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Highlights from WS#1: Flexibility is the cornerstone of the future energy system on 20 June

Key messages from 20 June

Below are listed the key messages from the various presentations, to introduce the overall messages from the workshop are:

- The Clean Energy Package brings us a good step forward towards engaging the end-user through an aggregators intervention. However, member state implementation must be monitored going forward, including the compensation issue
- There are major differences between EU and other regions and also within the EU. Hence Mission Innovation's work on demand response (Task 2) is encouraged to provide insight across regions and EU member states – aim for Workshop#2 in autun 2020
- Examples from Voltalis and USEF demonstrates the potential of engaging consumers. Important is the good offer (e.g. energy savings and comfort) where the consumer benefit. Furthermore, there is a need to develop demand response markets
- ENTSO-E and TSOs are moving in the right direction but too slowly. There is a need for TSOs in the product design to drive forward the demand side flexibilty since Balancing services are the only existing market
- NODES case with Entelios and Mitnetz Strom as well as EPEX Spot's Enera case demonstrates the ability to mobilise demand response to balance power markets in a more cost effective way than by simply curtailing RE-production
- The flexibility platforms also demonstrate the ability to ensure transparency in the flexibilty market as well as effective coordination between TSOs and DSOs when facing opposing needs

Flexibility is the corner stone of the future energy system, Philip Baker, Regulatory Assistance Project

Philip Baker, RAP

- Flexibility is key in many elements of the Clean Energy Package, eg. retail market concerning request of smart meter, dynamic tariffs etc. see slides for more details
- CEP brings us forward in the development of flexibility markets and there is now a need to monitor and address member states' implementation, carefully
- It will be a massive challenge for DSOs where dependence is significant on many prosumers
- Consumer access to aggregator without consent of a supplier must be carefully implemented to avoid barriers in the future market
- Requirement that DSOs develop multi-year development plans will support their demand for flexibility
- Member states should report progress on DR development
- On the issue of compensation – buying power in advance compensation is an issue but benefits need to be taken into consideration when assessing the need for compensation
- Art 17 underlines that no barriers should be created for aggregators
- Issue of synthetic inertia was raised – batteries and fast response an advantage

Providing flexibility from large numbers of flexible units into the electricity markets, Pierre Bivas, Voltalis

Pierre Bivas, Voltalis

Voltalis value proposition:

- Offers a good deal for the consumer (15% savings, green solution and comfortable heating with heat pumps)
- Offers a good deal for business in the spot market

On the seemingly advanced DR market in France, Mr Bivas was noticed, that though France is "green" in the SmartEN-mapping this only means that France is fairly advanced in activating flexibility, but France is still lacking behind in the development of Demand Response. And the DSO market is not existing.

Voltalis has been closely involvedin advocacy work of the CEP-process:

- Highlighting art 17.2. services to the TSO and the DSO must be delivered with balance responsibility. So if there is no delivery there will be a penalty
- There is a cost of DR because without DR suppliers will have higher revenue. But on the other hand thanks to demand response, the supplier is also buying cheaper, because DR ensures generation and consumption is matched at a lower price level instead of curtailing generation consumption is moved to

matchs production. Hence the overall benefits for suppliers exceeds the costs

Lessons learned from the MI parties on demand response, Matti Aro, VTT

Matti Aro, VTT

On behalf of the MI-Task 2 on demand response VTT has conducted a survey. Focus is on TSO flexibility products. Results highlighted are:

- The DR-activities include industrial processes which are easily activated, but also buildings and households deliver.
- Barriers for DR includes a lack of incentive and a lack of business model.
- Researchers and regulators see DR as a key part of the future low carbon power system. But clearly consumers need to be convinced. There is a need to promote benefits. In terms of model-development the USEFs work has been paving the way for aggregator model development.
- Aggregators and sub-aggregators is the way forward. The business case is difficult for the aggregator. The sub-aggregator is a technical entity which controle and monitor the flexible units. Models are being tested in the Finnish market and seen as a gateway to Distributed Energy Ressources as well as a new way of getting much more Demand Response into the market

Panel debate

Panel debate – Are we well on track to succeed in developing demand response markets (Philip Baker, Pierre Bivas, Matti Aro and Henrik Bindner (DTU Electro)) involving the audience, just a few highlights:

- The value of aggregation for aggregator and society is significant
- The value for the individual consumer is a cup of coffee but other elements counts for the consumer

Participants asked about other issuesnot addressed in the presentations:

- Will time-of-use tariffs help or undermine the market for DR, there was various positions on this issue ranking from tariffs undermining the market for explicit demand versus tariffs as a price signal that is insignificant for the single consumer but when pooling units it can be picked up by aggregators,
- Why isn't cyber security addressed. When remote controling multiple units in private households there is also an entry pass for those not welcome

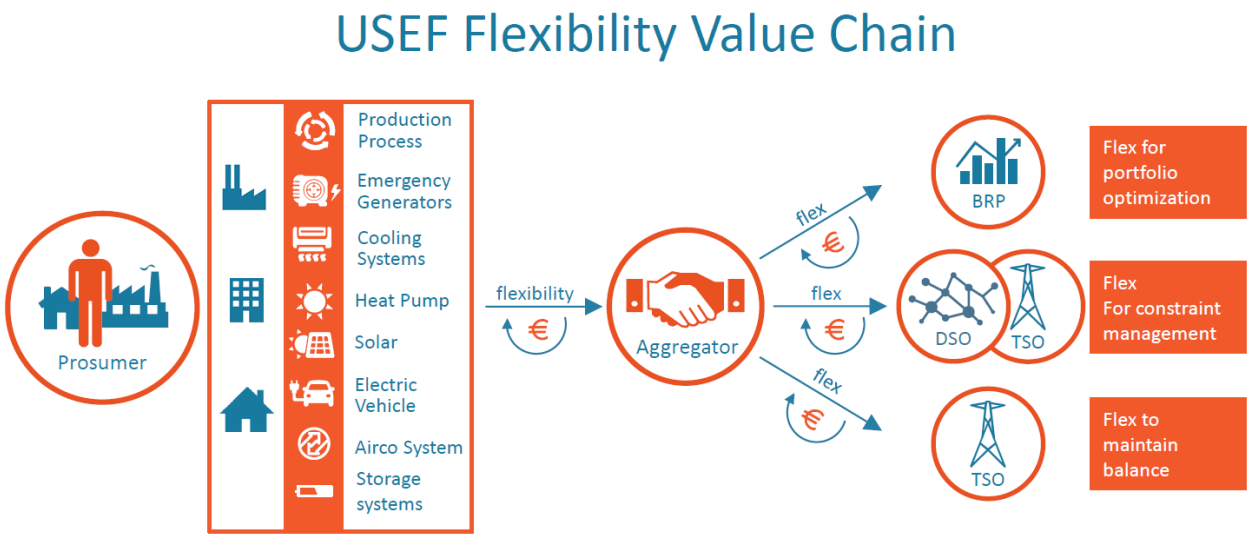
Marten van der Laan, USEF

Flexibility from residential Power Consumtion – field trials based on USEF, Marten van der Laan, Universal Smart Energy Framework:

A brief introduction to the USEF work and recent demos on engaging consumer in local energy communities as vitual power plants. Highlighting recent USEF work:

- Update of the Flexibility Value Chain
- Facilitating Independent Aggregation (incl. 7 models)
- Value stacking & dynamic pooling
- Role of Flexibility Platforms (TSO DSO coordination)
- Role of Citizen's Energy Communities
- Country Deployment expected 2019
- Protocol for Flex Trading (UFTP) expected 2019

Consult USEF-webpage for more information including very informative white papers



Energie Koplopers: In this project with PVs, boilers, batteries, fuel cells and heat pumps in private households (230kW) the flexibility was exchanged between BRP, Aggregator and DSO. Consumer gets a flex fee, no dynamic pricing.

Key message:

- Flexibility is easily unlocked. Consumer willing to participate.
- Flexibility brings additional value for the BRP
- Flexibility can be used to relieve grid congestion
- Aggregator can bring value to Prosumer
- Aggregator needs to manage its risk position
- DSO and BRP requests not always in line (16%), coordination mechanism needed

Other projects presented:

- Interflex Demonstrators:
  - Six EU demos (S, NL, G and F)
  - One of these is in Eindhoven (Semi public EV charging,PV and batteries, three competing aggregators, USEF applied for congestion management)
  -
- Rennovates (deep renovation of houses, becomes zero energy houses
- Two EV-cases in Stedin.net/Lombox.net and JedLix
- Flex solutions for the town of Nijmegen:
  - with 8000 users.
  - DSO needs flex
  - 1MW in the winter time in peak hours

Developing the EU market for balancing services, Martin Høeg Møller, Energinet (Danish TSO):

Martin Høeg Møller, Energinet

- EU legislation requires that the common platform for balancing services is established
- Electricity Network Codeshas been implemented in the Balancing Guidelines (18/12/2017)
- MARI and PICASSO are the further implementation work in ENTSO-E making sure that prouct design sosn't exclude flexibility demand
- In addition CEP support the development of a flexibility framewor
- TSOs have handed over 500 pages about how to move forward. They await the National Regulator's Agencys approval. If a country does not approve, it will go to ACER. A proposal is a TSO-TSO-model: You do not need to speak to the central platform, but can go to the national TSO

Elements in the ENTSO-E-proposal:

- Reducing the focus to two products: aFRR and mFRR Product specification
- Bidding zone is national / within borders
- Permission to pool production and demand
- asymmetric requirements are possible
- Pre-qualification is a national issue and will vary a lot across borders
- How to: See slides on merit order and pricing
- Nordic markets are on hourly basis EU on 15 minutes – huge changes are required to implement the ENTSO-E-proposal

Flexibility platforms can facilitate a cost effective and transparent market solution for demand and supply of flexibiity, Hallstein Hagen, NODES

Hallstein Hagen NO-DES

- German DSO Mitnetz Strom is in a situation similar to other areas in Germany with an increasing amount of PV and wind, DSOs curtailment comes with a compensation to PV producers, costly for the DSO. Hence in the German context the results can be expected in other parts of Germany
- BASF-industrial demand response identified by aggregator Entelios as the cheapest way of dealing with grid congestion – 10 times cheaper
- NODES is the applied flexibility platform
- There is no TSO in the case, but if required NODES can provide a TSO-DSO-coordination

Article describing the case is attached.

Experience in facilitating flexibility trading, Elies Lahmar, EPEX Spot

Elies Lahmar, EPEX Spot

- Rapid RES expansion, congestion management need is appearing. Decentralization creates a need for vertical integration and a need for multidimensional flex markets (micro-local-wholesale)
- Main priciples for a flexibiity platform: market based, open, netral, local, grid impact (fysical), secure
- EWE, TenneT and Avacon have grid congesion issues.
- In the Enera case (Part of the SINTEG-projects) a number of parties have been admitted. The first trade has taken place between EWE Netz and Audi (activating a power2gas facility), EPEX Spot being the market facilitator
- The need for TSO-DSO-coordination happens in a traffic-light-proces

Important design questions to take into account:

1. Enhanced TSO-DSO coordination
2. Interaction between congestion management and the wholesale market
3. Impact on the BRP and the balancing responsibility
4. Timeline of the market and interaction between Long-term and Short-term flexibility arrangements

Explanation about the SINTEG projects are attached.