A new world for electricity transactions: Peer-to-Peer and Peer-to-X

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Summary

• Introduction
• Beyond B2B and B2C
• Peer-to-Peer transactions
• Peer-to-X transactions
• Three essential components of the new transactional world
Beyond B2B and B2C

• Limited role for “peers” in traditional electricity markets
• B2B transactions in wholesale markets
• B2C transactions in retail markets
• But things are changing
  • Deployment of DERs behind the meter
  • Digitalisation of distribution grids and customers’ premises
  • Consumer stratification
• Small and non-professional actors no more only on the “buying” side
  • Peer-to-peer transactions
  • Peer-to-X transactions
Peer-to-Peer transactions (1)

- Peers on both sides of the transaction
- Very demanding type of transaction with still limited concrete implementation
- Three forms currently being trialled around the world
  A. Peer-to-peer in a sandbox
  B. Peer-to-peer within a platform
  C. Peer-to-peer in a community
Peer-to-Peer transactions (2)

• P2P in a sandbox
  - Closed space of limited size where some rules applied to electricity are changed
  - Peers can enrol but do not lead the process
  - A few tens of peers trade surplus generation at the local level
  - Frequent involvement of blockchain
  - Local utility and energy supplier involved

• Examples
  - Brooklyn Microgrid (US)
  - Quartierstom (CH)
  - RENeW Nexus (AUS)
Peer-to-Peer transactions (3)

• P2P within a platform
  ➢ Open space supporting two-sided markets via network effects
  ➢ Peers can enrol but have to respect the rules set by the platform
  ➢ A potentially large number of peers can trade electricity or some attributes of it
    ✓ Green
    ✓ Local
  ➢ Detailed data on peers needed (e.g., smart meters)
  ➢ Need to respect the rules of the electricity system
    ✓ Platforms acting formally as an energy retailer

• Examples
  ➢ Vandebron (NL)
  ➢ Bolt (BE)
Peer-to-Peer transactions (4)

• P2P in a community
  ➢ Open space for bottom-up initiatives either at the local or dispersed level
  ➢ Peers can enrol to
    ✓ Join resources and expand scale & scope at which they operate
    ✓ Create new relations
  ➢ Enduring limited size and skills call for support by specialised agents
  ➢ P2P only one of many different activities performed

• Examples
  ➢ Partagélec (FR)
  ➢ Beehive Project (AUS)
Peer-to-X transactions (1)

- Peers only on the supply side
  - Offering their DERs
- The “professional” side facilitates the transaction
- Some forms already well established, while other emerging only recently
  - Peer-to-System via Feed-in Tariff
  - Peer-to-Grid via aggregators or local flexibility markets
  - Peer-to-System with an integrator
Peer-to-X transactions (2)

- Peer-to-System via FiT
  - Well established and ‘peer-friendly’ transaction
  - Peers ‘damp’ any excess generation into the grid
  - Fixed remuneration over a long time frame
  - A professional entity in charge of collecting and marketing electricity

- Phase-out of support measures call for new arrangements and revenue streams
Peer-to-X transactions (3)

- Peer-to-Grid via aggregators or local flexibility markets
  - Emerging due to increasing value of flexibility
  - More demanding type of transaction
  - Several possible arrangements

- Aggregation of retail customers still less developed than C&I

- Local flexibility markets tested across Europe

- Examples:
  - Voltalis (FR)
  - Piclo Flex (UK)
Peer-to-X transactions (4)

• Peer-to-System with an integrator
  ➢ Specialised asset-light intermediary linking peers to the power system
  ➢ Integrated management of all BTM assets
  ➢ Provision of residual demand

• Towards energy as a service?

• Examples:
  ➢ SonnenCommunity
  ➢ Octopus-Tesla Energy Plan
Three essential components of the new transactional world

• P2P and P2X transactions rely on alignment of three components
  ➢ Transaction loop to deal with transaction costs
  ➢ Pricing mechanism to incentivise peers
  ➢ Delivery loop to provide the service

• Peers need support by some intermediary or third party

• Digitalisation: an enabler

• Business models: is there enough value to create & capture?
  ➢ Electric vehicles as a game changer?

• Regulation of electricity supply and networks: a possible barrier?
Thank you for your attention
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