Demand response and other distributed energy resources: what barriers are holding them back?

ACER 2023 Market Monitoring Report

ACER Webinar
19 January 2024
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<th>Webinar items</th>
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Housekeeping rules

Please pose your questions using the Slido tool within Microsoft Teams.

You can also access Slido through this direct link: https://app.sli.do/event/eaH94EXaFHDtAczUgvoosm

Questions from other participants can be ‘liked’ to increase their visibility.

This meeting is being recorded.

Keep your microphone muted unless the chair gives you the floor.

Substance-related questions will be addressed during the relevant Q&A session; although they can be posed at any point.

Slides and recording of this webinar will be uploaded to ACER website.
Opening

10:00 – 10:05

Christian ZINGLERSEN, ACER Director
Flexibility is becoming the ‘name of the game’ …

The energy transition implies a surge in intermittent renewable energy sources and further electrification of energy needs, such as heating. As such, future flexibility needs will increase significantly.

Source: ACER-EEA report Flexibility solutions to support a decarbonised and secure EU electricity system, October 2023.
Negative prices: indicators ‘telling us something’

High/low wholesale prices send signals to generators (where to invest / when to produce), to traders (where to trade) and to consumers (if/when to consume).

Consistently low or high prices call for attention, possibly signalling the need for a more responsive power system.

* Source: ACER calculation based on ENTSO-E data.
Note: One occurrence corresponds to one hour during which prices are negative.
Bringing challenges, yes, but also opportunities

**More cost-efficient market and system operation**
- Reducing peak prices
- Helping to balance the power system
- Preventing blackouts

**More cost-efficient network development**
- Reducing the risk of grid overload
- Helping to solve network congestion as an alternative/complement to more costly grid build-out

**Savings for consumers**
- Electricity bill savings for **ALL CONSUMERS**, not just for those providing demand response

**Making the most out of your resources**
- Many consumers will invest in electromobility, rooftop solar panels, batteries, etc. They can become **AN ACTIVE PART OF THE SOLUTION.**

**Unlocking** demand response and other **distributed energy resources** can bring **significant opportunities.**

**Sharp rise in electric car sales**

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Source: European Environment Agency
New electricity market design

New rules on demand response

Multiple EU efforts ongoing to ‘unlock’ flexibility

Acceptor Agency for the Cooperation of Energy Regulators

This report presents regulatory barriers and restrictions in market design that merit further consideration and possible removal.
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2023 ACER MMR: Demand response and other distributed energy resources: what barriers are holding them back?

10:05 – 10:20

Cristina VAZQUEZ HERNANDEZ, Electricity Department, ACER
Scope and methodology ...
Scope

Regulatory barriers & market restrictions
- Clean Energy Package & some existing EU Guidelines
- Market design and structure

Geographical scope

2022 data
Barriers come in many sizes and shapes …
Our methodology in a nutshell

**Raw data**
- Raw data to calculate each indicator.

**Different scoring system per indicator**
- When missing data: lowest performance or N/A (not available).

**Barrier scores** (8 barriers)
- Weighted average of the normalised indicators. All indicators have the same weight.
- When at least half of the indicators per barrier are missing, the barrier score is considered as N/A (not available).

**Normalised indicators**
- To ensure comparability each indicator is normalised onto a common scale ranging from 0 (worst performance) to 1 (best performance).

**Indicator scores** (> 40 indicators; some comprise more than 20 questions)
- Different scoring system per indicator.
- When missing data: lowest performance or N/A (not available).

**Scoring**

**Normalisation**

**Weighting & aggregation**

Notes: More information on the methodology:
- DNV’s 2021 study on a methodology for benchmarking the performance of the EU Member States in terms of efficient price formation and easy market entry and participation for new entrants and small actors.
Barriers to distributed energy resources (including demand response) are often ‘hiding in plain sight’. The sum of many small obstacles can add up to significant barriers, impeding system flexibility.
Some examples of barriers holding back distributed energy resources ...
Lack of a legal framework to allow market access
Many Member States have not yet defined the main roles and responsibilities of new entrants and small actors in line with the Clean Energy Package.
Aggregation models in place?

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<td>NA</td>
</tr>
</tbody>
</table>

Type of aggregation model

- 1 BIP/Connection point + 1 metering point
- Multiple BIPs/Connection point + Multiple metering points
- Multiple BIPs/Connection point + 1 metering point + No correction of the BIPs
- Multiple BIPs/Connection point + 1 metering point + Correction of the BIPs
- NA (Not available: there is an aggregation model in place but the NRA does not have any information)
- NA: No aggregation model implemented as BAU or TorP
- BAU: Implemented as a business as usual approach
- TorP: Implemented on a trial stage or in a pilot project

Maturity level

- BAU: Implemented as a business as usual approach
- TorP: Implemented on a trial stage or in a pilot project

Customer segment

- Only applicable to customers connected to LV level
- Only applicable to customers connected to MV and HV level
- NA: NRA does not have information on the customer segment
- NA: NRA does not have information on the maturity level
Lack of at least one aggregation model (up and running or in a trial stage/as a pilot project) in some electricity markets or market-based system operation services in almost half of Member States.

- Missing aggregation models for some customer segments and lack of monitoring of aggregation models.
Unavailability or lack of incentives to provide flexibility
Lack of technical means to activate flexible resources

**Smart meters roll-out - 2022**

- Delays in plans to develop smart meters
  - 80% target
  - Positive roll-out decision but no 80% target

**Functionalities of smart meters installed (% ranges) - 2022**

- Ten Member States with a rollout rate lower than 20% (with five being (almost) 0%).
  - Delays in development plans.

- Limited information on functionalities.
- Many consumers likely not having full advantage of smart meters.
Without price signals or incentives… why respond?

- Limited penetration of ToU network tariffs in some Member States.
- Lack of a proper implementation assessment in a few Member States.

Little information on the penetration of retail electricity contracts with time differentiation (e.g. dynamic electricity price contracts)
- Do consumers receive proper price signals?

Note: ToU refers to Time-of-Use network tariffs.
Restrictions to providing balancing services
Prequalification: restrictions to aggregation or unregulated/protracted duration

Still limitations to prequalify reserve providing groups or to aggregate generation+demand+storage

Protracted duration (even unregulated) for re-prequalification processes. With an increasing aggregation in the upcoming years, this can be a no-go for new business models.
Restrictions in product design and structure

- A minimum bid size larger than 1 MW (with aggregation sometimes not allowed) and balancing energy bids with a validity period longer than 15 min hinder the participation of demand response and storage in many Member States.

- Multiple Member States with balancing capacity contracts and procurement lead times much longer than 1 day. Difficulties for distributed energy resources to commit a long time ahead of delivery and for long delivery periods.
Restrictions in product design and structure

- Large minimum bid size
- Long validity period of balancing energy bids

A minimum bid size larger than 1 MW (with aggregation sometimes not allowed) and balancing energy bids with a validity period longer than 15 min hinder the participation of demand response and storage in many Member States.

Multiple Member States with balancing capacity contracts and procurement lead times much longer than 1 day. Difficulties for distributed energy resources to commit a long time ahead of delivery and for long delivery periods.
Limited capacity prequalified (when known)

- Limited capacity prequalified of distributed energy resources with some exceptions for distributed generation (mainly distribution-connected hydro), industrial or commercial consumers and batteries.
- Almost no information on actual participation (portfolio-based systems).

*Note: Capacity prequalified as of 31 December 2022 for local, specific, and standard balancing products. Shares of distributed energy resources prequalified over the total capacity prequalified per Member State and per balancing product.
Restrictions to providing congestion management services
No, congestion management measures are usually based on non-market-based procedures, especially at distribution level. In many Member States, NRAs cannot ensure whether the reasons for not using market-based re-dispatching, especially by DSOs, are in line with the exceptions allowed by the Clean Energy Package.
Difficulties for local markets to develop and mature

Most Member States lack an iterative national reassessment process with a transparent decision-making procedure to review whether the exceptions from using market-based re-dispatching. This hinders distributed energy resources from playing a role in “local markets”.

No iterative national reassessment process to review the exceptions from using market-based re-dispatching
Restrictions to participating in capacity mechanisms or interruptibility schemes
Some Member States relaxed some requirements in the last years, but some product design features still discourage distributed energy resources.

Limited capacity contracted of distributed energy resources although steadily increasing over time in some Member States.

Note: The list of restrictions shown is not exhaustive. For more information, ACER 2023 MMR: Demand response and other distributed energy resources: what barriers are holding them back?, December 2023
Limited competitive pressure in retail markets and retail price interventions
Some developments in the retail markets also hold back distributed energy resources.

Room to improve competition in retail electricity markets. **High market concentration** in many Member States. New entrants with **new business models** can find it difficult to enter.

**Widespread retail price interventions**, way beyond vulnerable consumers. Many consumers may not receive proper price signals.

*ACER European Union Agency for the Cooperation of Energy Regulators*
A possible “To-do list” to address barriers...
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?
Panel discussion: Barriers to distributed energy resources

10:20 – 10:35

Moderator: Johan ROUPE, Ei (Swedish NRA)

Panellists:
• Michael VILLA, Smart Energy Europe (SmartEn)
• Naomi CHEVILLARD, SolarPower Europe
• Leen PEETERS, Think E
• Julia MAJEWSKA, European Commission, DG COMP
• Are there ways that public authorities can move quicker and e.g. facilitate business and technological innovation with regards to distributed energy resources?

• If you had to pick one or two main reasons for why we only see limited participation of distributed energy resources (demand response, storage, and distributed generation) in wholesale electricity markets and system operation services, what would they be?
Stick to the principles of regulation
The 14-year old
Julia MAJEWSKA
European Commission, DG COMP
Studies on demand response at the EU level

• **ACER** - *2023 Market Monitoring Report on Demand Response and other distributed energy resources*

• **European Commission, DG ENERGY** (with ENTSO and EU DSO) - *Proposal for the Network Code on Demand Response*

• **European Commission, DG COMPETITION** - *Barriers for demand response participation in electricity markets and State aid support (July 2024)*
DG COMP Demand response study – scope and objectives

General objective: identifying the barriers for DR participation in electricity markets and State aid support, providing qualitative and quantitative input to support DG Competition in the SA control and assessment of the State Aid measures.

Focus of the research:

• What are the legal and regulatory, financial, market and technical barriers for DR participating or willing to participate in electricity markets and SA mechanisms?

• What are the costs and revenues for the operators participating in wholesale electricity markets and SA measures?

Final report: July 2024

Webinar: 5 March 2024 – presentation of pre-liminary results and stakeholders workshop.
Q&A session

10:35 – 10:50

Johan ROUPE, Ei (Swedish NRA)

Ways to connect to Slido

- Directly in MS Teams
- Through www.slido.com #MMR2023
- Scan the QR code below
- Use the direct link: https://app.sli.do/event/eaH94EXaFHDtAczUgvoosm
Panel discussion: Barriers for bringing flexibility (beyond distributed energy resources) through the electricity market

10:50 – 11:05

Moderator: Johan ROUPE, Ei (Swedish NRA)

Panellists:
• Thomas LEWIS, Climate Action Network (CAN) Europe
• Martin ROACH, European Association for Storage of Energy (EASE)
• Peter CLAES, International Federation of Industrial Energy Consumers (IFIEC) Europe
• Mathilde LALLEMAND-DUPUY, European Commission, DG ENER
Barriers for bringing flexibility through the electricity market

- To accommodate rising flexibility needs, do you believe we can mainly rely on markets or mainly on subsidies / state support to get us there?

- What is in your view the most important source of flexibility EU power systems have today? How do we tap into it?

- What about 2040? What will be important then and how do we tap into that source?
Thomas LEWIS
Climate Action Network (CAN) Europe
Martin ROACH
European Association for Storage of Energy (EASE)
Reflection 1: How to meet future flexibility needs?
• To accommodate rising flexibility needs,
  • It is better to have a market-driven approach (but we do not have perfect markets)

• The most important source of flexibility in EU power systems,
  • Today: Fossil fuels
  • Up to 2040: Non–fossil flexibility, including energy storage technologies across all timeframes

Reflection 2: Energy storage barriers related to ACER report
• Existing EU legislation should be implemented without delay
  • End non–market–based procurement of balancing services (FCR & aFRR in ES & PT, aFRR in FR)
  • Lower the minimum eligible capacity (>10 MW in ES & PT)

• More clear EU guidance on the legal framework for energy storage
  • Remove double charging of taxes, network fees, and other charges

• Greater incentives and market mechanisms for energy storage are necessary to support congestion management
  • Ensure network tariffs are aligned with incentives to provide flexibility
  • Valorise non–wire alternatives
  • Expand use of local flexibility markets and non–firm connection agreements
  • Bring greater transparency around grid capacity and faster new grid connection processes
Peter CLAES
International Federation of Industrial Energy Consumers (IFIEC) Europe
Mathilde LALLEMAND-DUPUY
European Commission, DG ENER
First, implementation

- Electricity Directive and Regulation

- Open the electricity markets to demand response and other flexibility sources, incl. distributed
- Use of flexibility by system operators, in particular in distribution networks
- Active customer
- Demand response through aggregation
Complement the existing framework with rules on Demand Response

➔ Address remaining regulatory barriers for the development of demand side flexibility and other flexibility resources in the electricity market.

- Network code on demand response, including rules on aggregation, energy storage and demand curtailment
- Draft to be submitted by ENTSO-E and EU DSO Entity by May 2024

- Current draft would cover in particular:
  - Market access (aggregation models, baseline, settlement)
  - Prequalification and process to engage in the market
  - Market design for congestion management and voltage control
  - TSO-DSO coordination, data exchange
Looking forward: the reform of the electricity market design

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

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

Indicative national objective for non-fossil flexibility
- including specific contributions of both demand response and energy storage

Non-fossil flexibility support scheme

Enhance the use of flexibility services by system operators
- Network tariffs to incentivise the use of flexibility services
- Possibility to use data from dedicated metering devices
Q&A session

11:05 – 11:20

Johan ROUPE, Ei (Swedish NRA)

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- Through www.slido.com #MMR2023
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Closing

11:20 – 11:30

Christophe GENCE-CREUX, Head of the Electricity Department, ACER
ACER aims to continue monitoring all barriers to market integration. This includes barriers to distributed energy resources and challenges to bring flexibility through the electricity markets. Increasing the flexibility and interconnection of the EU electricity system is key to meet the EU Green Deal targets.
• On 19 December 2023 ACER launched a public consultation seeking feedback on the ACER 2023 Market Monitoring Report and aiming to gather input to bring more flexibility through the markets.

• ACER will use your input to:
  ✓ Narrow the scope of ACER 2024 MMR: focus on the most relevant regulatory barriers and restrictions to distributed energy resources
  ✓ Assess how to unlock flexibility from all resources through the markets
  ✓ Help define the scope of this MMR in the upcoming years

• If you have any questions, please do not hesitate to contact us (ewpmm@acer.europa.eu).
Thank you for your attention