



Energy storage and thermal energy storage in the EU policy



IEA Energy Storage
Task 39

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Energy Storage



Flexibility and storage in EU energy policy

- EMD (original Comm, proposal):
 - **national assessment of the flexibility needs**
 - establishment of objectives to increase **non-fossil flexibility**, especially from **demand response and storage**
 - possibility to introduce **new support schemes dedicated to non-fossil flexibility**
 - reform tackles the **use of flexibility services by system operators, as alternative or complementary to grid development**
 - evolution in the system operators' **remuneration through network tariffs**
 - requirement to **reward the use of flexibility services**, by adequately **remunerating operational expenditure**
- Energy storage recommendation
- addressing various issues to promote energy storage, in particular
 - **regulatory barriers**,
 - better consideration of **energy storage as part of grid planning** and operation and
 - financing, to ensure **services provided are remunerated** and that **energy storage can best participate** in existing and possibly new **support mechanisms**.
- NECPs:
 - Integrated reporting under dimensions of energy security, market integration, and competitiveness, R&I
 - Thermal; energy storage is mentioned in a couple of NECPs analysed so far

Summary of the recommendations on energy storage

- **Regulatory:**
 - **Double role of ‘consumer-producer’** - removing barriers, network design and charges and tariff schemes
 - **Flexibility needs** in the energy system + objectives AND related policies and measures
 - **Networks:** potential of energy storage, possible alternative, in planning + access + operation
 - **Barriers** for demand response and ‘behind-the-meter’
- **Financing:**
 - **Financing gaps** – instruments providing stability and predictability
 - **Monetisation of services provided** – revenue stacking
 - **Competitive bidding processes** + design of **capacity mechanisms**
- **Other**
 - Accelerate energy storage deployment in **islands and remote areas**
 - **Publication of important market data** (e.g. renewables curtailment, existing facilities) to facilitate storage investments
 - **R&D** (including optimization) + consideration of de-risking instruments

The importance of thermal energy storage

- Thermal energy storage:
 - Very important role in energy transition - Essential enabler for the decarbonisation of the energy system
 - H&C represents half of the energy consumption in the EU (thus replacing fossil fuels with RES in heating systems is vital) – increasing electrification of H&C
 - Wide variety of thermal-energy-storage technologies (using sensible, latent or thermo-chemical heat storage - varying in temperature levels, applications and technological maturity)
 - Can replace high-temperature fuels in general and fossil fuels in particular, whether they involve:
 - (i) renewable electric input and heat output; or
 - (ii) renewable heat input and heat output)

The importance of thermal energy storage (cont.)

- When combined with renewables-based heating and cooling, helps to maximise the capacity of renewable-energy sources to cover heating demand
- Higher proportion of heating demand with variable and low temperature RES (such as shallow geothermal, solar thermal, and ambient energy, etc.)
- Makes possible for renewable heating systems to achieve the same performance level as fossil-fuel heating systems
- Large thermal storage (e.g in district heating systems) can provide flexibility and balancing services to the electricity grid
- Can play many roles in ‘shifting’ the final use of electrical and thermal energy, including through the thermal inertia of assets themselves (e.g. building spaces, water tanks, etc.)
- Necessary to complement renewable H&C generation technologies, in all sizes and with all storage timescales (incl. seasonal and long-term thermal storage)