

## ENTSO- E position on the Integrated SET Plan issue Paper 4- “Energy Systems”

ENTSO-E welcomes the issue paper on Energy Systems which stimulates the R&I activities for the next years aligning with EU energy Union objectives and political targets.

As requested by the EC on 17 December 2015, ENTSO-E is pleased to provide its position on the issue paper, on the targets and priorities.

### 1. Targets

The **EC issue paper mentions** on page 3 that the overarching target for SET Plan Research and Innovation is to develop and bring to use cost effective technologies, systems and services so that the EU electricity system **is capable of hosting 45% of variable RES by 2030** and operate in a safe, stable and secure way. ENTSO-E understanding is that the overarching target of the issue paper refers to variable RES namely wind and solar generation, which are by nature scarcely programmable.

The political target agreed by EU Council for 2030 is 27% RES in the total EU energy consumption which can be translated in (total) RES covering 45% of the EU electricity consumption.

According to the last progress report on RES of DG ENER (2015), presently 26% of the EU's power is generated from renewables. About 10% of the total EU electricity production is sourced from variable renewable electricity (such as wind and solar).

The TYNDP2016 shows in the four 2030 scenarios a range of 40 to 60% of RES contribution to the electricity consumption in Europe. Looking only at wind and solar, the two main variable renewables then the four scenarios range is 21 to 34%.

As Research and Innovation activities are the scope of this issue paper, it is natural that the targets set are more ambitious than the currently foreseen extreme scenarios for system development for 2030 and 2050. The penetration rates of wind and solar generation over next decades are going to challenge the European power system, hence the focus of R&I activities to develop a system hosting higher penetration rates of variable RES would be the necessary approach.

Therefore ENTSO-E's proposal is to consider for 2030 a target range of **35%-45%** of electricity consumption on average over a year covered by variable RES generation, i.e. non-synchronous generation.

For 2050 this target of non-synchronous RES contribution to the EU electricity consumption should be in the range of **40-60%**.

### 2. Priorities

In the European energy system there is still room for improving interactions between Member States and between electricity, gas and heat networks. The relevance of electricity as main energy carrier for final consumption will increase and the objective of the TSOs is to convert today's variable RES in controllable generation through the integration of different technologies and solutions. Creating links between the operation of these networks (with their respective energy applications) would provide more flexibility at lower cost, more resilience and allow a larger penetration of variable renewables by balancing over larger areas and over different energy carriers and storage facilities.

The priorities should reflect on defined targets in the paper and identify the needs, technologies and services which will enable the power system to achieve those targets.

**Priority:** Development of holistic communication systems and real time decision support systems to provide security (including the cybersecurity), oversight and participation opportunities between DSO, TSO, Aggregators, storage etc should therefore be a priority action.

- European electricity system should be modernised based on already demonstrated technologies and solutions while the R&I focus should be on the development and integration of new technologies (e.g. super conductivity, wide area measurement system, digital substations, new market tools), new solutions (Internet of Things, ICT, smart asset management) and use of web based flexibility markets. Individual options such as EV, storage, Demand Side Response, back-up capacity will enable the RES integration. However they will need to be complemented. Interoperable and interchangeable functionalities should be at the base of the development of integrated solutions. For instance ancillary services (e.g. ramp up power) can be delivered by many sources such as DSR, battery, EV, heat storage, gas turbines etc. European wide energy only market and web based flexibility markets would effectively connect all these sources and services.

**Priority:** Enable network operators to guide technology/services based on needs

- The network operators should be the parties to identify those needs and technology/service and the providers should develop products accordingly. The approach of using promoted technologies/services may not be the cost effective and target oriented approach. Therefore a priority actions should be defined for enabling this process for network operators.

**Priority:** Cost efficient integration of market and grid operation

- It is necessary to provide solutions for the cost efficient integration of market and grid operation for day ahead and intraday timeframes applying a holistic approach (across the spectrum from consumer to generation). A non-exhaustive approach could include the development of a European wide standardized set of services: e.g. ancillary, system and network to enable web based flexibility markets.

### 3. Other aspects

In the introduction of Issue Paper 4 the focus remains on developing new technologies rather than incorporating existing new technologies into the grids, financing them. This is replicated in the Targets section where the focus is on “developing, maturing and demonstrating”. This approach is not ensuring viability through the creation of appropriate cost effective market uptake measures or suitable market frameworks.

Network operators operate on a regulated income, which is not always conducive to R&I, as regulated income is typically apportioned based on a shorter horizon. Limited regulated funding can stem R&I and act as a barrier to reaching the proposed targets. Regulated income is typically for a 5 year horizon, however the research in question here is often a generational horizon. Regulated income for research typically allows for incremental innovation, whereas the transformation research and innovation required here requires more time and money.

Regarding the monitoring of the targets, it is important that evaluation and monitoring of the R&I process and potential impact is performed. Further discussion on monitoring process is needed as the assessment of the project results does correlate directly with the overall target.

ENTSO-E strongly recommends that the priorities should be based on the Grid+Storage project deliverables to avoid inefficient use of resources.

Some of the actions listed in the Annex of the issue paper are in ENTSO-E opinion related with the short list priorities mentioned above. It is important that the selected priorities for the issue paper are independent from the headings and challenges in the SET Plan and a more holistic approach is taken. For example the market uptake programme should not be completely separated from the demonstration and advanced research. Another example the flexibility of the power system is interlinked with actions related DSR, storage, energy grids.