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*local **E**lectricity retail **M**arkets for **P**rosumer smart grid p**OWER** services*

Design and Operational Characteristics of Local Markets in the Distribution Grid

Pol Olivella-Rosell, CITCEA-UPC

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Pol Olivella-Rosell[1,3], Jayaprakash Rajasekharan[1], Bernt Arild Bremdal[1], Stig Ødegaard Ottesen[2], Andreas Sumper[3] and Roberto Villafafila-Robles[3]

[1]Smart Innovation Norway,

[2]eSmart Systems, Norway,

[3]CITCEA-UPC, Spain

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smart innovationnorway

CITCEA

eSmart SYSTEMS

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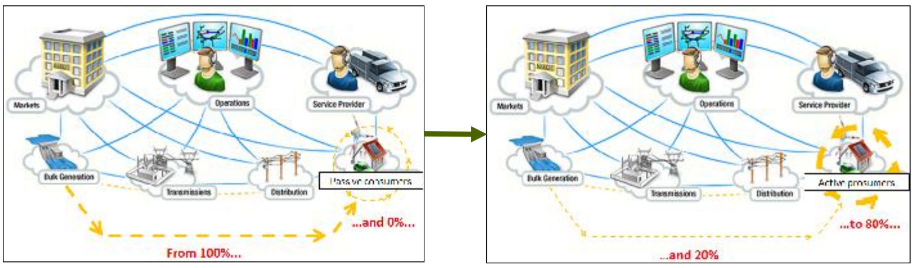
What is a local market?

In the future, most of the energy we consume will be generated where it is used. Big power plants will only be used as a reserve and for technical purposes.



Original source: IEEE

Electricity produced and bought locally

For this a new market is needed for trading electricity locally

What is a local market?

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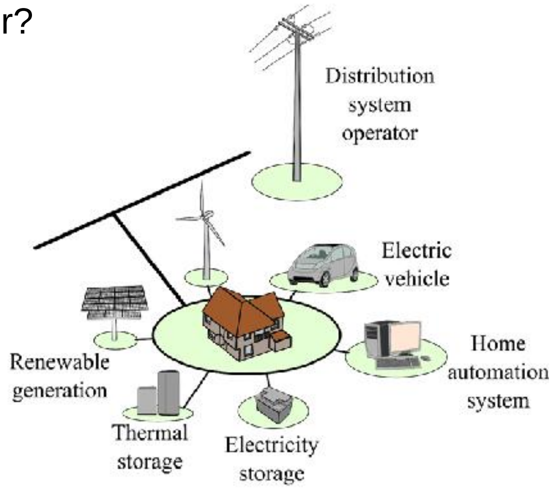
The rise of prosumers will change the relation between customers and the grid but…

What negotiation power does have a single prosumer?



What is a local market?

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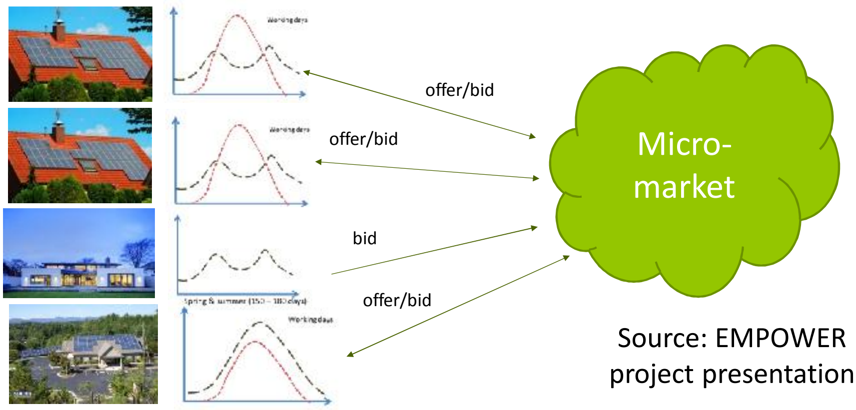
Generally speaking…

A micro-market is the implementation of market rules in a lower scale system as medium or low voltage grids like neighbourhoods, towns or even cities. Similar than Energy Management Systems but with multiple owners.



Source: EMPOWER project presentation

What is a local market?

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Objectives:

1. Support a business model whereby locally produced energy is primarily targeted local consumers.
    1. Offer a competitive market place
    2. Facilitate local trade
2. Promote the installation of distributed renewable generators.
3. Support trade of end-user flexibility for the benefit of the DSO and its operations.
    1. Managing grid bottlenecks.
    2. Providing power curtailments under request.
4. Support power system balancing in wholesale markets
    1. In intraday market sessions
    2. In technical markets like the tertiary reserve market.

Local markets and the SESP as a platform provider

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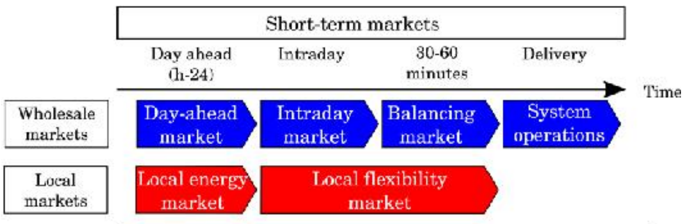
- A local market (LM) is an electricity trading platform to sell and buy electricity and flexibility in the neighbourhood provided by SESP.
- The Smart Energy Service Provider (SESP) is the local market facilitator for the energy community and it is an aggregator for wholesale market agents.
- The LM is divided into two sub-markets: Local Energy and Flexibility Markets



Local markets and the SESP as a platform provider

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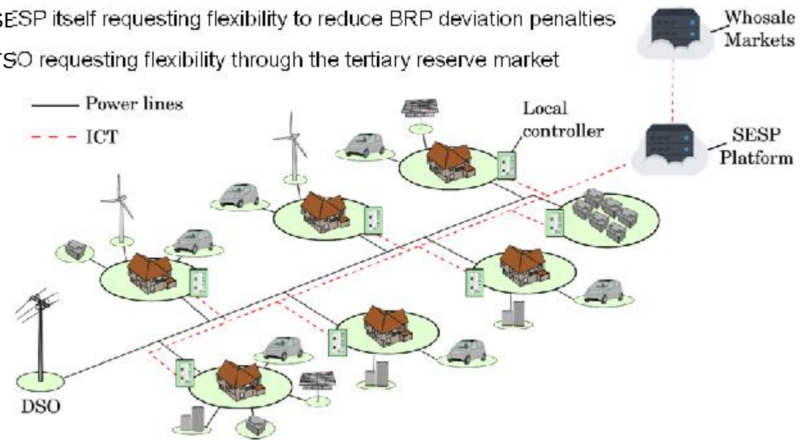
- Market participants: consumers, producers, prosumers, community storage units and others
- Market services:
  - Neighbours providing local and renewable energy
  - DSO requesting power curtailments in a specific zone
  - SESP itself requesting flexibility to reduce BRP deviation penalties
  - TSO requesting flexibility through the tertiary reserve market



New market model, agents, roles & business

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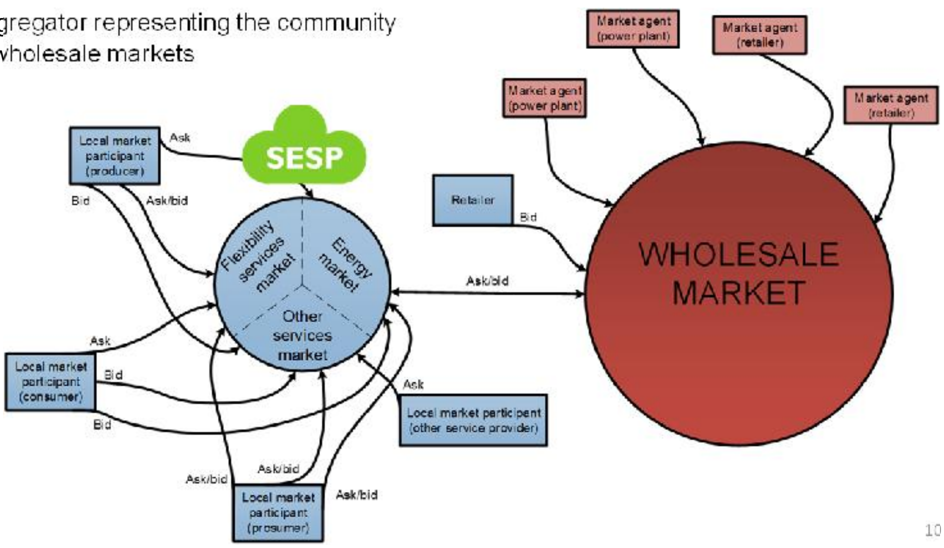
SESP has a double role:

1. Local market operator supervising the local market operation
2. Aggregator representing the community in wholesale markets



New market model, agents, roles & business

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Local market contracts:

- Under this approach, all LM participants have a contract with the SESP and there are no direct negotiations between traders
- Community members negotiate and trade contracts through SESP ICT Platform
- These contracts can be renewed periodically like every month, week or day.
- Contracts are between:
  - SESP-DSO
  - SESP-Consumer
  - SESP-Producer

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EMPOWER means leveraging citizen energy management
www.empowerh2020.eu

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