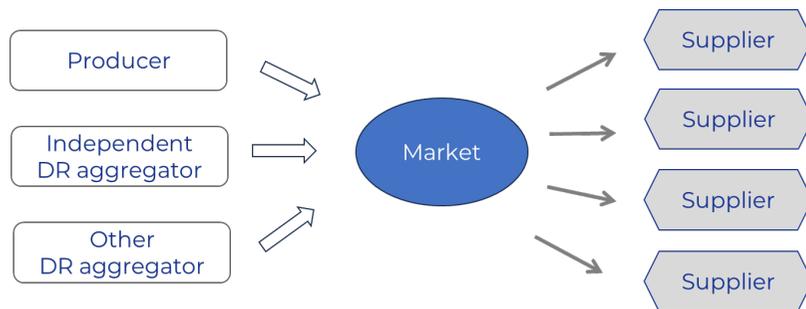
- Market based mutualisation
 - Benefits are mutualised via market
 - Compensation mutualised via SO
 - Net benefits fairly shared among all suppliers, may be transferred to all consumers
- Benefits for all consumers whatever their retail price
 - Directly for variable retail price based on wholesale market price (+margin)
 - Also indirectly for flat retail price reflecting average market price (+margin)

Level-Playing field vs charging DR

Mutualised Compensation

Aggregators are remunerated for their deliveries (without any specific levy).

All aggregators and producers operate on a **level playing field.**



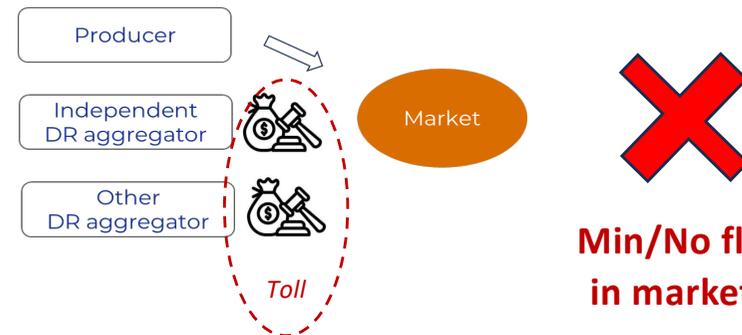
DR through markets



Compensation charged to DR

Cost of flexibility provision carried by those placing flexibility onto markets
-> barrier to operations.

Unlike producers, independent aggregators carry artificial costs -> **no level playing field.**



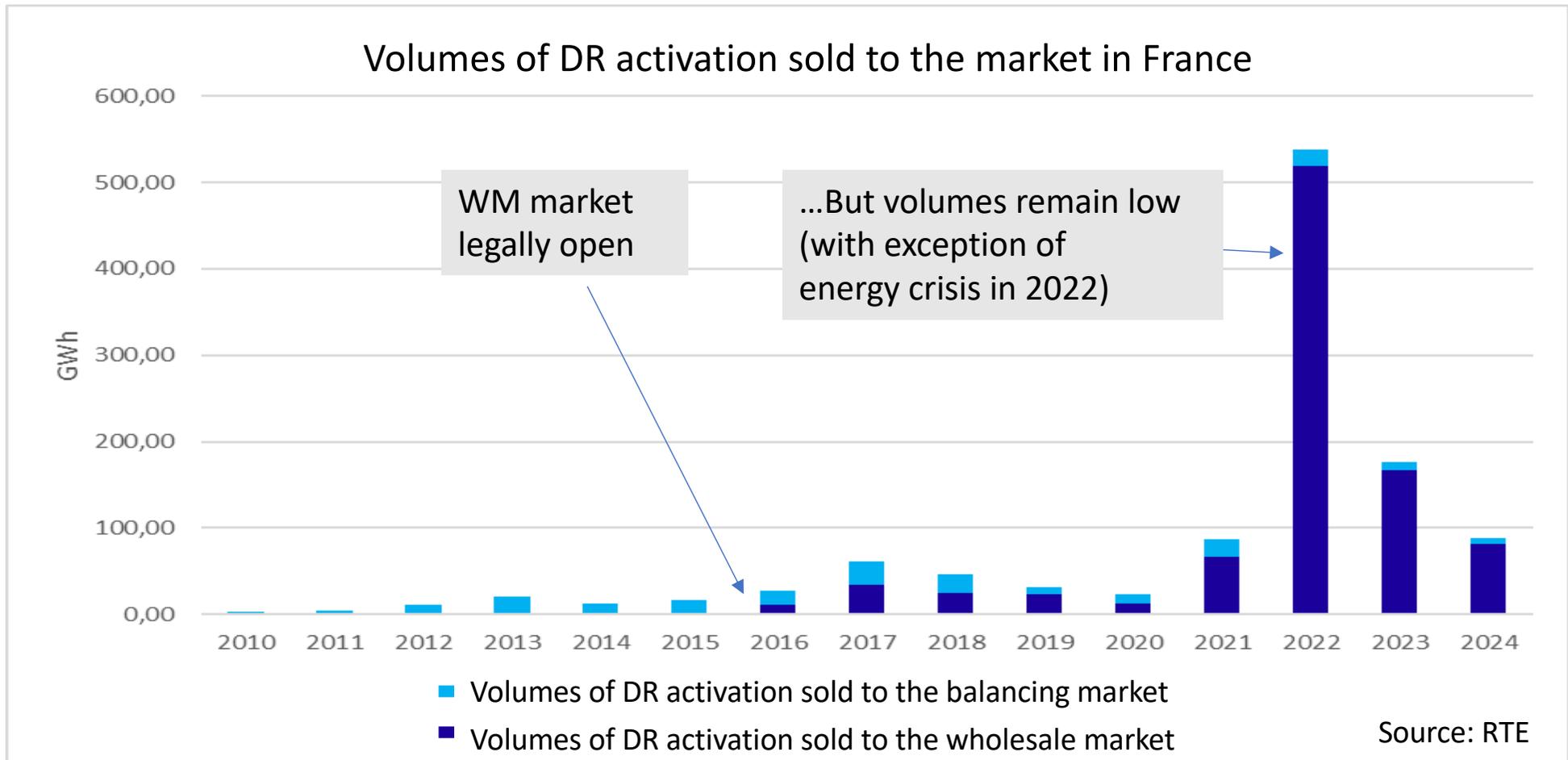
**Min/No flex
in markets**





Do not create barrier to DR: avoid the French trap

(cf. NEBEF rules for Wholesale Markets / now NEBCO)



- WM market is open to DR in principle, but not in practice
- Lots of capacities available (GWs), but volumes very limited (tens of GWh/year)=> barrier



UK front runner

Correction + compensation mutualised amongst retailers

- DR (including from IAs) allowed in all markets

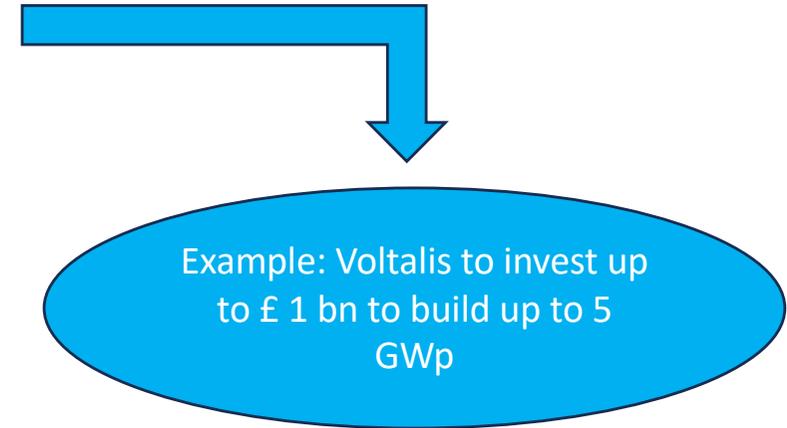


Modification proposal:	Balancing and Settlement Code (BSC) P415: Facilitating access to wholesale markets for flexibility dispatched by Virtual Lead Parties (P415)		
Decision:	The Authority ¹ directs that the modification be made ²		
Target audience:	National Grid Electricity System Operator (NGESO), Parties to the BSC, the BSC Panel and other interested parties		
Date of publication:	06 October 2023	Implementation date:	07 November 2024

<https://www.ofgem.gov.uk/publications/ofgem-decision-p415-facilitating-access-wholesale-markets-flexibility-dispatched-vlps>

All markets incl. Day-Ahead this year, model with correction and compensation & its cost spread, not charged to DR

- + capacity mechanism including DR
 - Auction price > 60 k£/MW/year (March'25)



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Thank you!

pierre@dr4eu.org