

Agreed strategic targets for the Energy systems:

- Flexibility of the system, by 2030

Technologies for grid observability and controllability: the percentage of substations at high, medium and low voltage levels equipped with remotely accessible monitoring and control devices should be 80% or higher for HV and MV substations and around 25% for LV substations. Values will vary depending on Member States.

Tools for managing the variability and uncertainty of operational conditions should enable the peak load to be reduced by 25% due to demand response by 2030¹.

Technologies for flexibilisation of centralised and decentralised thermal power generation enabling 50% of all thermal power plants (new as well as retrofitted) should meet the flexibility requirements demanded by vRES. This requires:

- Doubling of average ramping-rates (the speed at which output can be increased or decreased)
- Halving efficiency losses for part-load operations
- Reducing minimum load by 30% compared to the average of today (avoiding plant switch-off)

Increasing the capability of RES to provide services to the energy system by:

- Improving accuracy of forecasting models for aggregated RES plant power production by 10 %
- Developing technologies, tools, services and interfaces enabling a full and effective integration of RES in the grid (balancing services, dispatch, contribution to the stability, 'smart' connection with the grid)

- Economic efficiency

The main indicator for the technological development that will be used focuses on the cost reduction by 2030 of energy storage ranging from 50% to 70% depending on the specific technologies for the same storage function². Here storage is meant broadly, including batteries, pumped hydro, the interaction of heat and electricity networks, power-to-heat and power-to-gas/fuel concepts, interaction of gas, heat and electricity networks.

¹ In ENTSO-E TYNDP 2016, under the scenario 'European Green Revolution', demand-response potential is fully used to shift the daily load in response to the available supply resulting in a reduction of peak load of 20%; therefore 25% is considered as an ambitious goal that R&I could enable

² Cost and performance of EV Batteries, Final Report for The Committee on Climate Change, 2012, see Fig 6-1, Measurement details to be developed for other technologies.