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ETIP SNET Virtual Workshop

Parallel session 2

Markets as key enablers of the energy transition

18th June 2020

Welcome to the ETIP SNET virtual Parallel Session 2

Survey to see which entities are presented by the attendees

LINK on the chat

Rules for interaction during the PS2

- **ALL ATTENDEES of the Plenary Session are invited to switch on the Camera – if possible.**

- **TO INTERACT WITH THE SPEAKERS DURING THE PS:**
  - The attendees who want to speak or make some questions are invited to **raise the hand** on TEAMS and the floor to them will be given at the end of each speech.
  - The attendees are also invited – if preferred – to **write their questions/statements in the chat**. They will be read at the end of each discussion rounds

- **The link to come back to the Final plenary session** will be shared at the end of each Parallel Session via chat
  - Please note that it is the same of the current Plenary Session.

Parallel Session 2

- *Parallel Session “Markets as key enablers of the energy transition (F4 - Wholesale, F5 - Retail)”*

Markets as key enablers of the energy transition	F4 Pan-European wholesale markets	F4 Wholesale
	F5 Integrating local markets (enabling citizen involvement)	F5 Retail

F4 Pan-European wholesale markets

- The new legislation asks for **enhanced roles of DSOs**, particularly in procurement of ancillary services, flexibility, data management and integration of electric vehicles.
- **Markets must encourage** development of more flexible generation and demand and Member States must **eliminate obstacles to market-based pricing**.
- **Bidding zones** must be reviewed by TSOs and possible alternative concepts must be proposed.
- DSOs must adapt **network access** and congestion tariffs and **charges**.
- Member States must **remove regulatory distortions**, enable scarcity pricing, interconnection, DSR and storage before **Capacity Remuneration Mechanisms** (CRM) can be introduced.
- **Capacity must be procured separately** from balancing energy by TSOs and may be **facilitated** on a **regional** basis.

F5 Integrating local markets (enabling citizen involvement)

- **Final customers and small enterprises** must be **enabled to buy** electricity generation from aggregated, multiple power-generating facilities or load from multiple demand response facilities to provide joint offers on the electricity market and be jointly operated in the electricity system.
- **Smaller-scale producers** must be directly or indirectly responsible for **selling on the market** the electricity they generate.
- **Citizens** must be offered **competitive prices**, efficient investment **signals** and higher **standards of service** so that they can contribute to security of supply and sustainability.
- Membership of **citizen energy communities** is **open** to all categories of entities. A manual of procedures is to be made available to facilitate the understanding of procedures for project developers and citizens wishing to invest in renewable energy.

Route towards 2030

- The transition towards 2050 will be ensured by achievements that are formulated in the Roadmap2030
- Some achievements in relation with F4 Wholesale F5 are presented

Route to F4 - Pan-European wholesale markets

- **Net Transfer Capacity** levels ensure 15%+ of national electricity demands though import/ export; easier public involvement in the infrastructure project, more efficient use of interconnectors
- **Better reward of flexibility from generation, demand or storage;** Dynamic market intervals compatible with grid-flow guarantee and systems constraints
- **Market mechanisms for liquidity and flexibility on the power market ;** progressive transition to market-based mechanism for renewables generation to reach very low marginal energy generation costs, smart balancing operation of renewables within energy communities
- **Flow-based market coupling demonstrations to be extended geographically and temporally ;** bio-methane consumed locally or transported via gas grids; integration of various types of gas in gas distribution (Inc. Hydrogen blended with methane); more interoperable functions between the gas and electricity grid; replacement of fossil hydrogen demand in industry
- **Controllable PtX (**X being water in hydro storage, gas in storage reservoirs, heat in thermal storage, batteries to a lesser extent; PtG marginal until 2030) and **XtP** (P being discharging of hydro storage; of energy from and to battery storage; efficient use of fossil natural gas)

Route to F5 - Integrating local markets

- **CEC** contribute with their flexibility to local balancing issues and congestion management in coordination with DSO;
- new **multiple user benefits business models for private households**. Empowerment of citizens engaged to decide on their energy act (generate, store, share, consume or resell energy to the markets) and share benefits of lower system costs. Aggregators or peer-to-peer technologies to enable customers to take part to open, transparent energy markets
- **Data analytics as a service** (DAaaS) of digitalisation, **Non-Intrusive Load Monitoring** (NILM) systems ; load forecasting for optimized intra-daily energy market usage thanks to e.g. connected Active Buildings able to a bottom-up aggregation of forecasts provided by smart metering
- **Center-used demonstrations of Active Demand Response** with permanent and ubiquitous access to energy related services, guaranteeing full data privacy and cybersecurity

Research is still needed

- Several Research Areas and Research Sub Areas contribute to F4 and to F5
- Bullet points proposal on issues extracted from the Implementation Plan tasks needed to fulfill F4 and F5 functionalities.

Research Areas contributing to F4	And to F5
RA**1. CONSUMER, PROSUMER and CITIZEN ENERGY COMMUNITY** RSA 1.2. Adaptive consumer/user behaviour incl. energy communities (Interaction, incentives by dynamic tariffs)	**RA 1. CONSUMER, PROSUMER and CITIZEN ENERGY COMMUNITY** RSA 1.2 Adaptive consumer/user behaviour incl. energy communities (Interaction, incentives by dynamic tariffs) RSA 2.1 Business models (including Aggregators)
RA 2. SYSTEM ECONOMICS RSA 2.1 Business models (including Aggregators) RSA 2.2 Market design (Retail, Wholesale; Cross-border; Ancillary services; Flexibility markets; etc) RSA 2.3 Market governance (regulation, rules) and tariff design (capacity versus energy)	**RA 2. SYSTEM ECONOMICS** RSA 2.2 Market design (Retail, Wholesale; Cross-border; Ancillary services; Flexibility markets; etc) RSA2.3 Market governance (regulation, rules) and tariff design (capacity versus energy)
	RA 3. DIGITALIZATION 3.1 Protocols, standardisation and interoperability (IEC, CIM, Information models.) 3.4 Cybersecurity (vulnerabilities, failures, risks) and privacy
RA4. PLANNING - HOLISTIC ARCHITECTURES and ASSETS RSA 4.2 Long-term planning (System development)	**RA4 PLANNING - HOLISTIC ARCHITECTURES and ASSETS** 4.1 Integrated Energy system Architectures (design including new materials)

4 successive discussion rounds (10 min each) based on 3 underlying question(s):

- *How our priorities described in the ETIP-SNET Implementation Plan fit to your own ETIP/PPP/ … agenda?*
  - *How could you contribute to our goals?*
  - *To which extent are we aligned?*

Discussion **A** (10 mn) :	Discussion **B** (10 mn) :	Discussion **C** (10 mn) :	Discussion **D** (10 mn) :
Towards a better understanding of the **Adaptation** of the energy behaviour of the demand	Towards novel, multi-sided **Business models** dedicated to each stakeholder in the electricity value chain and beyond	Towards Cross-border, **Coordinated schemes** for **market design** at each level of relevance (pan-EU, dedicated markets)	Towards a secure and efficient **Data** management along value chain

- Specific questions are derived from statements / key words of R&I Implementation Plan 2021-2024

How do you contribute to our goals ?
How our priorities fit to your own ETIP/PPP/ … agenda?
To which extent are we aligned?

Discussion **A** (10 mn) :

Towards a better understanding of the **Adaptation** of the energy behaviour of the demand

Our priorities (based on IP) are:

- Methods and tools to support **consumer and prosumer** energy behaviour **adaptation**: online measurements and behavioural studies to analyse non-energy benefits (comfort, security, etc.)

- Methods and tools including campaigns to support the **industry's consumption adaptation** in order to support the system

⇒ **Additional questions**

⇒ **Incentives?**
⇒ **Active modes of participation?**

⇒ **Will multisided markets facilitate more engaged participation?**

How do you contribute to our goals ?
How our priorities fit to your own ETIP/PPP/ … agenda?
To which extent are we aligned?

Discussion **B** (10 mn) :

Towards novel, multi-sided **Business models** dedicated to each stakeholder in the electricity value chain and beyond

Our priorities are:

Business models adapted for each type of stakeholder

- prosumers providing Ancillary Services,
- retailers & aggregators,
- data analysis service providers,
- storage in electrical transportation networks,
- gas fired or biomass fired CHP units

⇒ **Additional questions**

⇒ **Smart sector integration role?**

⇒ **Multisided flexibility**

How do you contribute to our goals ?
How our priorities fit to your own ETIP/PPP/ … agenda?
To which extent are we aligned?

Discussion **C** (10 mn) :

Towards Cross-border, **Coordinated schemes** for **market design** at each level of relevance (pan-EU, dedicated markets)

Our priorities:

- Pan-EU market design to foster the **integration of large scale RES, storage, DR, EV** in coordination with network operations?
- Market design for TSO with cross-border coordination and involving multiple DSO**, aggregators,** and **multi operation zones**
- Market rules and coordination mechanisms for providing **AS by aggregated storage and VPP** (comprising RES, flexible thermal generation, heat pumps, EVs,..)
- Design of local markets and **retail P2P markets for LEC** with power balancing and coordinated LV MV technical grid control
- Market design for large scale demand response **beyond electricity**
- Market design for **storage owners** and **operators**

⇒ **Additional questions**

⇒ Any priority ranking from your perspective?

How do you contribute to our goals ?
How our priorities fit to your own ETIP/PPP/ … agenda?
To which extent are we aligned?

Discussion **D** (10 mn) :

Towards a secure and efficient **Data** management along value chain

Our priorities:

- **Data exchange protocols** / interfaces for a well-functioning market between all players (stochastic model based for handling market operations on different time scales; common, standardised models for encrypted and authenticated market orders)
- Methods for **data protection** for management of **DER**
- **Risks of using public ICT and wireless infrastructures** for smart grid functionalities (e.g. smart meters, energy boxes)

⇒ **Additional questions**

⇒ Data access
⇒ Evolving large scale analytics and AI?

How do you contribute to our goals ?
How our priorities fit to your own ETIP/PPP/ … agenda?
To which extent are we aligned?

E (optional for the discussion)

Extra topics related to the energy system as a whole

Our priorities:

- On LT planning (System development): which cost effective **coordinated investment planning in RES at EU level** considering alternative market designs (incl. all flex types including cross-carrier flex)
- How **CEC** with energy management systems could operate local multi-energy stream operation (electrical storage, P2X generation and storage and X2P including CHP based on hydrogen and fuel cells)?
- Which benefits from **multi-carrier hybrid storage systems** in comparison to single storage units and which applications (P2H for balancing, dynamic interaction heat/electricity, dynamics considering thermal loads inertia)?

⇒ **Additional questions**

⇒ Do we have adequate ICT architectures and coordination to deliver the above?

⇒ How to leverage with upskilling or reskilling?

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Thank You