KEY FUNCTIONS

For an energy community to work key functions have to be fulfilled. The key functions define some core characteristics and tasks of the energy community.

FACILITATING P2P TRADING

DESCRIPTION

By adopting the pattern "facilitating P2P trading", usually a platform operator enables communities to trade energy and/or flexibility directly with each other through a market platform in a peer-to-peer (P2P) manner.

The platform can be organised locally or on a wider scope.

IMPLEMENTATION REFERENCE

- Trade electricity within the community (Sonnen Community, Green Energy Cooperative, Quartierstrom / WEW Walenstadt)
- Independent market place for trading flexibility (PicloFlex)
- Software-as-service for trading platforms (Lumenza, Prosume)

AGGREGATING ENERGY AND FLEXIBILITY

DESCRIPTION

The pattern "aggregating energy and flexibility" defines the process of centrally coordinating and bundling energy services (generation, flexibility, demand) to a larger pool that then can be managed and valorised more effectively due to its scale. The aggregated supply and/or demand is then used on a community level.

Further, the aggregated energy/flexibility/demand can be used for local or external value creation.

IMPLEMENTATION REFERENCE

- Pool renewable energy generation and flexibility for better energy economy (Tiko, Prosume, Equigy)
- Aggregate flexibility for prosumer benefit (Smart Otaniemi, Equigy)
- Aggregating demand (FlecoPower)
- Aggregate and manage multiple energy assets (Schneider electric, Siemens)

MANAGING STORAGE SYSTEMS

DESCRIPTION

With the pattern "managing storage systems" the function of operating and optimising all kinds of storage services is fulfilled.

The storage system may be based on batteries but also by vector conversion technologies that enable long-term storage.

IMPLEMENTATION REFERENCE

- Virtual storage for grid services (EON Solar cloud)
- District battery (EKZ)
- Storage services for increasing self-consumption (Green Reality)
- Flexibility for peak shaving on consumer level (ThermoVault)
- Centralized energy storage to mitigate fluctuations in energy production (Lemene project)

CO-OPTIMIZING ENERGIES

DESCRIPTION

The pattern "co-optimising energies" enables the optimisation of demand and generation characteristics through the local energy management services. The services can be addressed to single consumers or producers within the energy community or the energy community as a whole.

The pattern involves pure electricity optimisation, as well as multi-vector optimisation.

IMPLEMENTATION REFERENCE

- Co-optimize heat and power using biomass (Bio-energy villages)
- Co-optimize multiple sources & sectors (heat and mobility) (Smart Åland
- Manage solar power, gas, & heat (Lemene project)
- Demand shaping towards the PPA (Open Energi)

COORDINATING PARTNERS

DESCRIPTION

The pattern "coordinating partners" focuses on the engagement of external partners. Managing the interests and stakes of outsiders to the energy community can be very important for the smooth initiation as well as the stable operation of the energy community.

Fulfilling this function requires analysing the interests of the outsiders and understanding which impacts the energy community has on them.

IMPLEMENTATION REFERENCE

- Provide a customer acquisition, engagement and retainment solutions for the retail sector for utility companies (ThermoVault);
- Assign excess bids of the P2P platform to the local utility company (Quartierstrom / WEW Walenstadt);
- Academia as coordinating partner (ThermoVault & Quartierstrom, Smart Otaniemi)
- Providing a customer acquisition, engagement and retainment solutions, sell excess local renewable generation (REScoop, Som Energia, Ecopower, Sonnen community)