

Market consultation Feedback - Product Design Group

Energy sharing

23/06/2023



Virtual meeting rules

Please keep your camera on (to the extent possible)

Please turn off the microphone when you do not want to intervene



Questions:

1. Raise your hand in teams if you want to ask a question
2. Or post your questions in the chat (with slide number if applicable)

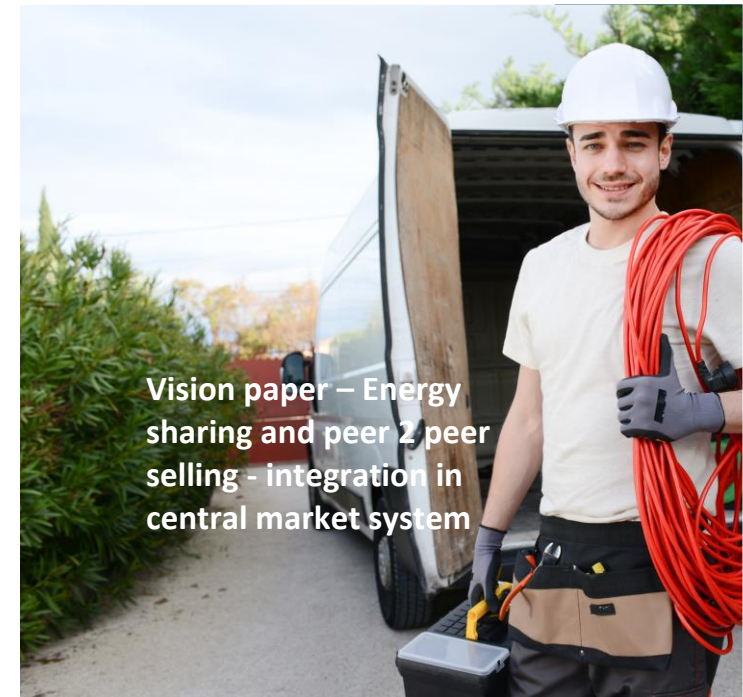
Agenda

1. Introduction (energy sharing notions)
2. Regional implementation
3. Market Feedback
4. CMS integration per domain
 - I. Structure
 - II. Measure
 - III. Billing
 - IV. Settle
5. Planning

Gevoeligheidsklasse : Intern



Federatie van de elektriciteits- en gasnetbeheerders in België
Fédération des gestionnaires de réseaux électricité et gaz en Belgique



Dit document bevat geen vertrouwelijke of persoonlijke informatie en mag enkel gedeeld worden binnen de interne werking van Fluvius.

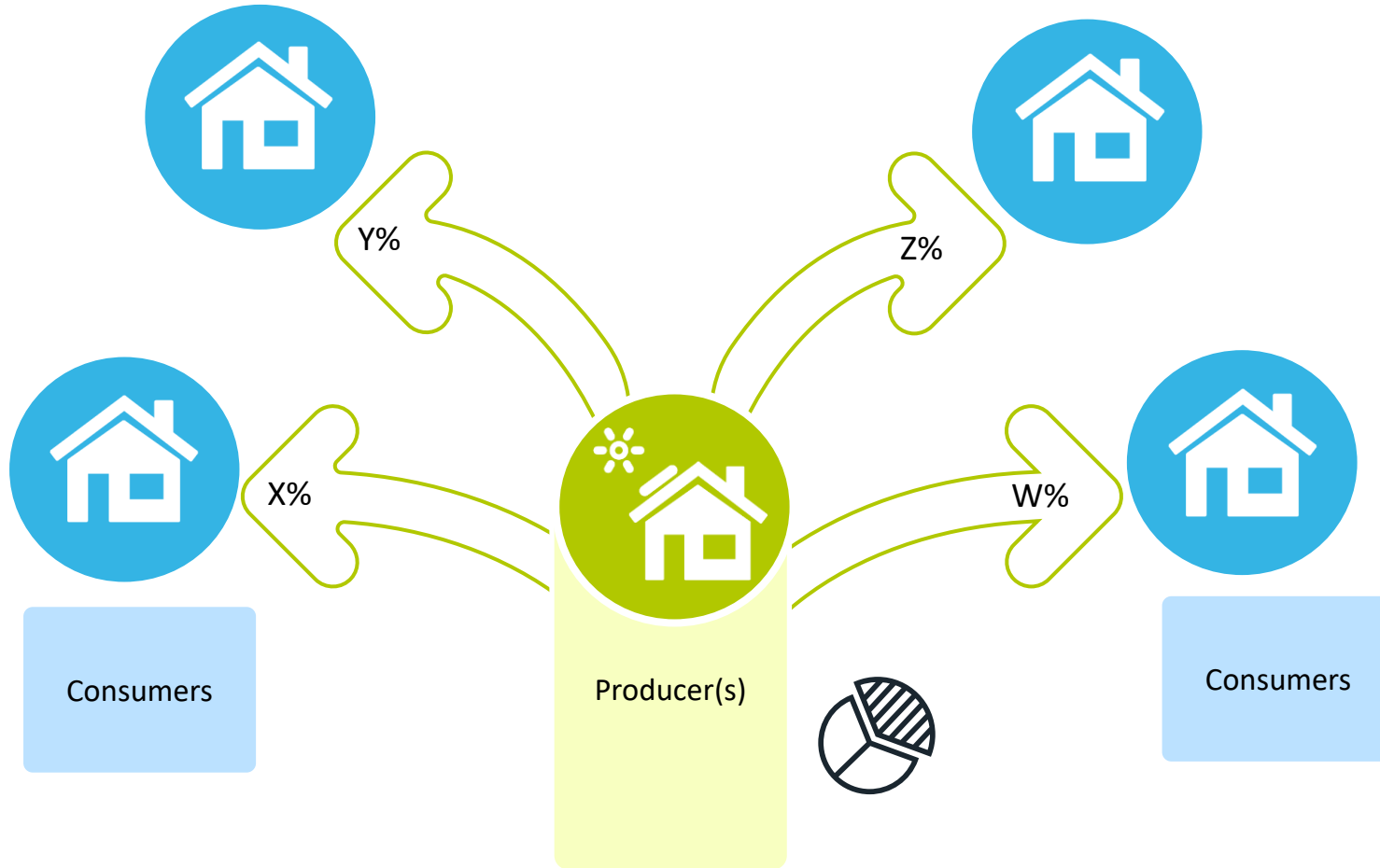
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Recap



Energy Sharing – Notions (1/2)



Convention contains the rules for distributing the energy between producing and consuming members.



Representative manages contracts, convention keys, advises on consumption



DSO collects meter data, calculates energy distribution based on convention keys.



Access holder bills its energy to URD for remaining volumes (and gridfee)

Energy Sharing – Notions (2/2)

- **Energy Sharing:** a group of user sharing energy (typically on a 15 minutes base)
- **Volumes before energy sharing or Gross Volumes:** the measured volumes on the meter
- **Shared volumes:** the volumes a producer virtually hands over to offtakers or that a consumer receives from injectors.
- **Volumes after energy sharing or Net volumes:** volumes before energy sharing minus shared volumes

Example of participant consuming 10 and receiving 4 from the Energy sharing community

"Before ES – Gross"

Offtake: 10

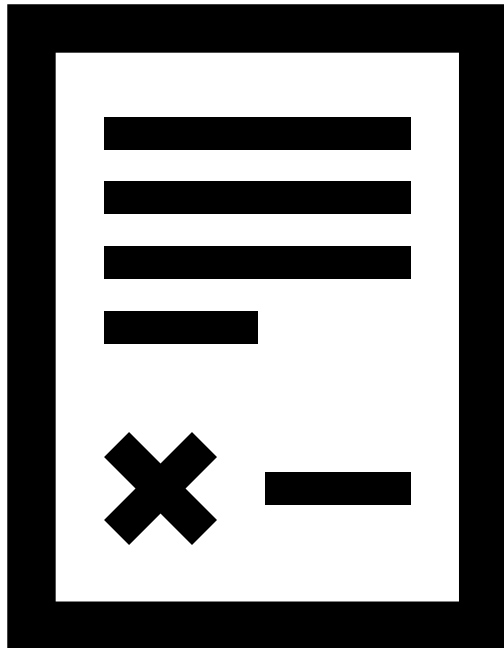
Injection: 0

After ES

Shared Volumes: 4

Volume After ES - Net: 6

The roles of DSO's



Registration Entity

- Registration entity/community type, members, distribution keys (incl. changes)
- Check on requirements/conditions ('technical verifications' & contracts)

Central market facilitator

- Considering structure, rectify and settle scenarios in the market
- Facilitating stakeholder debate

Data manager (DSO backend)

- Calculations of shared volumes (volumes) and measure flow in the energy market
- Information flow towards community administrator (and members)

Current regional situation

| | Wallonia – 07/2023 | Flanders – 01/2022 | Brussels – 02/2023 |
|-----------------------------------|---|--|--|
| Key dates | <p><i>All at once approach</i></p> <ul style="list-style-type: none"> 05/2022: First legislation 06/2023: Publication of last AGW (p2p will come later) 07/2023: Current target of CWAPE | <p><i>Progressive approach</i></p> <ul style="list-style-type: none"> 01/2022: Live: Sharing within the same building 07/2022: P2P 01/2023: Energy communities 04/2023: Selling in the same building | <p><i>All at once approach</i></p> <ul style="list-style-type: none"> 05/2022 – First legislative framework 11/2022 – Legislation clarified 01/2024 : publication of the new technical regulation |
| Meter types | AMR and Smart | | |
| Network fees | <p>Inchanged (applied based on gross volumes) + cascading principle</p> | <p>Inchanged (applied based on gross volumes) + cascading principle</p> | <p>Lower distribution cost for shared volumes* + split of the grid fee</p> |
| Data shared with suppliers | <p>Gross volumes shared through CMS Other volumes off-CMS</p> | <p>Gross volumes shared through CMS Other volumes off-CMS</p> | <p>Net volumes sent to CMS</p> |

* Reduced network costs based on local character

Energy Market Directive evolution

New upcoming European proposal for amending directives to improve the Union's electricity market design <https://eur-lex.europa.eu/legal-content/NL/TXT/PDF/?uri=CELEX:52023PC0148&from=EN>,

- Greater energy sharing (e.g., sharing surplus roof top solar power with a neighbour) can improve the use made of low cost renewable energy
- Affordability of energy is important, but preserving the signals for demand response is equally important. Emerging solutions such as energy communities, self-consumption, energy sharing should be enabled and incentivized

On a European level, Energy Sharing is seen as an important tool to activate customers, to increase renewable production and to play a role in the affordability of energy. Legislation is still subject to changes that can impact (change) future implementation

Common objectives

- Facilitation of new markets
- Creating possibilities for (active) customers
- Remove potential barriers
- Strengthen debate

Feedback from FEBEG after first vision PDG

1. Each actor supplying energy– including an energy community - must bear its own obligations
 - **ANSWER: this is a regulatory decision. The proposed CMS market integration will be compatible with changes in the roles and obligations of the different parties involved in energy sharings.**
2. Avoiding handling multiple models in Belgium and the subsequent market fragmentation
 - **ANSWER: this is a common goal of suppliers and the DSOs. The aim of the PDG Energy Sharing is to facilitate new markets and remove potential barriers. This is done a.o. by defining a base for an agile (in this case CMS) market integration thus decreasing market fragmentation.**
3. The energy volume after energy sharing must be calculated and transmitted by the DSO to each supplier implied, and this exclusively via the regular operational systems and information flows (CMS)
 - **ANSWER: DSOs are 100% aligned on this. Adding the different types of volumes in the CMS will be the first step of the agile CMS integration.**

Feedback from FEBEG after first vision PDG

4. The allocation process must be based on the volumes that take energy sharing into account.
 - **ANSWER: We understand the willingness from access holders to integrate shared volumes into allocation and settlement. An analysis was performed in the context of this PDG and multiple design options have been discussed with Atrias. A first shared vision will be presented today. This vision is to be aligned with the new settlement/forecast/balancing processes needed to support different new market products (flex, submetering, eMob, energy sharing, ...)**
5. The forecasting models must be adapted, which impacts as well DSO, BRP's and suppliers, enabling market parties to have correct and sufficient information to forecast its allocations.
 - **ANSWER: idem previous question. For additional master data about market headpoint, the position of DSO is still that the shared master data has to be kept minimal as the access to 15min data is - according to DSOs - the optimal way to decrease uncertainty. At least this is the position within the energy sharing context**

Evolving “agile” from a regional market integration to a CMS market integration

Lessons learning from first agile market integrations performed:

- High customer expectations vs customers experience complexity
- Legislation is still being adjusted in all the regions (and on a European level)
- Limited business case(s) -> research for grid (cost/)benefits
- Supplier reluctance
- ...

-> step by step searching for removing market barriers

-> shifting (existing market integration) to a CMS market integration

-> Further exposed theorems have to be seen as agile steps that in a next phase will be analysed by Atrias and discussed within Atrias working group(s)

Unified Vision



DOMAINS UNDER DISCUSSION FOR CMS MARKET INTEGRATION



Calculating

- Currently, DSOs don't see added value in integrating the calculations of the shared volumes in a centralized system. DSO side calculation enables more flexibility on the repartition keys (imposed by regulators) and faster time to market.
- On the longer term, DSOs are not against the implementation of a shared system “energy sharing manager” that would enable energy sharing registration and volume calculations, if this adds value to the market or is indispensable to support new (legislative supported) schemes that were not part of the first assumptions (like cross regional energy sharing)

Customer/Supplier impact:

Low impact. No federal catalog of keys. Higher flexibility on definition of keys.

Structuring (1/2)

Master data

- Quarterhourly meter readings will be mandatory in an integration in CMS
- Extra info will be needed in **TMD** for suppliers.
 - Static information about the energy sharing participant such as participation and energy sharing role (injection, offtake, both) will be included
 - For other master data, clear added value hasn't been proven so far. DSO position is that additional master data in the CMS must overweight additional system costs (additional updates/maintenance) and constraints such as GDPR (e.g.: data about other participants), and uniformity/reliability (e.g.: distribution keys/algo). DSOs do not want to introduce complexity in the market to solve risks that can be overcome statistically overtime... Risks that exist anyway for any "new" customer behaviours (eMobility, batteries, etc.)

Customer/Supplier impact:

Access to quarterhour data and limited master data about participants.

Structuring (2/2)

Informing about energy sharing entity changes

- Informing the access holder in case of **new / leaving participants** in an energy sharing entity
 - Generate "leave energy Sharing" in case of structuring scenarios such as Move out, customer switch, combined switch, end of contract
- Avoid necessity for rectification (to be seen in a broader perspective) – operations on 15' value necessitate reviewing existing rectification rules

Customer/Supplier impact:

It is vital to take the relevant scenario's and market operations into consideration (which is already the case where the DSO supports energy sharing today). Thus forming a flexible calculation system based on 15' values (aggregated volumes) but at the same time taking into consideration client choices (changes in access register and energy sharing parameters). The improvement of the CMS integration lays in the cross regional uniformity that takes scenario's (access register modifications) into consideration.

Measure (1/2)

Registers/Volumes

In order to answer to the regional legislation and the access holders requirements, sub-registers need to be stored and made available for access holders via standard measurement messages (architectural TBD)

- Offtake : Gross volumes (before ES), Shared volumes; Net volumes (after ES)
- Injection : Gross volumes (before ES) ; Shared volumes ; Net volumes (after ES)

Customer/Supplier impact:

The outcome of the calculation is transported from the DSO backend to the supplier/BRP. The net volumes are important to inform the customer and to be able to take into account these volumes after energy sharing in supplier billing (which is already the case where the DSO supports energy sharing today). The improvement of the CMS integration lays in the cross regional uniformity and the 'MIG6 measure format which facilitates the processing of the shared volumes on the invoice.

Measure (1/2)

Registers/Volumes

Nevertheless, given the additional calculation steps and the dependency created between multiple points, impact on the supplier billing process still remains, even with this CMS integration.

Non-uniform, more flexible SLAs logics in CMS are required for energy sharing. In order to avoid exponential number of updates/rectification. There exist options at DSO side that can help such as limiting the size of energy sharing groups, buffering corrections, filtering applied corrections based on impacted volumes or timing, ...).

Customer/Supplier impact:

Some elements under debate will not be solved with a CMS integration. For instance some bill elements are, depending on the legislation, based on volumes before and other elements after energy sharing. Certain complexity in order to integrate energy sharing on the bill remain. Other elements have to be discussed in a broader perspective for instance rectification rules and timing of processing/visualizing the impact on the bill of energy sharing. However, first steps in an agile implementation can take place leaving these elements to further debate.

Billing

- The gridfee billing will be based on specific volumes (gross, net, shared). Depending on local legislation, the used register/volume might change (see 'regional differences')
- Most flexible market integration (link gridfee to potential different (measure) registers)

Customer/Supplier impact:

The major benefit of a CMS integration lays in creating a flexible and simple framework (taking into consideration all available volumes). However, this framework can nevertheless prove insufficient depending on the complexity of gridfee tariff schemes described in future regional tariffication models

Settlement

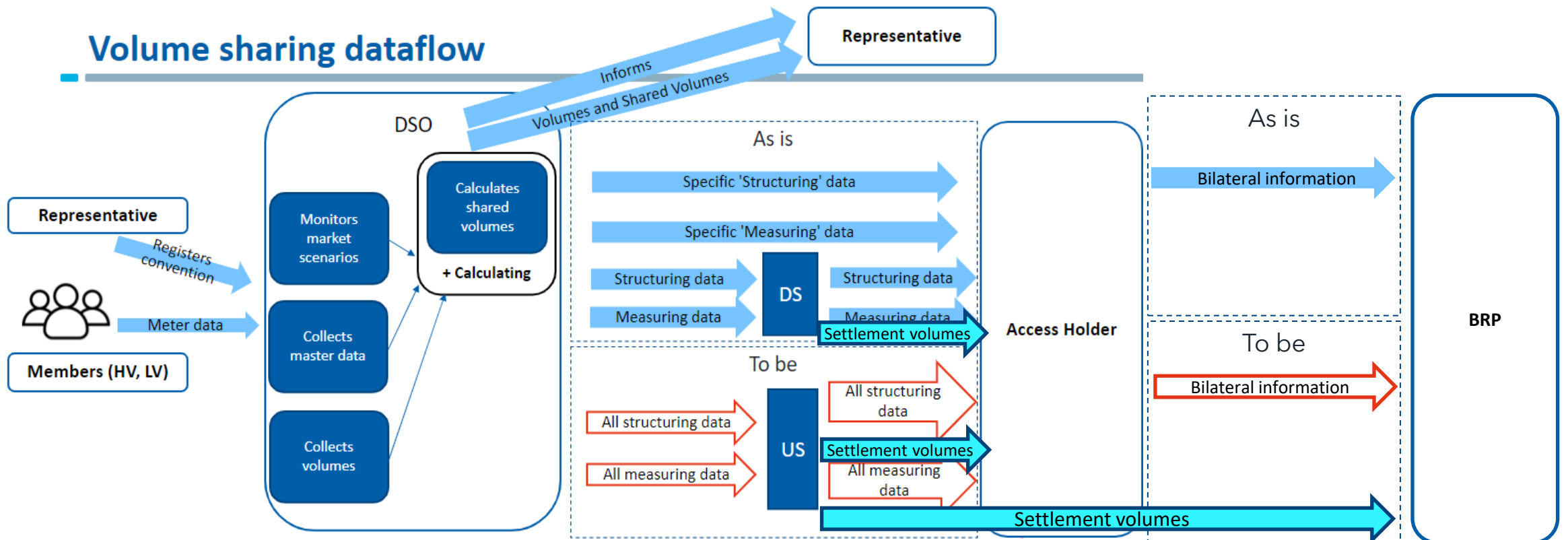


Current principles - BRP and settlement

Balancing and settlement are currently based on gross volumes (before/without ES).

We understand there is a willingness from access holders to identify options to integrate shared volumes into these domains (allocation and rectification) and to treat them separately.

Volume sharing dataflow



Current principles – sourcing/balancing impact

Gross offtake (physical energy flow) 

Gross injection (physical energy flow) 

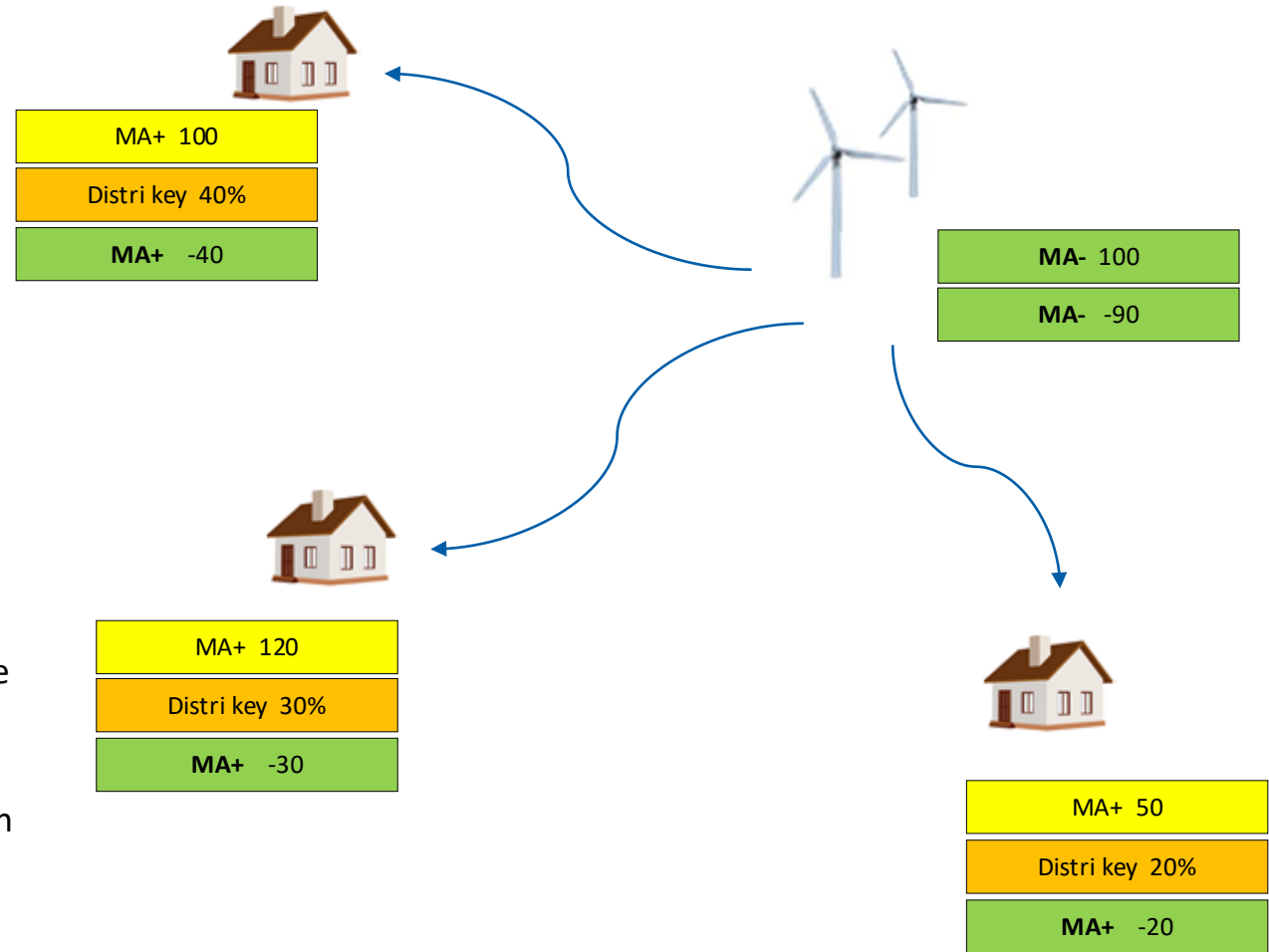
Distribution keys 

Partitioning shared energy into different fractions

- Injection point : reduction on MA-
- Offtake members : reduction on MA+

Member's contribution is limited to the offtake amount (hard limit)

- Result after correction can never be a net injection value (offtake members)
- A member can never become a prosumer due to his participation in energy sharing

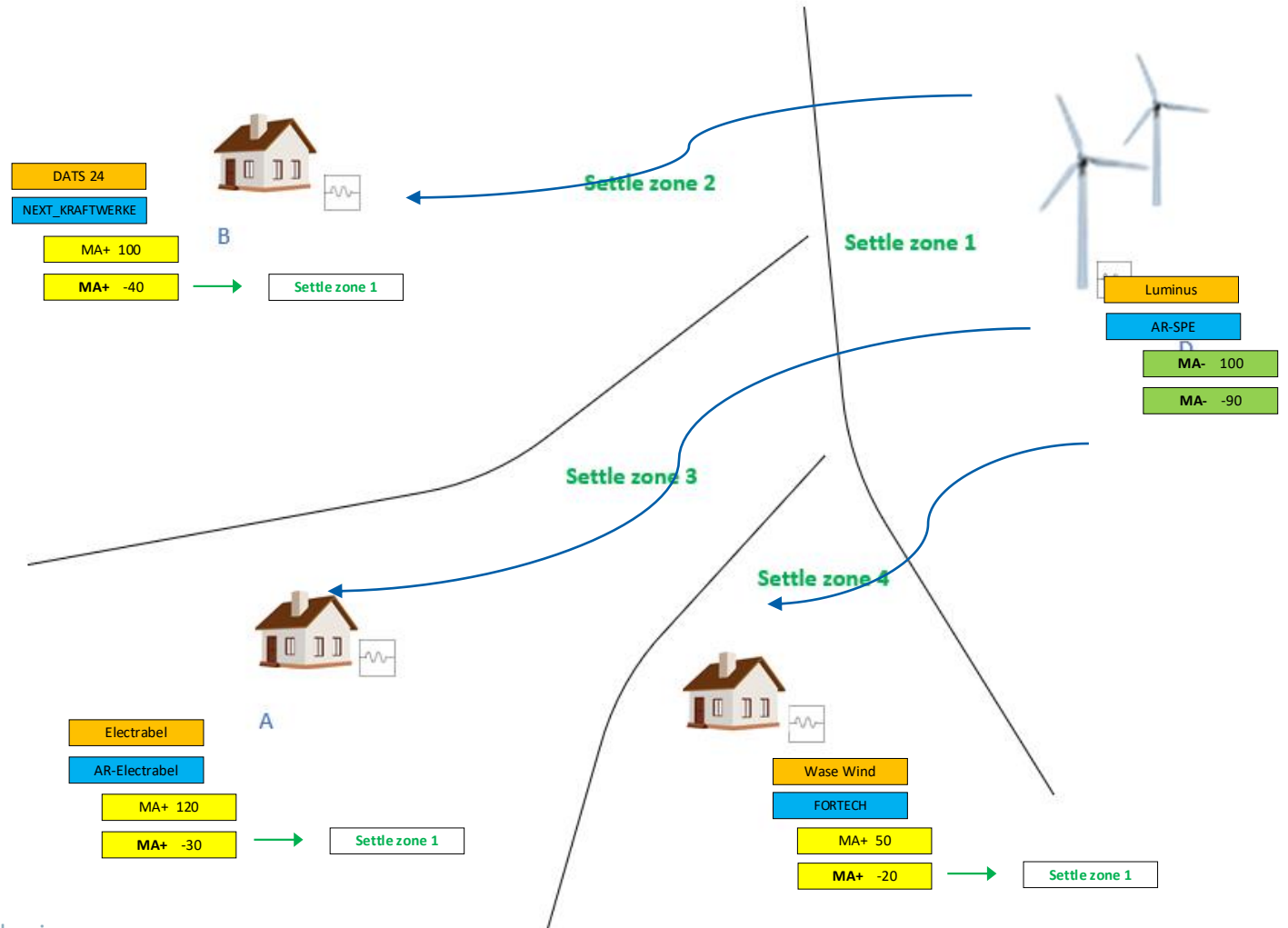


Current principles – sourcing/balancing impact

Cross-GAP energy sharing

-> settlement is organised based on physical energy flows

-> from DSO perspective; delivery & sourcing should be balanced for each DSO separately



Position of the DSOs

- Allocation must be transparent, with **all volumes correctly represented and taken into account** within the systems (baseline position of the DSOs)
- Take into consideration remarks towards improving market functioning, made by suppliers/BRP; requirement to **take volumes after energy sharing within the CMS allocation calculation** (and reconciliation) instead of handling settlement by means of the current ex post financial reconciliation process (Flanders)
- **Every individual volume fraction (net & shared volume) should be allocated to the market party** that takes responsibility for it

Customer/Supplier impact:

In a first (current) agile step, a model based on an ex post financial reconciliation process, maintaining existing allocation process being based on volumes before energy sharing, can give valuable insights. When volume amounts increase and societal benefits can be affirmed/demonstrated, shared volumes can be taken into account within the allocation/reconciliation. A CMS integration will make it possible to include both gross and shared volumes in the CMS allocation calculation. Because the BRP has to integrate the energysharing concept into its forecasting, (since volumes after energy sharing will be used in balancing), we want to highlight the resulting impact on the BRP role. First steps in an agile implementation can take place, leaving options open for protocol/legislation modification if necessary, and the decision to be taken concerning shared volume allocation to a (responsible) party or “closing post”.

Position of the DSOs

Discussions with Atrias have led to an implementation approach making use of a virtual SDP (see next slides)

Implemented solution should be futureproof ;

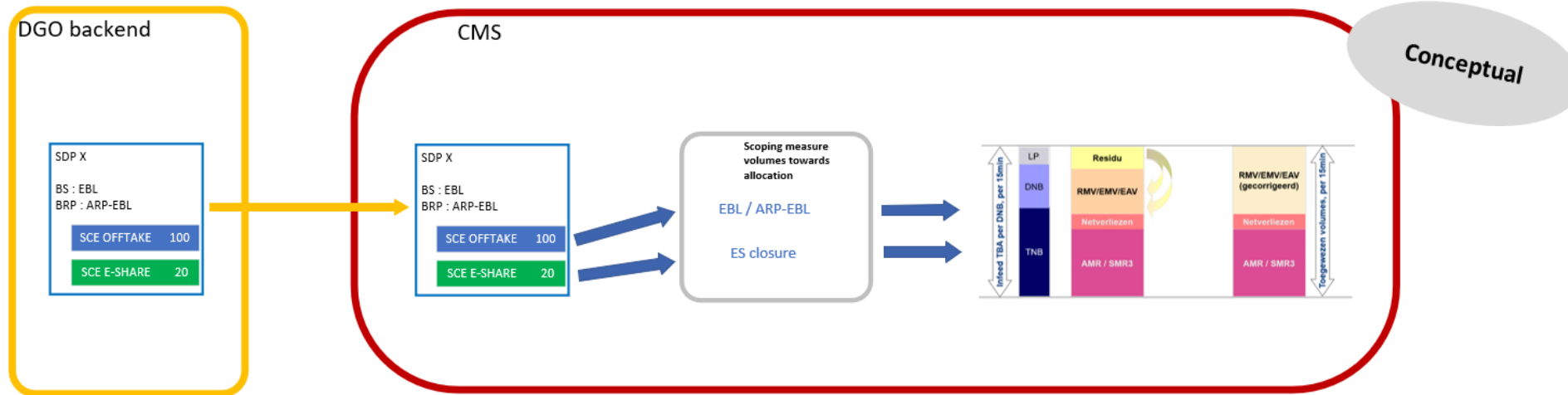
- Cross region, cross voltage
- Other new market products (flex, submetering, etc.)

Customer/Supplier impact:

DSO's see the opportunity to use net volumes (volume after energy sharing) in the allocation process as a next agile step in market integration. However, we are still eager to know whether this integration will lead to the disappearance of current market barriers invoked by market parties, that interfere with the "well functioning" potential of the energy sharing market.

A CMS integration will make it possible to include both gross and shared volumes. This however also has to be situated within a broader constellation. Therefore, in addition to this context, there will be a new PDG initiative focussing specifically on Settlement – in order to look at the broader settle picture including other market products.

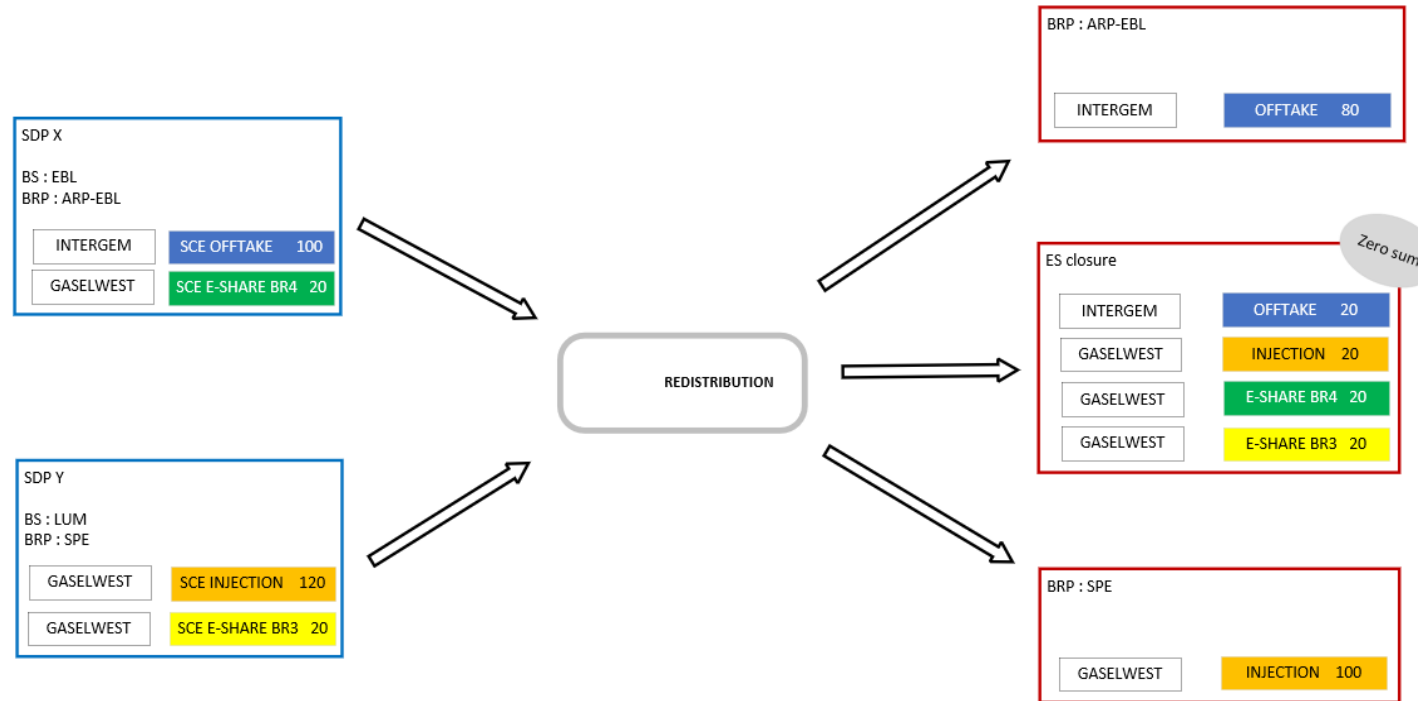
Volume-based integration – conceptual solution



Important prerequisites from DSO point of view;

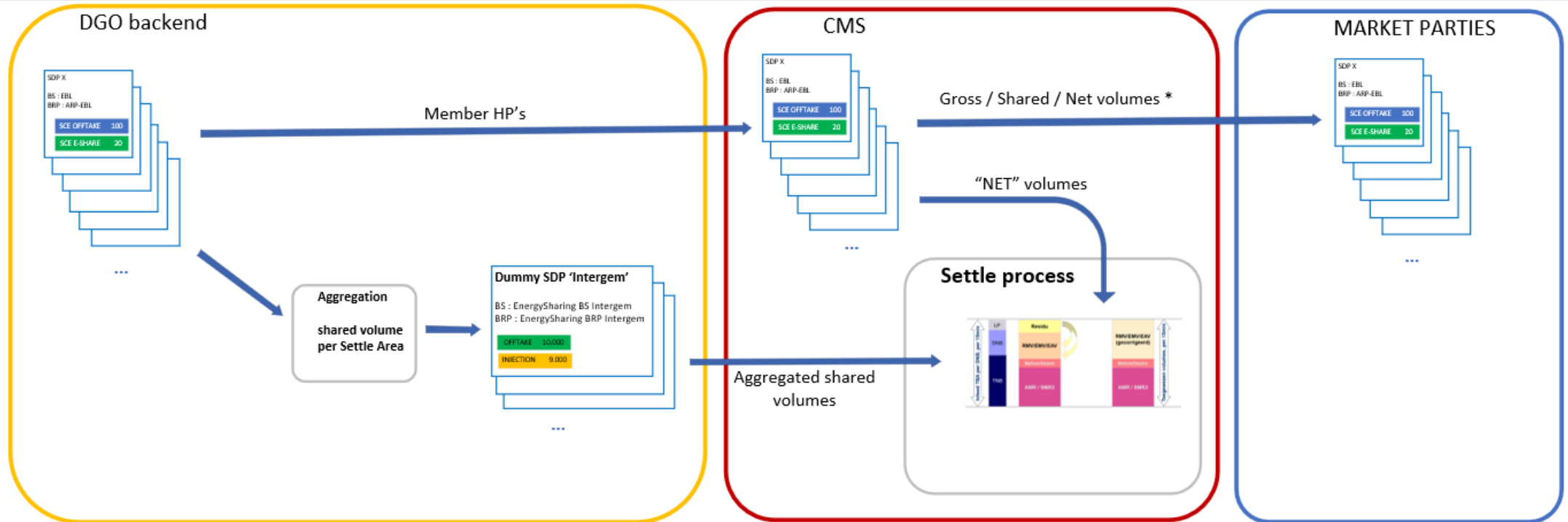
- Keeping track of **all** energy flows (gross) on the grid --> need for visibility/inclusion of shared volumes
- Allocating the net volume (after energy sharing) to the involved contractual supplier/BRP combinations
- Making it possible to allocate the shared volumes to a central energy sharing entity/BRP combination
- This enables to address responsibilities (equally and fair) accordingly to the active supplier/community who causes potential impact. But leaving also the possibility to solidarize this risk/impact by creating an (aggregated) “energy sharing closing/party”.

Volume-based integration – attribution on individual level



- Redistribution step calculates shared volume allocation on market side (no intervention on infeed side)
- Shared volumes are attributed to central energy sharing closing/party (BRP, closing position,...)
- Net volumes are attributed to involved contractual BRP parties
- Volume allocation is executed with respect to Infeed area (settle zone) and meter type (SMR3 / AMR)
- A similar approach is needed towards Reconciliation, to be able to calculate net volumes accordingly

Volume-based integration – treatment on aggregated level



* MEASURE : possible differentiated approach between DSOs to be defined

- Calculated shared volumes (redistribution step) are aggregated in DSO backend
- Aggregated shared volumes are represented by means of a virtual market SDP and included in Allocation
- Net volumes are individually included in Allocation
- Volume allocation is executed with respect to Infeed area (settle zone) and meter type (SMR3 / AMR)
- Reconciliation : volumes after energysaring are taken into account; VI is aligned to allocated volume.

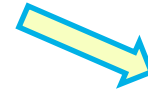


Planning

Planning

Objective: Integrate “Energy sharing” into the market

- PDG: market consultation feedback – final text before analyses



Analyses implementation CMS



If new insights/debate is necessary

- *Not within Atrias forum (=implementation forum) but within new PDG market session(s)*


PDG roadmap

Deliverable PDG Energy Sharing (1.0)

- *Integration of volumes and scenarios in the CMS*

Deliverable PDG Energy Sharing (2.0)

- *Supporting Cross GRD and cross voltage*

A group of diverse hands holding glowing lightbulbs against a background of a network diagram. The hands are of various skin tones and are holding the lightbulbs in a row. The lightbulbs are glowing with a warm, yellow light. The background is a dark blue-grey color with a network of white lines and dots, representing a digital or social network. The overall image conveys a sense of collaboration, innovation, and shared ideas.

Thank you for your
participation!