Workshop 4: Demand side management: Use of distributed flexibility to help grid management for non-interconnected islands

EU and national strategy, policy and regulation

EU Green Deal | Fit-for-55 | REPowerEU

Renewable energy Directive (2018/2001/EU) , Electricity Market Directive (EU/2019/944), Regulation on internal market for electricity 2019/943

Guideline on electricity transmission system operation 2017/1485

Network code on Demand Connection 2016/1388 | Network code on requirements for grid connection of generators 2016/63

Introduction to the Demand Side Management

- Implicit and explicit demand response
- Load shaping objective
- Future energy systems: Access to distributed flexibility

Demand Side Management at the consumers' level

- Price based / incentive based
- Voluntary price for the small consumers (Different tariffs during the day/real time pricing)
- District Self-Balancing
- Energy communities, self producing and local energy markets: a catalyser for distributed flexibility
- Electric Vehicles and demand side management

Demand at the DSO level

- Regulating reserves/Spinning and non spinning reserves
- Hybrid stations with batteries and behind the meter batteries
- Block exchange market/demand bidding
- Demand response aggregators
- Data management for flexibility markets
- Sector coupling

DSM at island level

- Smart microgrids / Virtual power grids
- Solutions for demand side management
  Desalination units
  Heat Pumps
  Electric Vehicles
- Storage services fon non-interconnected islands
- Interconnections and grid capacity
- Planning tools for consumers' engagement in islands

Legal framework and risks

- Revision of electricity markets
- Auction-based flexibility markets

Investment

Regulatory framework for DSM markets and integration in the grids

EVs, V2G and remuneration schemes

Flexibility prices

Industrial Loads and sparcity for grid services

Aggregation of smaller loads

Clean Energy for EU Islands

Proposals by DSO to regulators / policy makers

DSOs have the main responsibility to identify technical requirements and calculate costs

Astypalea simulations:
1. EVs can alter their charging power to provide frequencry containment services
2. EVs can work together with RES

DSM in residential appliancces can increase RES penetration

Larger loads (industrial) or desalination plants are easier to manage than smaller loads (EVs and appliances)

Large losses of load can cause rapid rises in frequency - Locational fast response as an answer

Control of large industrial loads tackle changes in frequency

RES limitations create the need for DSM

Greece:

Menorca proposal
- Integrate storage and DR in the current generation dispatch by creating a flexibility platform
- Price signals to follow the demand curve and not the generation curve

Network codes on DR to be finalized by the end of 2024:
- Simplifying market access
- Market design
- Standardization of products
- Cooperation between TSOs and DSOs.

Italy: using the production regulation:
First local auncilary services auction in November 2023
- different auction for the islands

Examples presented / discussed

Island level: Astypalea Kythnos Ikaria Menorca Azores

Country level: Italy France Iceland Greece Spain