



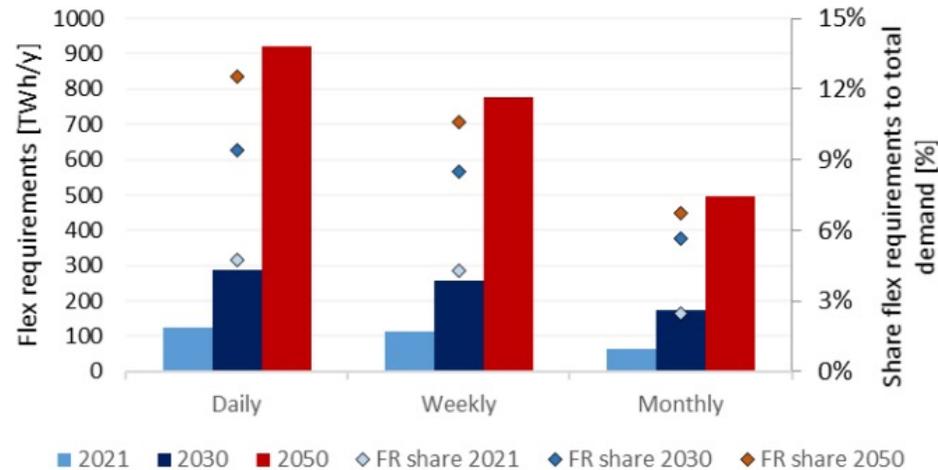
Demand Response – EMD reform and the implementation of the Clean Energy Package

DR4EU Workshop

24 May 2024

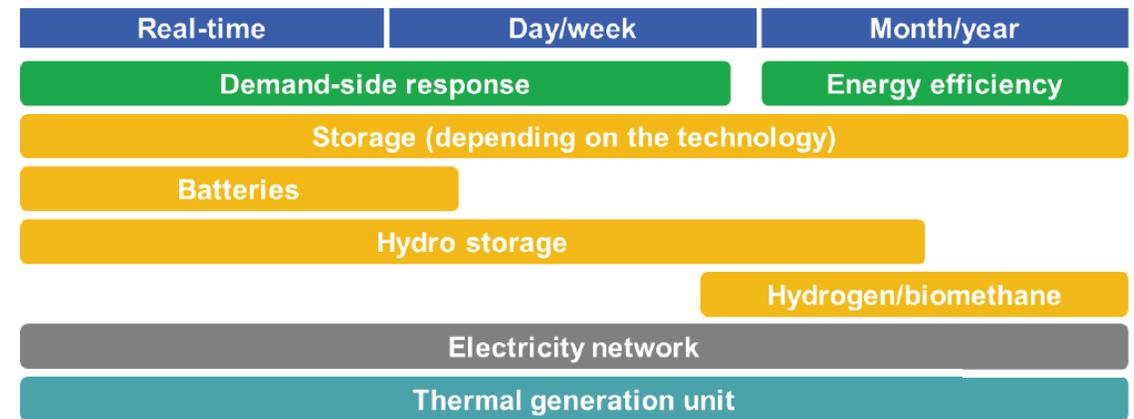
*European Commission – DG Energy
Internal Energy Market*

Flexibility needs are increasing



Increase of flexibility needs, source: JRC

Figure 18: Flexibility services provided by various technologies



Source: ACER.

Note: The list of technologies is non-exhaustive (with e.g. the storage category covering several different technologies). As mentioned, coupling electricity with other energy sectors (sector integration) may provide significant flexibility services.

The EU electricity system will require more than twice (2.4) the current quantify of flexibility resources by 2030. This increase applies for daily, weekly and monthly flexibility, to be provided by different flexibility sources.

First, implementation of Clean Energy Package

- **Non-discriminatory access** of demand response to **all electricity markets**, either directly or through aggregation (Art. 17)
- Full recognition of (independent) **aggregators** as market participants (Art. 17)
- Customer entitlement to contract with **independent aggregator** of their choice, without need for consent or prior agreement of their supplier (Art. 13)
- **Strict limits to compensation payments** (Art 17(4))
- **Use of flexibility** by system operators, in particular from distribution networks, for flexibility services including congestion management (Art. 32)

Complement the existing framework with rules on Demand Response

Objective: Address remaining regulatory barriers for the development of demand response and other flexibility resources in the electricity market.

To provide EU-framework for the integration of technology-agnostic distributed flexibility in transmission and distribution-related services for the overall benefit of consumers, by:

- Simplifying **market access** (registration and prequalification processes, definition of aggregation models, baselining & settlement)
- Establishing principles for **market design of local flexibility markets** (congestion management & voltage control services)
- Enhancing the framework for **cooperation between system operators** (data access & exchange)

How: By introduction of new rules on demand response, including rules on aggregation, energy storage and demand curtailment.

When: Draft was submitted by ENTSO-E and EU DSO Entity on 8th May to ACER, submission to EC and subsequent adoption in 2025.

Main topics of the rules on demand response

General market access

Provisions on general roles and responsibilities of market participants, independently of the specific markets, aiming for level playing field

- Aggregation models
- Baseline
- Measurement (smart meter + DMD)
- Min bid size
- Storage ownership
- EU + national processes for the TCMs + process for further harmonisation

Prequalification

Process that each potential service provider has to go through for certification by respective system operator to validate service delivery

- Flexibility register: roles, communication, data exchange, interaction with other provisions
- Simplification of processes (balancing products vs. local products, standardized devices)

Local markets

Processes for the market-based procurement of local services (congestion management + voltage control) required by system operators

- Roles/responsibility (local market operator) and process for national market design
- SO roles and interactions
- Product definitions
- Network development plans (DSOs)

In parallel, the reform of the electricity market design defines new flexibility provisions

Objective: Boost non-fossil flexibility: accelerate RES, impact positively the prices, bring system/grid services

New provisions:

1. Assessment of flexibility needs at MS level

- Based on a EU methodology
- ACER analysis at EU level and recommendations of cross-border relevance, including on removing barriers

2. Indicative national objective for non-fossil flexibility

- including specific contributions of both demand response and energy storage

3. Non-fossil flexibility support scheme

4. Enhance the use of flexibility services by system operators

- Network tariffs to incentivize the use of flexibility services
- Possibility to use data from dedicated metering devices

Thank you!



European Union Agency for the Cooperation
of Energy Regulators

European workshop on demand response in Hungary

DR4EU

24 May 2024

Cristina VAZQUEZ HERNANDEZ and
Athina TELLIDOU

Still ongoing implementation of the Clean Energy Package and relevant EU network codes and guidelines



COMMISSION REGULATION (EU) 2017/1485
of 2 August 2017
establishing a guideline on electricity transmission system operation
(Text with EEA relevance)

COMMISSION REGULATION (EU) 2017/2195
of 23 November 2017
establishing a guideline on electricity balancing
(Text with EEA relevance)



Regulatory barriers & market restrictions



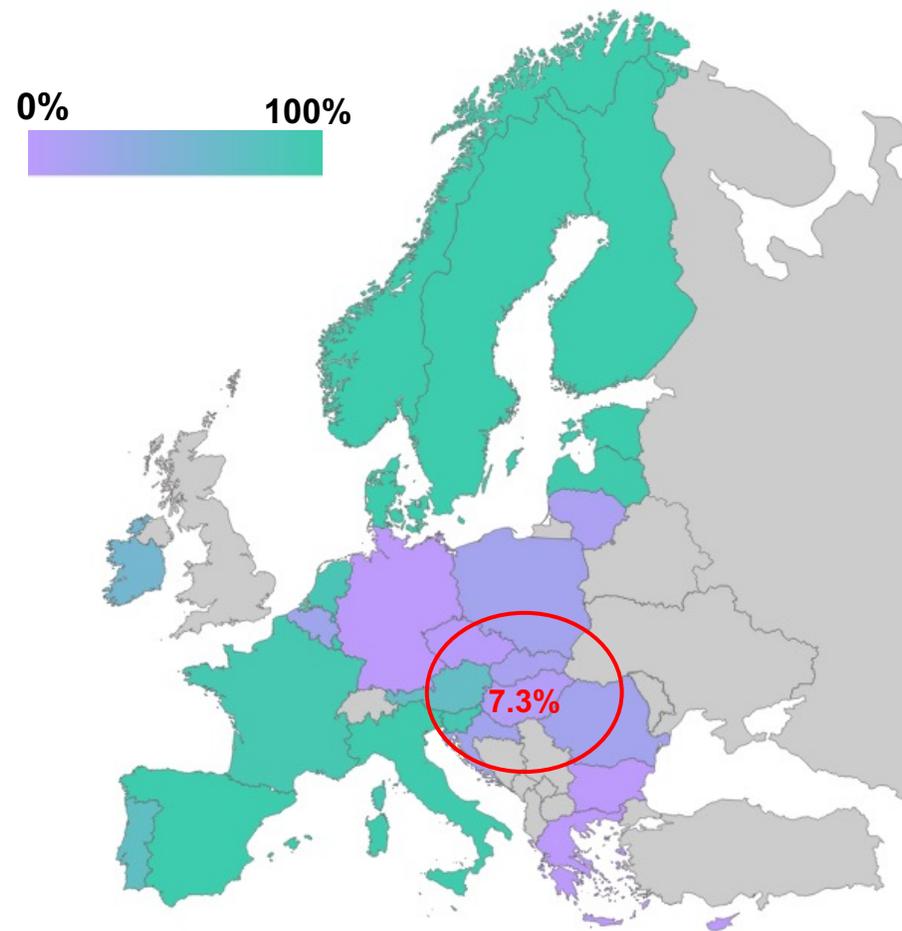
The upcoming **New European Rules on Demand Response*** will complement the existing regulatory framework

In parallel, the reform of the **Electricity Market Design** will define new provisions to boost non-fossil flexibility

Some examples of barriers in Hungary

Lack of technical means to activate flexible resources

Smart meters roll-out - 2022



The rollout of smart meters in Europe (EU-27 + Norway)

- 13** SUCCESSFUL
- 4** PROGRESSING
- 6** BARELY STARTED
- 5** NO SMART METERS



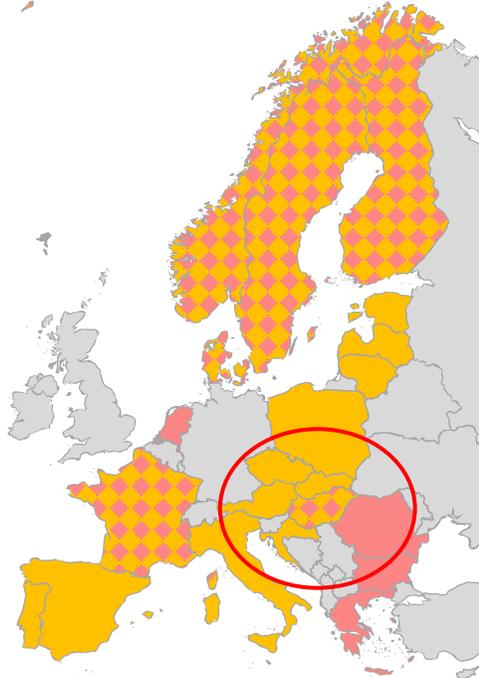
- To participate in all forms of demand response, consumers need to be equipped with smart metering devices.
- Hungary has $\approx 7.3\%$ of penetration of smart meters. Despite a positive roll-out decision, it has not set an 80% target in their national rules yet.



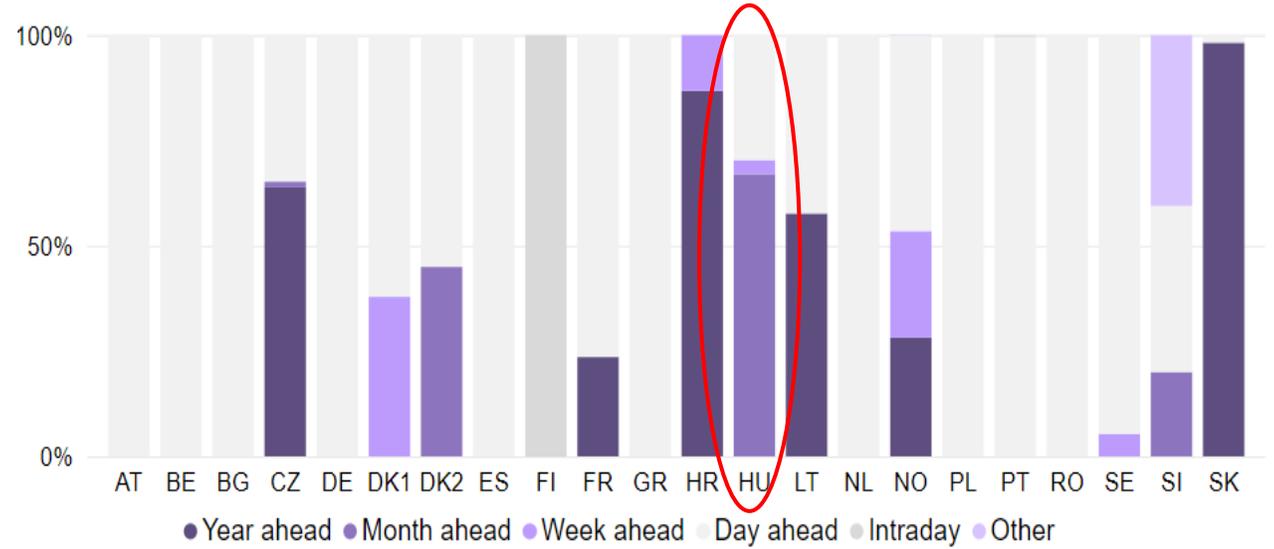
Set a **target** and **accelerate penetration** of smart-meters.

Some restrictions to providing balancing services

Large minimum bid size
Long validity period of balancing energy bids



Procurement lead-time for all balancing reserves (%) - 2022



- Hungary requires 5MW of minimum bid size for aFRR and mFRR (capacity and energy) and 60 min of validity period of balancing energy bids.

RECOMMENDED

Set 1 MW minimum bid size and 15 min of validity period

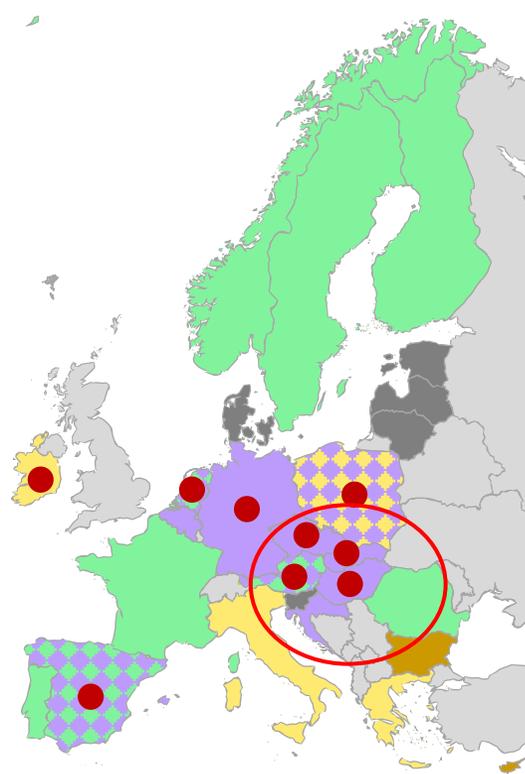


- Hungary procures most balancing capacity long before day-ahead (67% monthly ahead). Difficulties for DERs to commit a long time ahead of delivery.

RECOMMENDED

Procure balancing capacity daily ahead.

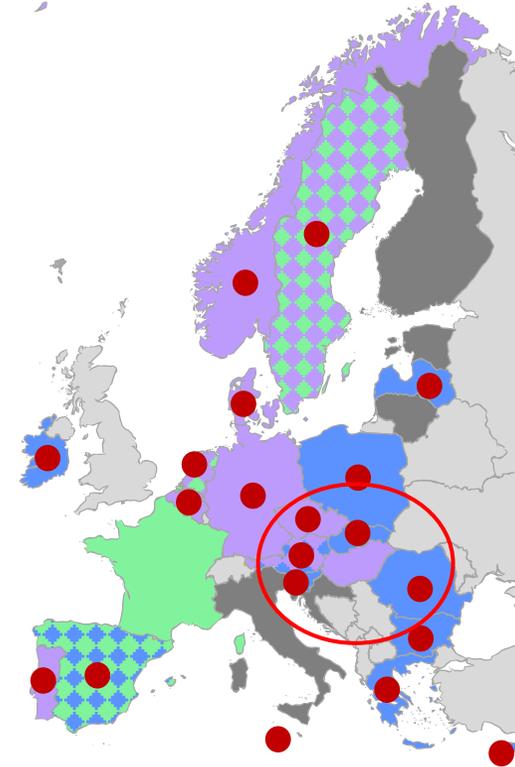
Difficulties for local markets to develop and mature



TSO(s) business-as-usual approach to solve congestions

Market-based redispatching
Non-market-based redispatching
Integrated scheduling process
NAP (No congestions in the transmission network)
N/A

● No iterative national reassessment process to review the exceptions from using market-based re-dispatching



DSO(s) business-as-usual approach to solve congestions

Market-based congestion management
Non-market-based congestion management
DSO(s) does not take any congestion management measure
NAP (No congestions in the distribution network)
N/A

● No iterative national reassessment process to review the exceptions from using market-based re-dispatching



TSOs and DSOs in Hungary use a **non-market based approach** to solve network congestions due to:

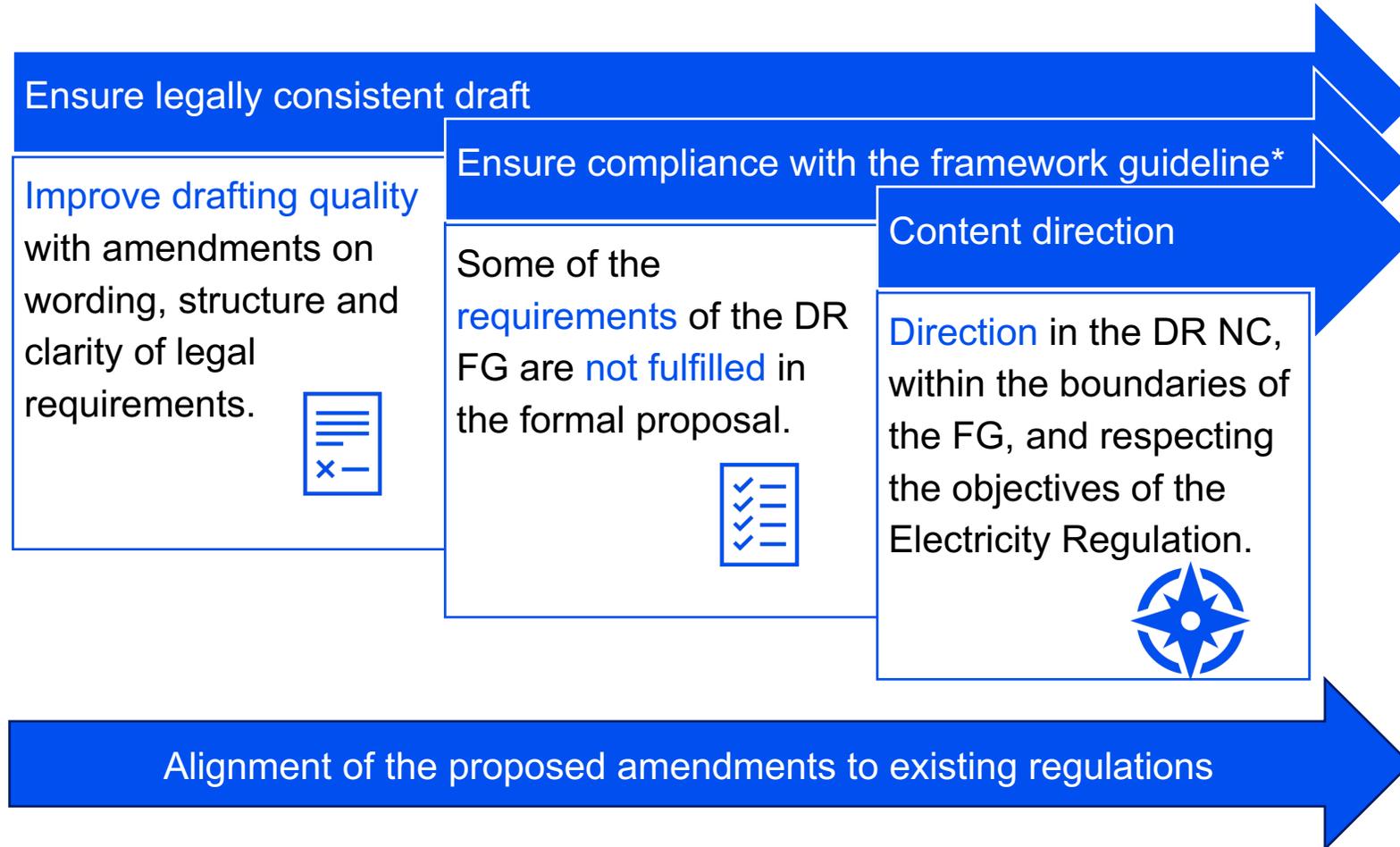
- ❑ potential predictability and increase of internal congestions at transmission level
- ❑ lack of market-based alternatives available at distribution level

Set an iterative national reassessment process at transmission level (already existing at distribution level) with to review whether market-based re-dispatching may be used to solve congestions.

RECOMMENDED

New rules on Demand response

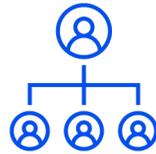
EU DSO entity and ENTSO-E submitted to ACER on 8 May their [proposal for the network code on demand response](#).



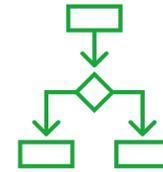
*DR FG: [ACER Framework Guideline on Demand Response](#)

Main objectives on specific topics

Clear requirements for the implementation of **aggregation models** in wholesale electricity markets.



Efficient **TSO-DSO and DSO-DSO coordination** for identifying and solving system issues (congestion and voltage control).



Simplification of the **prequalification** processes and avoiding duplications for the provision of multiple services.



Clear requirements for the **interactions between markets** (incl. market-based procurement of services) to ensure **overall efficient** operation.



Annex

ACER's main recommendations for governments, regulators and system operators to remove regulatory barriers and restrictions in the market design for demand response and other distributed energy resources



1 Speed up implementing regulatory changes to **remove persistent barriers**.



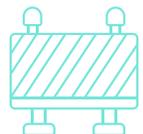
2 Set suitable **rules for new entrants**: clarify roles and responsibilities, define aggregation models, ensure data access, etc.



3 Ensure **open access** to all electricity markets and system operation services (balancing and congestion management services).



4 Provide the **technical means** and **incentives** by speeding up the rollout of smart meters, giving proper price signals in the electricity bills and raising consumer awareness.



5 Remove **restrictive requirements** to participate in balancing markets, capacity mechanisms and interruptibility schemes.



6

Ensure that **local markets for congestion management** have a chance to develop and mature. Define a transparent national process to assess when/where local markets may be implemented.



7

Facilitate new entrants' **access to retail electricity markets**.



8

Be **targeted, tailored and temporary** when considering retail price interventions.



9

Ensure **sufficient granular data** on all restrictions to demand response and other distributed energy resources.

Want to
learn more ?

Check out our ACER Market Monitoring Report on Demand response and other distributed energy resources: what barriers are holding them back?





ENERGIAÜGYI MINISZTERIUM



Demand response in Hungary

Outline for European workshop on DR in Hungary, 24 May 2024

Demand response and aggregation in Hungary – Status quo and possible way forward

Herczeg Sándor, Head of Department of Strategic Analysis

24 May 2024

Hungarian Energy and Public Utility Regulatory Authority

Clean energy, sustainable environment

Demand response

- Ministry: [Storage tender](#): support awarded for 440 MW to 50 promoters
- MAVIR (TSO):
 - Dedicated [interim demand response balancing product on mFRR 12,5](#) – however, there seems to be very low I&C interest in the product
 - Educational [Costumer Forums](#) organized by MAVIR
- DSO level:
 - E.On's flexibility platform, [FlexOn](#) started operation and system calculations in early April

Result: The participation of DR in most markets is still very low.

Aggregator framework

- [MEKH workshop](#) on aggregators in 2022.
Improvements since then:
- the possibility of creating mixed groups
 - submetering made possible
 - portfolio-based bidding both in aFRR and mFRR
 - balancing group-independent aggregators
 - balance group reporting (from imbalance adjustments to controlled unit level)
 - participation in an increasing number of submarkets
 - banded pricing of bids
 - MAVIR is very proactive with aggregators

Result: 76 aggregators registered with MEKH

Barriers and issues still persisting

- **Residential consumers:** no significant amount of flexible assets (electric cars, heat pumps, batteries) → **primary target group: industrial consumers and commercial installations** (I&C).
- **No adequate meters** with consumers (not even large)
- **Reluctance to participate:** possible reasons include:



a lack of awareness



risks are too high



operation too expensive



no network tariff incentive



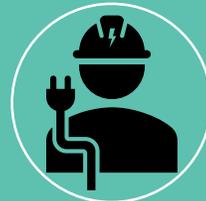
no energy price incentive



insufficient value stacking



Insufficient (or granular) data



lack of skill

There's **still a lot to be done**, if we'd like DSF to help satisfy the ever-growing flexibility need, and we'll **focus on DR through** aggregation.

- MEKH wishes to explore:
 - the features of the dedicated interim balancing product
 - further ways to develop the aggregation framework, including potential early implementation benefits of the DR NC
 - incentive structure to involve more market participants
- Further discussions with relevant stakeholders (Ministry, TSO, DSOs, market participants)



Market design and devices initiated by Government

Transposition

- **New players and functions:** aggregation/or, energy community, active customer, jointly-acting active customers, DSO flexibility service
- **Reporting:** annual DSO market report on flexibility services
- NRA is empowered to operate **regulatory sandbox** enabling special legislative framework for innovative projects for 24 months
- DSOs are enabled to **control electric hotwater heater&storage units** (boilers)
- Ministry and association of new players are **represented** in DSOs rulebook Committee

Subsidies

- **Piloting energy communities & DSM** since 2020
- **Commercial batteries:** 400+ MW electric storage for commercial use
- **Residential batteries:** Battery storage + PV for 15k+ residents

Grid development & System operation

- Extraordinary PV penetration (1+GW/y) resulting in massive grid developments
- Time & CAPEX need



- DSO flexibility service

Balancing services

- Constant increase in balancing needs
- Dominance of gas-fired suppliers
- OPEX & GHG aspects



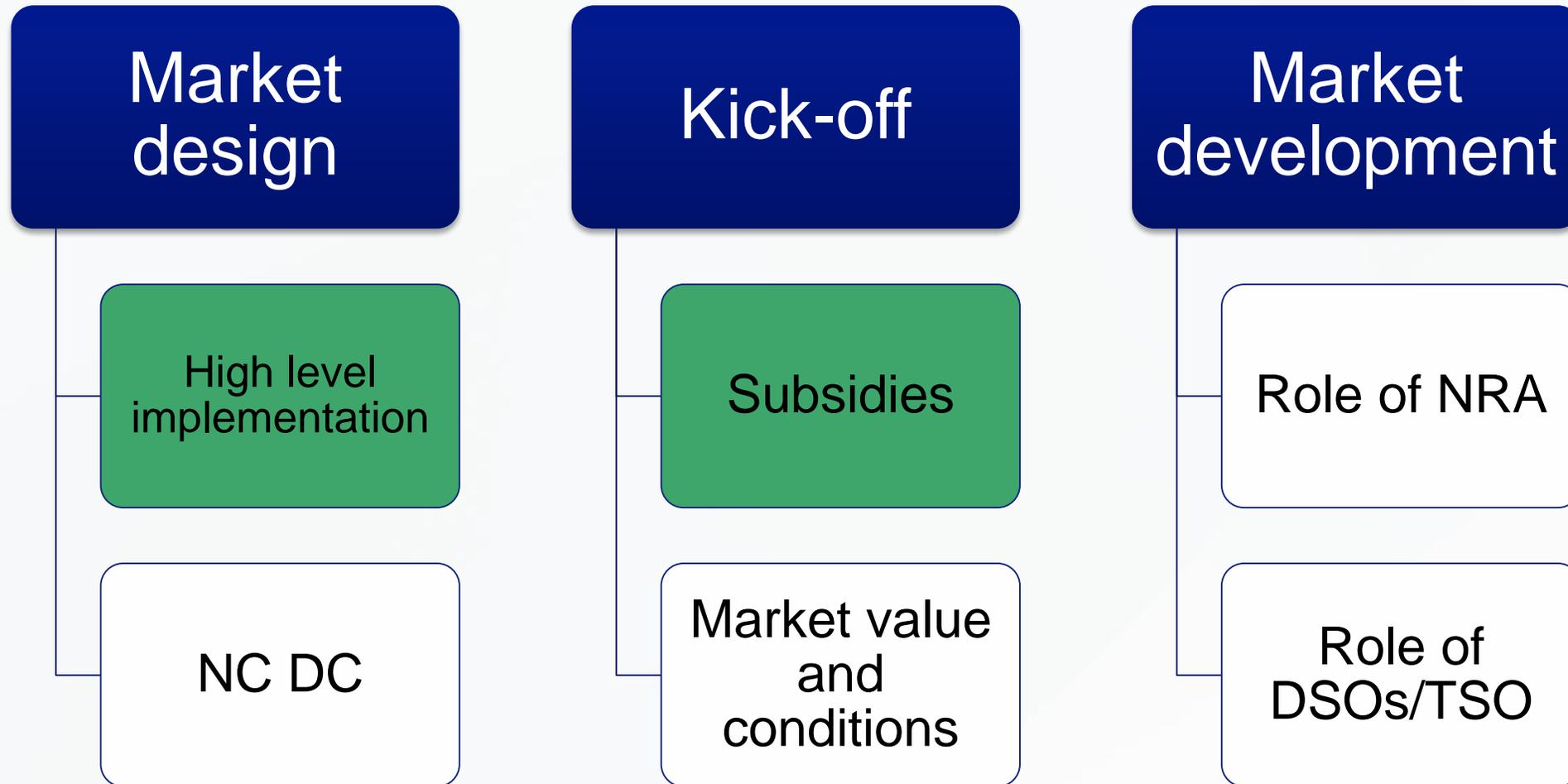
- tool for balancing

Trade on free market

- High price volatility
- Growing share of negative prices



- tool for price stability





MAVIR

MAGYAR VILLAMOSENERGIA-IPARI
ÁTVITELI RENDSZERIRÁNYÍTÓ ZRT.

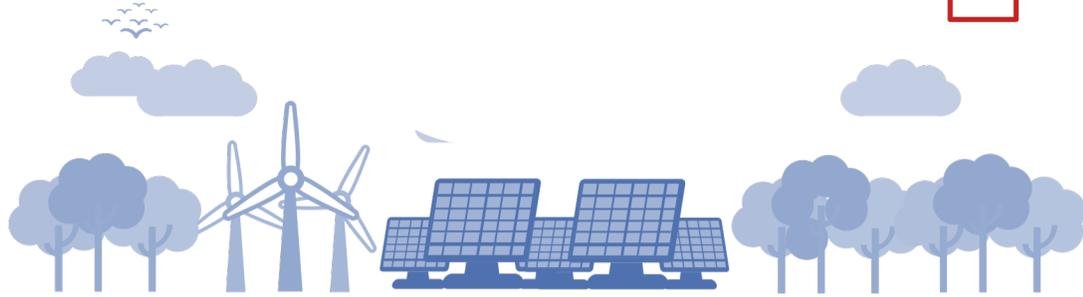
DR4EU – Demand Side Response

Batta Gergő
MAVIR Zrt.

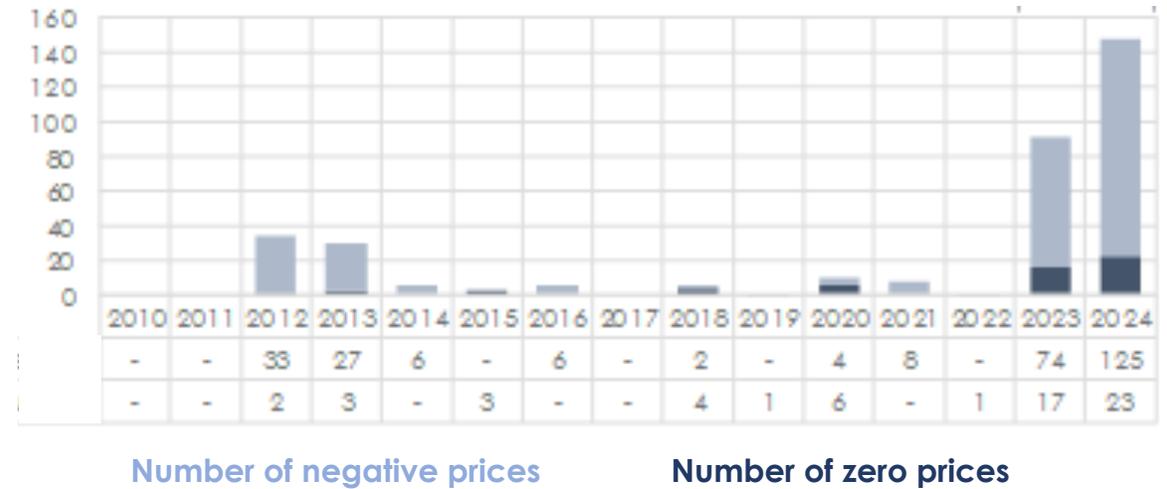
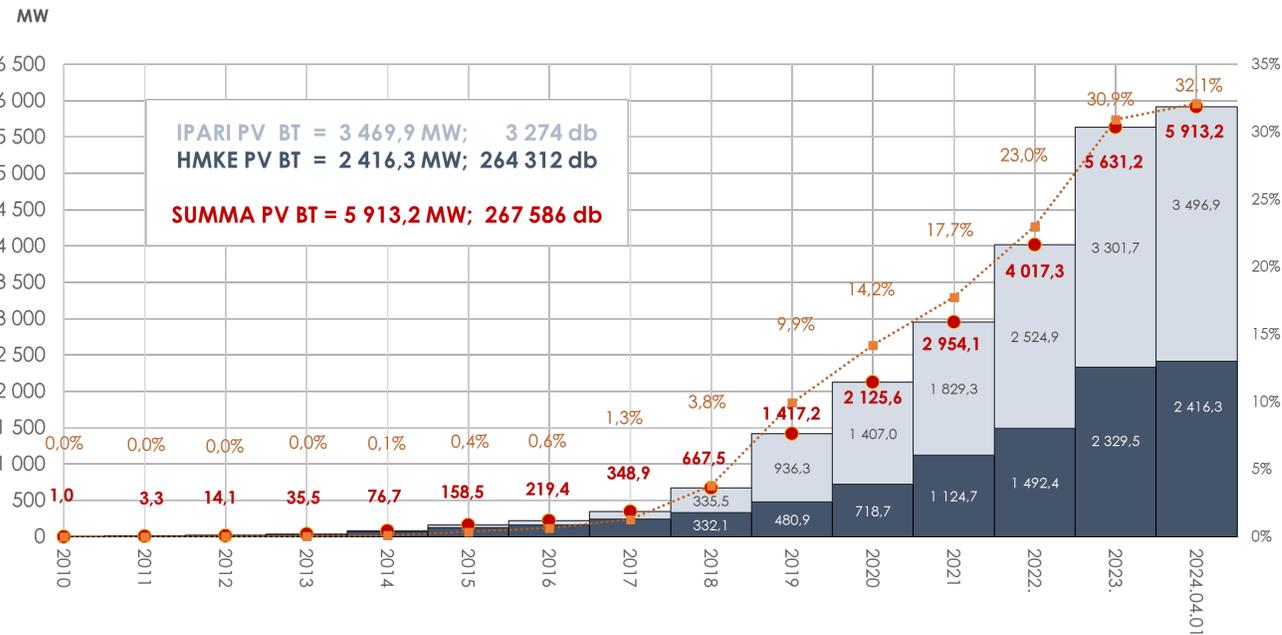
17 May 2024



Renewables (PV)

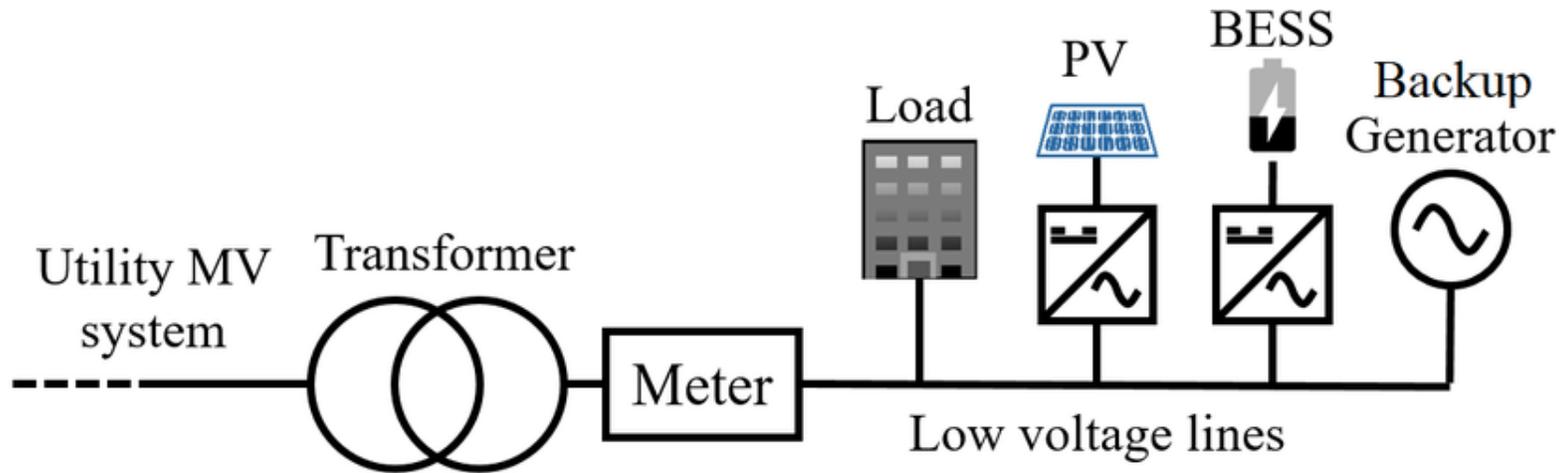


Wholesale prices



Number of negative prices

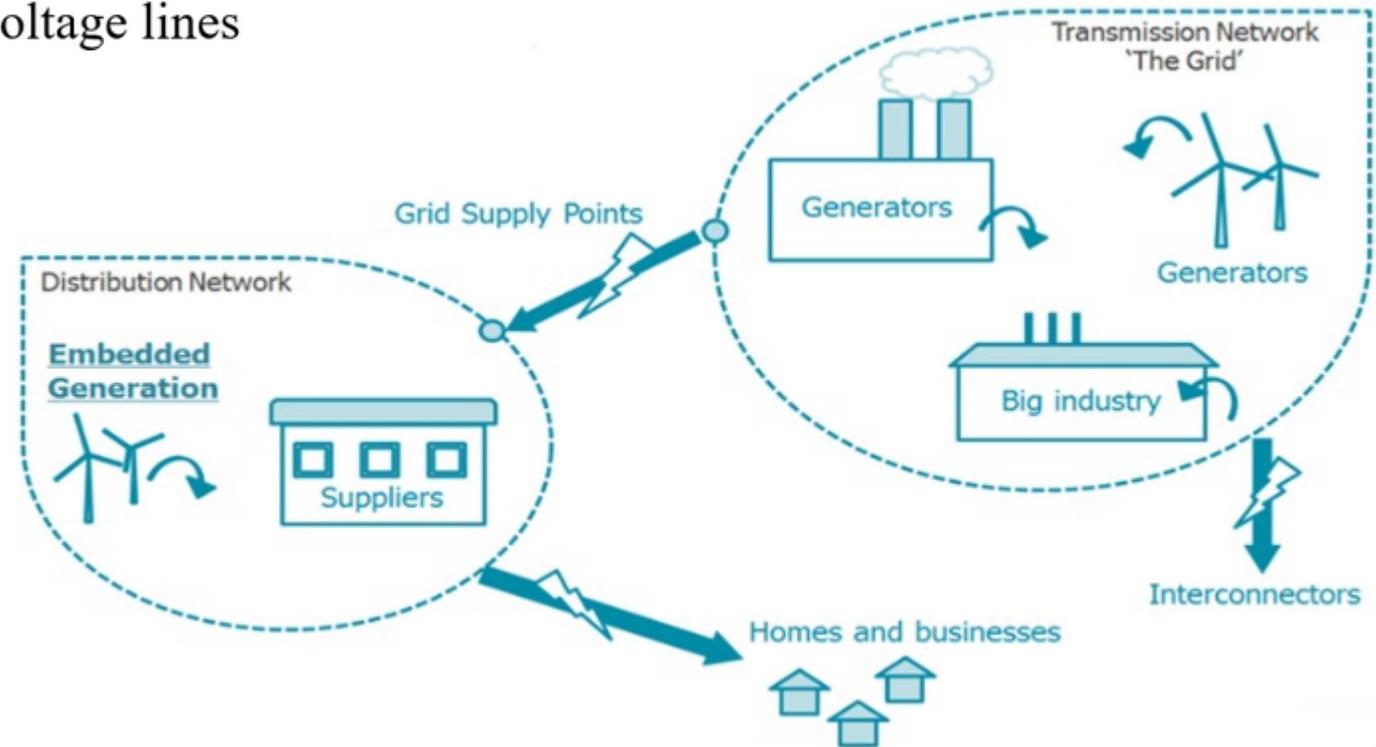
Number of zero prices



Embedded generation:
no real cutomers,

Ancillary services: technical requirements are too high for normal customers

Full supply contracts: no need to plan, schedule, balance



energo

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Demand Response

DR4EU Workshop

2024.05.24

Tamas ERCSEY



The story



Today.

About the hungarian flexibility market

Past.

What happened?

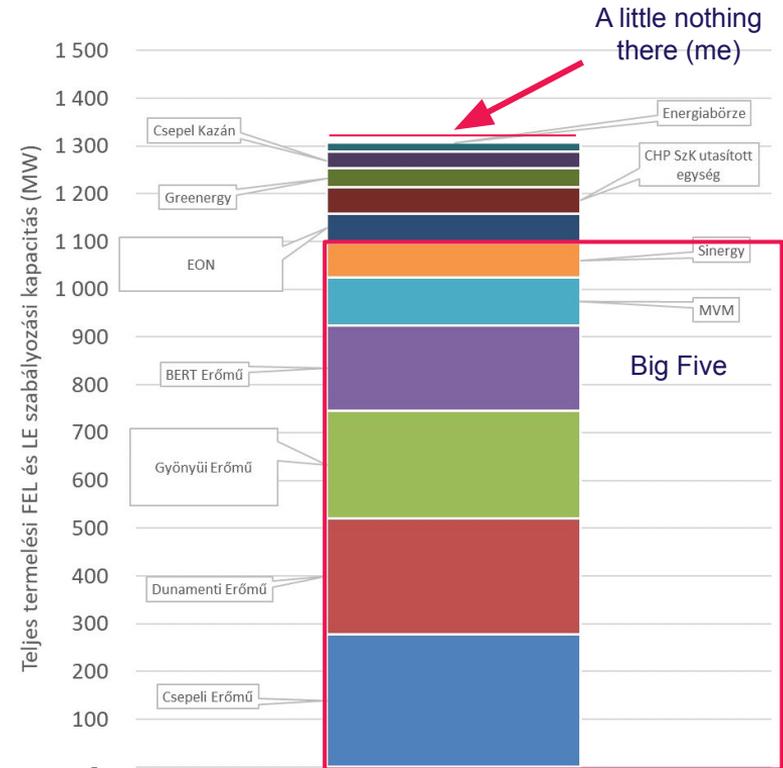
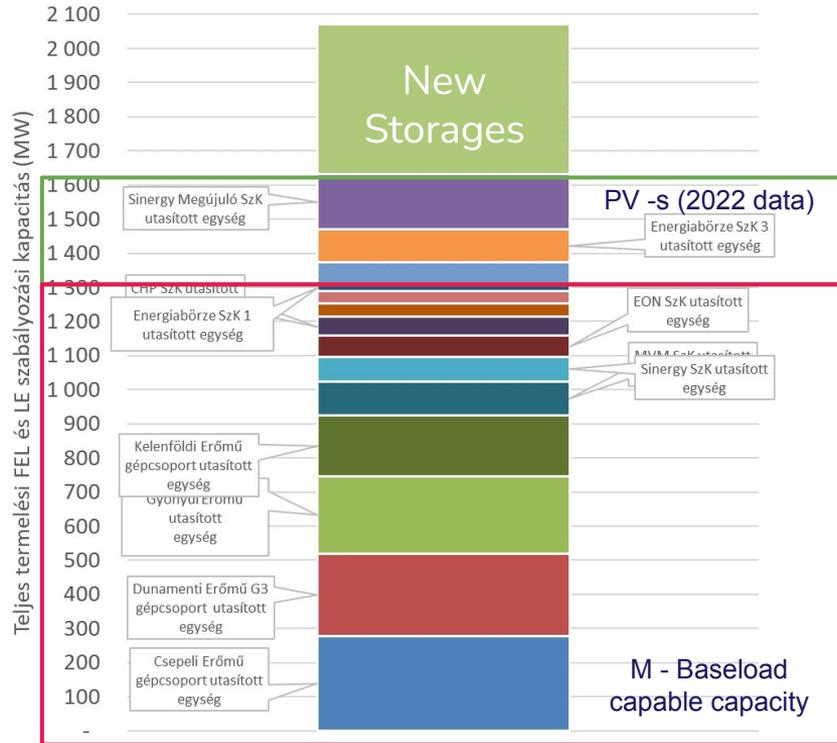
Future.

What should happen next?

Today

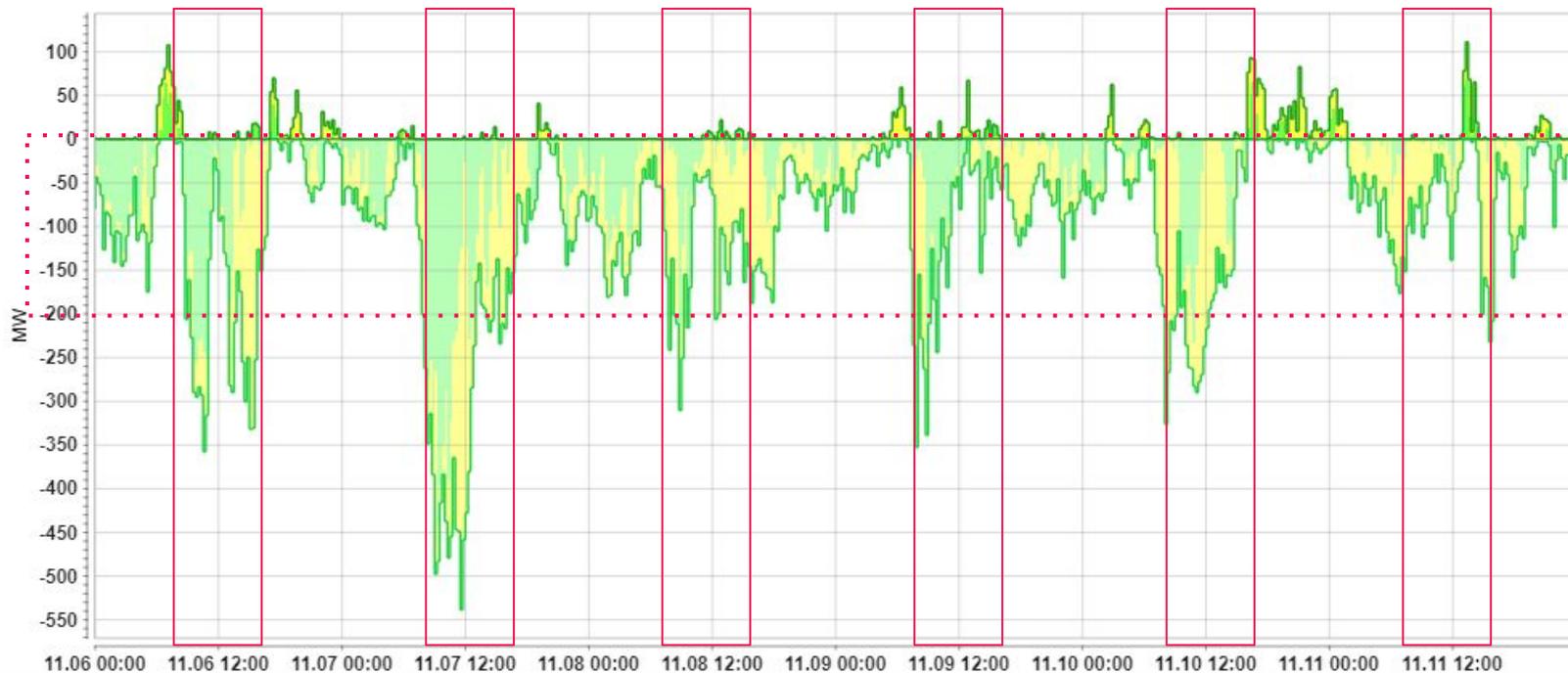
The flexibility markets are quite concentrated

“The playground of the big boys” -> Is that competitive?



Effects of the high PV penetration

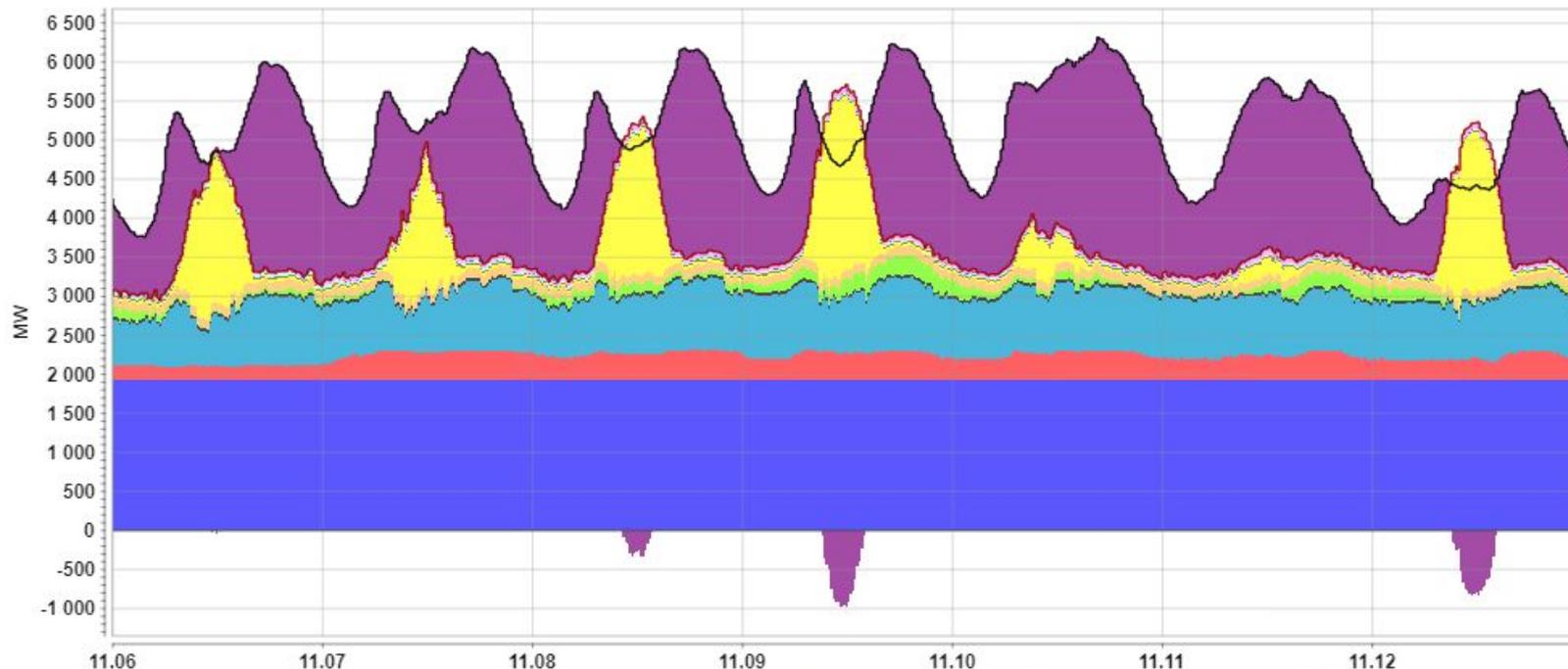
2023.11.06 00:00 - 2023.11.12 00:00



- aFRR (Automatikus) szabályozás FEL (15p)
- aFRR (Automatikus) szabályozás LE (15p)
- Hazai aFRR (aut.) szab. FEL (15p)
- Hazai aFRR (aut.) szab. LE (15p)
- IGCC szabályozás FEL (15p)
- IGCC szabályozás LE (15p)
- Nem automatikus szabályozás mértéke fel (balancing)
- Nem automatikus szabályozás mértéke le (balancing)

Effects of the high PV penetration

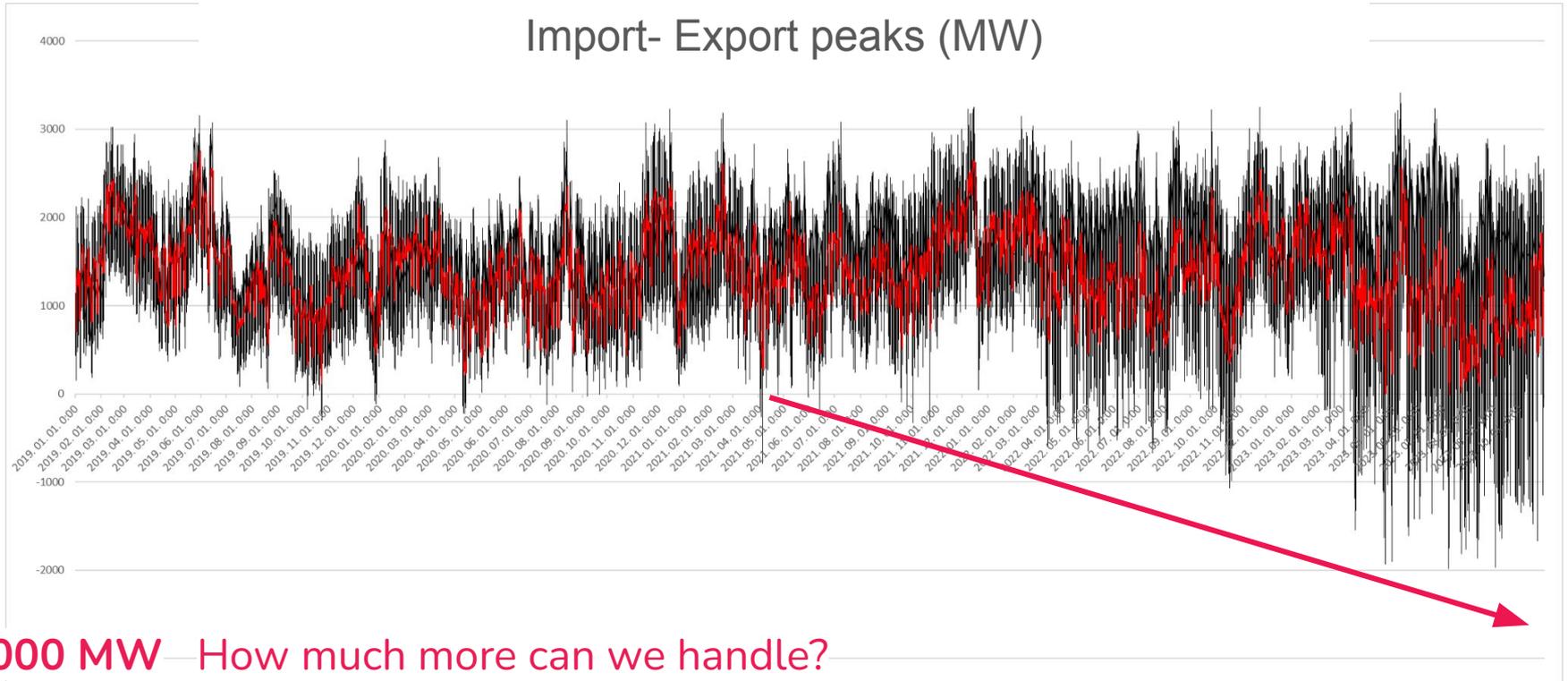
2023.11.06 00:00 - 2023.11.13 00:00



- Nettó rendszerterhelés tény - üzemirányítási
- Hazai termelés (erőművi szumma)
- ▲ Nukleáris erőművek
- ▲ Barnakőszén-lignit erőművek
- ▲ Gáz (fosszilis) erőművek
- ▲ Feketekőszén erőművek
- ▲ Olaj (fosszilis) erőművek
- ▲ Szárazföldi szélenerőművek
- ▲ Biomassza erőművek
- ▲ Naperőművek
- ▲ Szeméttégető erőművek
- ▲ Folyóvízes erőművek
- ▲ Víz tározós vízerőművek
- ▲ Egyéb megújuló erőművek
- ▲ Egyéb erőművek
- ▲ Import-export szaldó

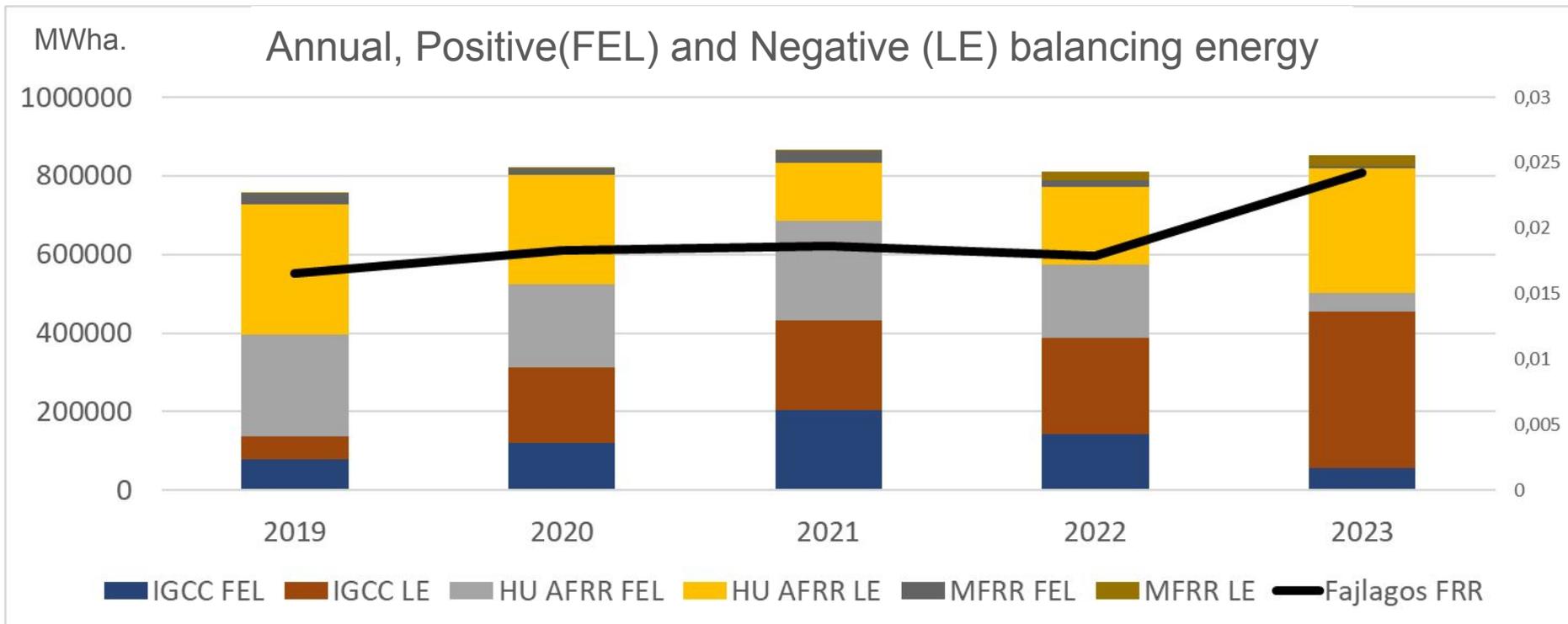
TSO flexibility markets

Effects of the high PV penetration



TSO flexibility markets

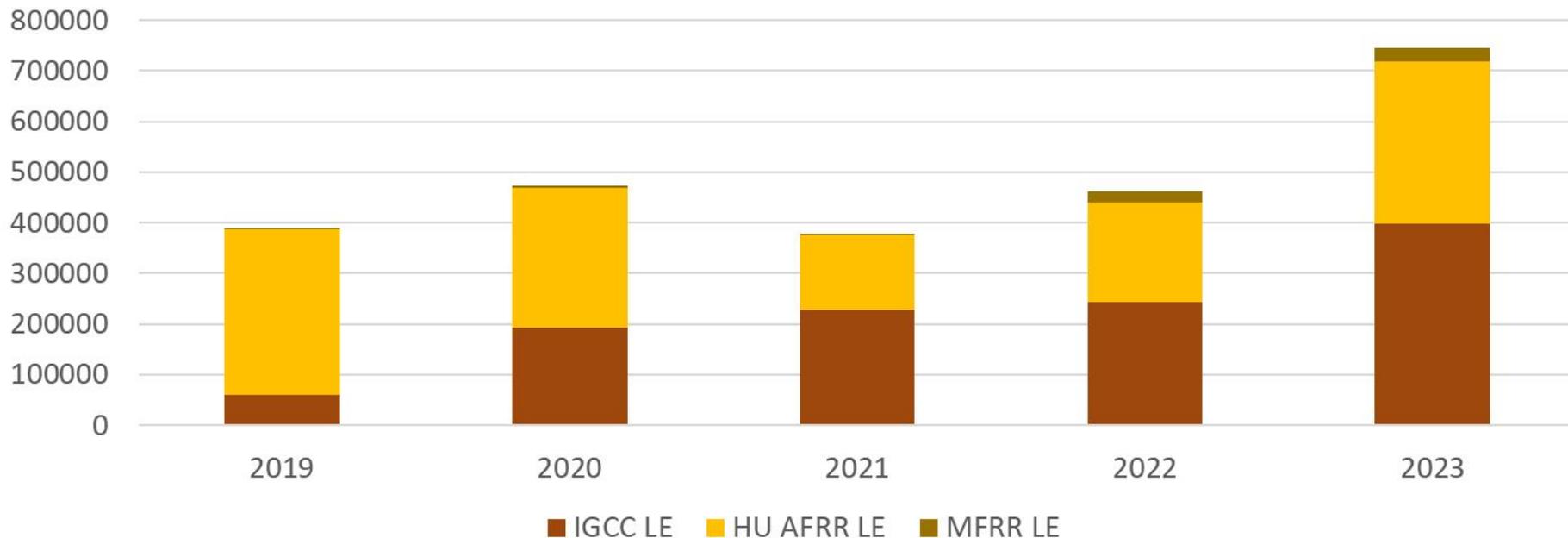
Effects of the high PV penetration



TSO flexibility markets

Effects of the high PV penetration

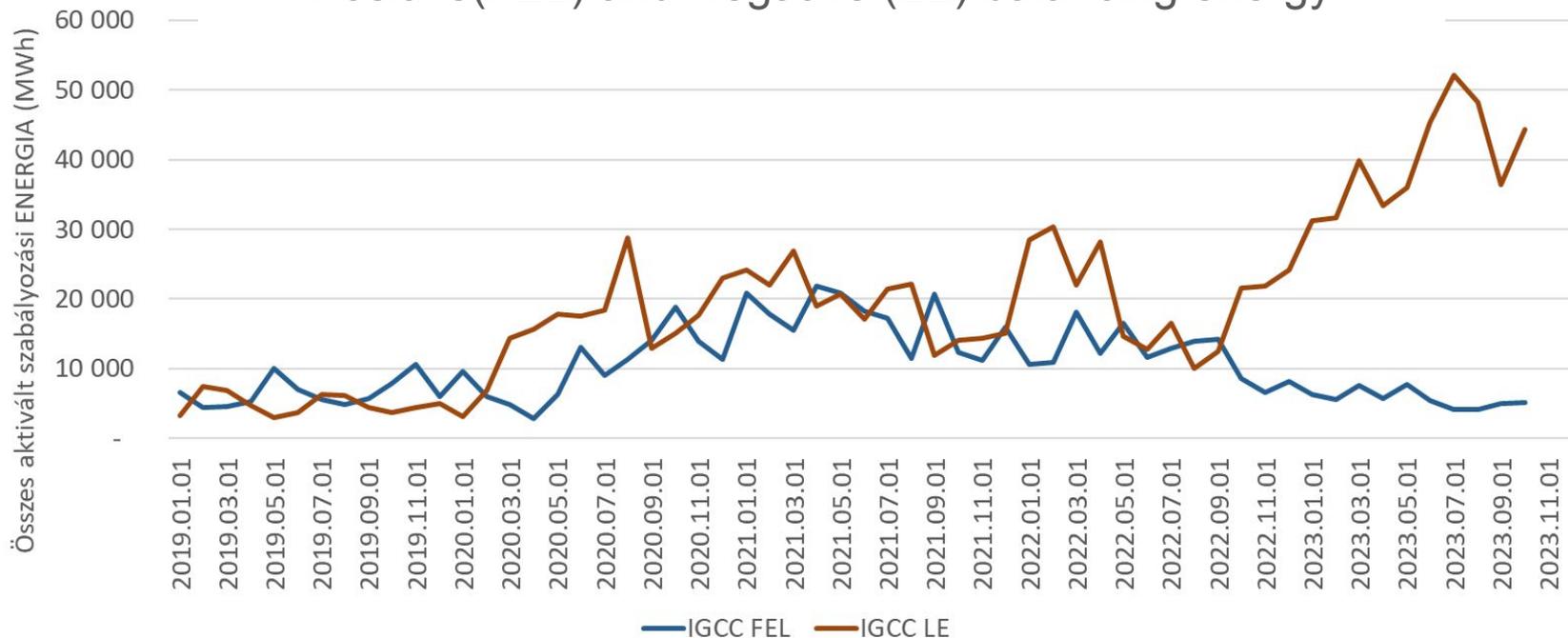
Annual, Positive(FEL) and Negative (LE) balancing energy



TSO flexibility markets

Effects of the high PV penetration

Positive(FEL) and Negative (LE) balancing energy



Past

2022.07.22 – MERSZ foundation meeting

E. LAW

Section 69. Distributors, in consultation with licensees and, **through their representatives**, with consumers and other system users – **including energy communities and aggregators** – shall develop the distribution code. This code specifies the provisions concerning the operation of the distribution network, the scope of distribution flexibility services, their procurement and utilization, as well as demand-side management.

Energy Communities



(Independent) Aggregators

CONTRACT between Aggregator and Supplier

NO CONTRACT between Aggregator and Supplier

1
SINGLE
BRP

Integrated

Broker

Uncorrected

2
DUAL
BRP

Contractual

3

Corrected

Central settlement

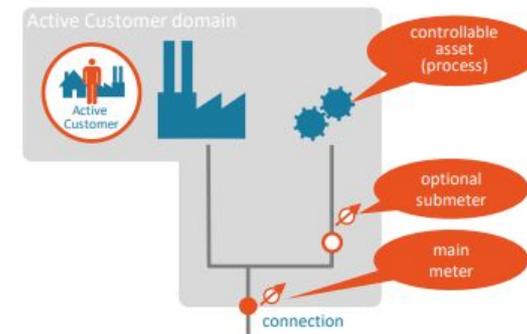
Net benefit

Future

The key is the open, multi-BRP aggregation

The multi BRP settlement
(1 BSP Multi BRP)

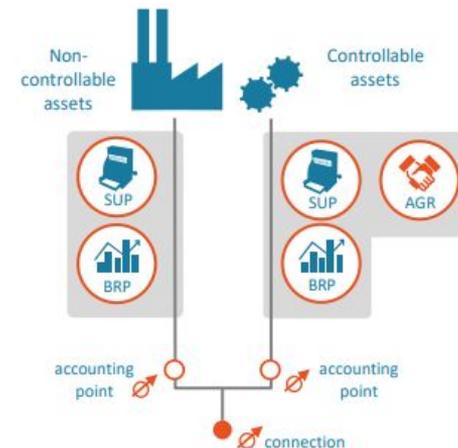
Ex-post, manual
solution
(TSO should improve)



Correction modell
Aggregator – Energy Trader
(BSP-BRP)

Regulator should lead

“Standard Contract”



Sub units, submetering

Done by DSO

Consumer’s Scheduling
and baseline

TSO should lead

BASELINE



Join MERSZ!

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