
Energy Regulation: A Bridge to 2025 – Electricity

ENTSO-E Response

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ENTSO-E response to public consultation

Key Messages

ENTSO-E welcomes the opportunity to respond to the Agency for the Cooperation of Energy Regulators (ACER) consultation: **Energy Regulation a Bridge to 2025**. This consultation is a timely contribution to broader energy policy discussions out to 2025 and beyond. ENTSO-E supports the main tenets of the consultation paper. When setting out policy towards new strategy of regulation (year 2025), the key purpose should be to learn lessons from the past and to avoid their repetition when laying down grounds for the future.

ACER has correctly identified a number of substantial changes to the market dynamics. Such changes are often examples of general market distortions leading to incorrect price signals. In turn, such price signals fail to drive effective investments. We consider it necessary to first identify causes of these negative changes. The market should be the main driver for any further changes in the electricity wholesale market to the maximum extent possible and measures that distort the market should be avoided. At the same time, however, the market should operate within security constraints posed by physical limitations of the energy infrastructure, interconnected transmission grids and user interactions that underpin the resilience of the power system.

In this regard ENTSO-E believes it is important for ACER to consider a number of important operational, market and technical issues when formulating a regulatory framework to 2025.

The European Union's commitment to renewable energy and decarbonisation has found legal expression in a range of energy and climate change "packages," broader communications and energy roadmaps. Indeed, there is now broad political agreement that the use of renewable energy sources can contribute to combating climate change, to increasing security of supply and help drive down costs for consumers. The introduction of the climate change and third internal energy market package has laid out the framework conditions for ensuring greater levels of energy efficiency, renewable energy, and the completion of the internal energy market.

In 2012 renewable energy accounted for 18% of the E.U.'s electricity consumption. According to the updated National Renewable Energy Action Plans (NREAPs), this percentage is expected to increase to almost 35% in 2020. It is likely that renewable energy percentage will be higher again in 2025 also considering that the decarbonisation objectives are likely to continue being a political priority¹. As this estimated 35% is calculated on an average output basis, it implies that the pan-European power system will have to be reliably and resiliently operate at levels of RES penetration which at times will be significantly higher than this. From a TSO's perspective, this represents a paradigm shift and poses considerable challenges for electricity system operators to overcome. Any roadmap to 2025 must include a

¹ While translating EU RES targets into national ones, we believe it is necessary to take account of specific of each Member State. In some countries, developing additional RES generation will be clearly more challenging. Moreover, the possible use of cooperation mechanism (e.g. the statistical transfer) for fulfilment of RES 2020 goals, as included in the EC 5 November 2013 Communication, remains as a debated issue.

comprehensive assessment of the interactions of the policy objectives, regulatory requirements and these technical operational characteristics and needs of the electricity power system.

The overarching strategic objective is to make renewable energy an increasingly significant component of Europe's energy supply by 2020 and do so while maintaining system security and economic competitiveness and increasing consumer participation. This energy transition will require an efficient and investment friendly business framework to deliver. Against the backdrop of this transition, ACER identifies the three electricity-specific core aspects as

1. Flexibility;
2. Smarter demand side and grids; and
3. Further competition.

While these areas will represent a substantial subset of the challenges arising from striving to meet multi-dimensional policy objectives, they do not in themselves cover all the material areas to ensure appropriate power system resilience. In essence the proposed regulatory bridge is covering the necessary issue, but is in itself not sufficient. ENTSO-E argues that the shift from conventional to renewable generation technologies over the next decade poses a number of challenges to the traditional approaches to power system operation and transmission investments.

It is important that any regulatory framework recognises the new operating paradigm that power system operators need to work within and ensures that the needs of the power system and the market align in order to ensure continued power system resilience in the context of high levels of non-synchronous variable renewable generation. This necessity will need to be reflected in any market reform measures and European energy policy goals. ENTSO-E is currently elaborating concrete proposals for market design: some key recommendations have been already presented at the latest Florence Forum (Milan, November 2013). Regarding technical requirements, the implementation of the network codes (connection codes and operational codes) will also be crucial.

Flexibility

The question of system flexibility in the context of renewable energy integration has gained considerable traction. The concept of flexibility should be understood as an expansion of adequacy concepts to include consideration of the tools needed to flexibly manage fluctuations and unpredictability in the generation and demand balance. It is important to note that the flexibility (which can be provided by generation, demand or storage) is a decisive factor for the successful integration renewable energy but needs to be complemented by addressing also other technical areas where fundamental changes will occur and have to be managed. The reality of technical requirements for the broader Security of Supply is a complex and multidimensional issues, and oversimplification should be avoided. In that sense, the flexibility issue should be considered in the broader question of whether the target model for electricity markets is sufficient to deliver the appropriate signals for investment, and ultimately Security of Supply.

The need for system flexibility and performance will become more pronounced with more variable renewable generation on the power system; therefore, it is important that any market reform – while avoiding unnecessary subsidies for specific mature technologies or non-market based distortive state aid interventions - ensures that generators are adequately incentivized to provide system performance. In this context, ACERs recognition of this particular issue is to be welcomed. ENTSO-E looks forward to providing the necessary expert input in order to ensure the appropriate products and markets (including ancillary services) are developed to incentivise performance in this regard.

However the ACER vision does not recognise, nor could it recognise without appropriate expert input all the material technical aspects underlying the necessary power system resilience that goes to the heart of the consumers' expectations and needs. It is only by recognising all the elements in power system resilience

which include network adequacy and generation adequacy, flexibility and technical considerations materially impacting power system at high penetration of RES including for example inertia, synchronising torque, fault levels and transient stability, that market solutions that truly deliver for the consumer and satisfactorily and efficiently meet policy objectives. Nowadays, energy markets do not fully reflect the value of system scarcities or missing system services that provide resilience and security to power systems. ENTSO-E would suggest that the ACER regulation bridge paper indicates a way forward on how to ensure that the necessary regulatory environments and that focus is committed to these areas. It is important that TSOs must be involved whenever system security and resilience is concerned

Lastly, one important organisational element that can assist with enhancing power system flexibility, performance and resilience in this new operating paradigm is TSO-DSO interaction. An enhanced governance relationship between TSOs & DSOs is required to ensure overall system security and efficiency.

Smarter Demand Side

Increased demand side flexibility will be a positive development for European markets and grid operations. If the technical and market challenges are adequately addressed, such integration will support the management of renewable generation and thus contribute to system stability and operational security. Demand side integration will also facilitate greater market liquidity and competition, with a downward pressure on wholesale energy prices. These are positive long term benefits for the electricity consumer and society at large.

However in order to fully release Demand Side Response (DSR) potential there needs to be a considered focus by all stakeholders to remove unnecessary administrative barriers to the large scale deployment of flexible DSM. These occur in Grid and Distribution codes, market rules and general industry thinking. ENTSO-E and its members support addressing these issues. Further analysis is necessary to explore the potential of using DSR directly by TSOs and to quantify its benefits in terms of keeping the power system in balance

In addition ENTSO-E considers that:

- Measurability of DSR is a prerequisite for market integration;
- Controllability of DSR is an important feature, which will bring a direct benefit for power system operation.

The definition of technical standards and regulation to ensure measurability and allow controllability of DSR will be controllable should therefore be considered as a priority. Moreover, we acknowledge that there needs to be a significant roll out of key enabling technologies (especially time of use metering). In this regard the issue of ownership and contestability of these meters should be carefully considered by national regulatory authorities. Data ownership and access should have a clear regulatory framework, to enable opportunities for market parties while protecting the confidentiality of personal and commercial information. This has implications for the system build and IT architecture but will facilitate competition not only in energy but also ancillary service provision into the future.

With respect to integration into existing markets, demand response should be incorporated and treated fairly in every aspect of market design, be it energy markets, balancing markets, reserves, ancillary services, or capacity mechanisms. Any demand side regulatory framework should take account of these four principles:

- Competition: access to a consumption site should not necessarily be restricted to its supplier, and other players should be able to value DSM (demand side management) through explicit participation in markets;

- Feasibility and transaction costs: the market design should be adapted to include small consumers (e.g. allow aggregators);
- Data management and confidentiality: commercial and personal data should be protected
- Effective framework for TSO-DSO interaction.

As stated above, one important organisational element that can assist with enhancing demand side flexibility is TSO-DSO interaction and cooperation. An enhanced governance to structural relationships between TSOs and DSOs is required to ensure overall system security and efficiency. ENTSO-E is concerned that the debate thus far has centred on the impact of DSM on the distribution system – a more holistic consideration of the impact on the wider power system is essential to maximise any benefits. This is particularly pertinent in light of Europe’s 2020 renewable targets and the associated challenges for network operation and security. Key to this is a deep understanding of the power system with large scale deployment of variable renewable generation – ENTSO-E can provide this expertise and will provide further insight via future position papers on these issues.

Moreover, it should also be reminded that new regulatory and market arrangements concerning DSR and the role of TSOs are being developed via network codes. While the Electricity Balancing Network Code primarily deals with a question to what extent DSR could help TSOs in balancing transmission grids, the Network Code on Demand Connection focuses on bringing more competition to the ancillary services market and ultimately allowing TSOs and DSOs greater possibilities for managing their control area. Any future regulation needs to be minded of these Network Codes and their implications.

Lastly, the deployment of DSM, which allows TSOs greater possibilities of managing their control area, should go hand in hand with deployment of units which demand such greater control possibilities, namely RES. Otherwise current high standard of operational security of the interconnected European power system may deteriorate

Competition in the Energy Market

ENTSO-E supports the calls for increased competition in the energy market. The completion of the Internal Electricity Market is a crucial first step to realise this goal. The electricity wholesale markets are steadily improving in terms of integration, competition, liquidity and transparency. The European system, while growing in operational complexity and degree of interconnection, is proving to be robust and reliable. Cross-border congestion management is becoming more efficient and better coordinated. However, the effects of Energy and Climate policies on wholesale markets, which pose challenges to well-functioning and more integrated markets, are becoming increasingly evident year after year.

We believe that the full implementation of the EU Target Model and the associated network infrastructure are essential for efficient market outcomes. At the same time, it should be noted that there is an emerging consensus that the Target Model as designed is not sufficient to economically deliver the range of policy objectives required, especially high RES-E and Security of Supply. To manage the ambitious and often conflicting energy policy objectives, ENTSO-E and TSOs are aware that that current market design needs to be further enhanced and complemented, even when the IEM Target Model will be fully implemented.

Answers to specific questions

Question 1: Do you agree with this overall approach? Would your emphasis be any different?

ENTSO-E welcomes the approach taken by ACER. It recognises the need to prepare the future and the post-target model era. It also reaffirms the need for a better coordination of national energy policies. ENTSO-E agrees that market design reviews should recognise the risks to lock-in solutions and jeopardize future developments to answer to yet unpredictable changes to the market, policy or technological environment.

However ENTSO-E consider that not all the material aspects that impact the resilience of the pan European power system are adequately covered in the scope outlined in the consultation. This is an area that needs to be added for active consideration in the regulatory roadmap to 2025.

Question 2: Do you agree with this broad analysis and/or do you have further suggestions?

ENTSO-E agrees with ACER analysis of the already taking place substantial changes

- Development of RES-based generation, on an uncoordinated way, with huge consequences on markets, on physical flows, and on operational challenges. ENTSO-E would like to emphasize once more that developing infrastructures are essential to accommodate to this new paradigm.
- Reduction of competitiveness of gas-fired power generation: the large deployment of RES coupled with sometimes inappropriate policy measures (e.g. non-market based support schemes, lack of balancing responsibility, priority dispatch) had a big influence on other sources of energy. In particular, gas-fired power generation faces a significant decrease of load factors and thus of profitability (which in some countries is further stressed by oversupply)
- Decrease in competitiveness of gas-fired power generation, aggravated by the decrease of coal prices (with environmental consequences). While part of the closures can be seen as justified given that EU has been in a situation of overcapacity, the closure of gas-fired power plants, which are required to answer to the intermittency of RES, is concerning for system stability.
- Push for the establishment of capacity remuneration mechanisms for electricity generation in many EU member states: to answer to previous mentioned issue, several member states decided to introduce capacity mechanisms, in very different ways. ENTSO-E would favour an approach that, where Member States are planning to implement a Capacity Mechanism, there is a high degree of cross-border co-ordination in order to minimise the potential for market distortions. In particular, cross-border participation to Capacity Mechanisms should be addressed.

ACER also develops a number of assumptions of developments which will occur:

- ENTSO-E agrees that the green agenda will continue being a priority, while concerns about prices and competitiveness will grow. With regard to the green agenda we would welcome a more consistent and more coordinated approach to targets, both at European and National level.
- The need for flexibility in the electricity system is an intuitive fact. Nevertheless, it must be understood as an expansion of adequacy concepts to include consideration of the tools needed to flexibly manage fluctuations in the generation and demand balance. The flexibility concept however may not be sufficient to cover all the material issues which need to be addressed to ensure resilience of the system.
- ACER assumed the continuation of European energy market integration and predominance of market-based approach. ENTSO-E would like to emphasise that while it hopes it will indeed continue, there is a non-negligible risk to see a progressive and partial renationalisation of the energy policy, due to different priorities in the member states, different criteria to assess generation adequacy, different security of supply criteria and objectives, etc.
- Greater consumer participation is for ENTSO-E a priority and a non-regret option. There is nevertheless a substantial uncertainty regarding the rate of development of consumer participation in the electricity market.

Question 3: Do you think the list of the suggested measures is complete or do you have further suggestions?

Efficient RES integration with flexibility:

The large deployment of intermittent RES has a lot of consequences on the system. The variability of its production is one of the major issues that will have to be addressed. Before developing on the ways to answer to this challenge, ENTSO-E would like to emphasise that this is not the only issue. More technical ones also exist, with which TSOs have to deal to ensure the resilience of the system.

To answer the variability of RES generation, at least the following three measures are required:

- An integration of the markets, which will help minimising the effects of variable production in one region. This also requires huge investments in infrastructures.
- A development of the adequate power system resilience requirements including their appropriate incentivisation. Flexibility capability (e.g. production, DSR, energy storage) is one of the necessary, but not necessarily sufficient on its own. The best way to ensure the development of this capability is still unclear and new models are currently in discussion. Nevertheless, a few principles could be agreed on as of now: price signals should reflect scarcities, administrative barriers and market distortions should be removed.
- Other non-regret options (which are nevertheless not sufficient) are: the development of liquid intraday, balancing and AS markets; a limit of the use of subsidies and a phase out of the most harmful ones for the market; an improvement of RES generation forecasts.

The financeability of new infrastructures development

The ACER proposal notes that the development of new infrastructures is necessary to meet the challenges posed by the new electricity system paradigm. ENTSO-E's fully agrees with this statement since it is widely recognised that investments in network infrastructures is a prerequisite and no-regret option. ENTSO-E considers that power system resilience includes network and generation adequacy, operational flexibility and technical issues at high levels of RES-E penetration.

We consider the implementation of the Community wide Ten-Year Network Development Plan is a crucial priority to enable all European energy policy objectives. Projects included in TYNDP will in fact contribute to RES deployment, market integration and to ensuring operational security.

ENTSO-E considers that in order to allow the transmission infrastructure required to meet the EU policy goals to be developed in a timely manner, the particular financial needs of TSOs should be recognized. Without the appropriate conditions, the execution of both the size and the pace of the necessary investments are highly endangered. The regulatory environment which TSOs are operating in must be stable and foster the financeability of the upcoming investment challenge. Regulatory regimes should be made fit for purpose enabling TSOs to finance the steep rise in capital expenditures. The attractiveness of the electricity transmission sector should improve in order to be competitive in global capital markets where the risk-reward balance is key for attracting financial resources.

The TEN-E Regulation (EU 347/2013), stipulates that the EC may issue guidelines on investment incentives for projects of common interest (PCIs). For this purpose each NRA shall publish its methodology and the criteria used to evaluate investments in electricity (and gas) infrastructure projects and the risks incurred by them. ENTSO-E believes that ACER should take a leading role in promoting best practices in this field.

A smarter demand side: Smarter grids and smarter markets

We welcome ACER's focus on this aspect: innovation can play a decisive role. However a key requirement to ensure this develops the need for good cooperation and appropriate regulatory framework between TSOs and DSOs. This needs to include the necessary exchange of information and co-ordination between them to not only ensure the safe and secure operation of the local network but the resilience of overall power system to the benefit of the end consumer. In particular there should be appropriate processes to ensure that no operational practices are developed that unduly restrict the potential of a smarter grid or have inadvertent consequences for the wider power system.

DISCUSSION PAPER ON ENERGY REGULATION: A BRIDGE TO 2025 – ELECTRICITY

E1: Although adequacy issues are not likely to disappear completely, do you agree that the current primary focus on levels of adequacy will likely be expanded to emphasise a later priority focus on flexibility?

The concept of flexibility should be understood as an expansion of adequacy concepts to include consideration of the market-based tools needed to flexibly manage fluctuations in the generation and demand balance. This flexibility concept may not be sufficient to cover all issues which need to be addressed to ensure resilience of the system.

The goal should be to make sure that the required capacity (demand response or energy storage) is available when needed. Hence the idea/concept of flexibility/capability: a model focusing only on adequacy in the sense of increasing installed generation capacities could lead to unnecessary overcapacity, with consequences on prices, competitiveness, cross-border distortions, etc.

E2. Should we seek to further define, measure and develop flexibility in addition to the initiatives that are underway? If so, how could this best be done and in which market time periods?

- Develop and integrate short term markets, which remunerate flexible productions (eg ID, balancing, reserves, etc.), via implementation of network codes
- Make RES generators responsive to price signals (e.g. Balance responsibility, market based support schemes)
- Develop and integrate DSR: make it possible, thanks to development and deployment of technologies and remove barriers
- In cases where capacity mechanisms exist, they should reflect as best as possible the technical needs of the system, and consequently take into account flexibility if required.
- Further measures to augment the current target model should also be considered if other tools prove to be insufficient

E3: What are the market-based routes for flexible “tools” to participate?

- Any complement to the target model to ensure an adequate level of flexibility in the system should be market based. This leaves many options open, but the principles of the IEM should be maintained: decentralized decision making by responsible market parties, physical supervision by the TSOs.
- Participation should be incentivised in intraday, balancing and reserves markets. Distortions to day-ahead markets should be avoided

E4: What measures may be required to ensure that the market receives the most appropriate signal for the value of flexibility?

- Balancing responsibility for all actors is essential;
- Market products and prices should reflect scarcities;
- The quality of the price signal emerging from the energy market (ID, balancing) should be further improved, but it can only be a volatile and short term signal. There is still no long term energy product to value flexibility that could provide a sound basis for investments. Developing such products is a policy option to be considered.

E5: do you think that other, for example institutional arrangements should be considered? Is greater TSO and DSO coordination required? If so, what should NRAs do to facilitate this?

Greater TSO-DSO cooperation and coordination is required to ensure system stability in a context of more and more decentralised generation and of development of DSR. A greater and more systematic exchange of information will be necessary.

E6: How should regulators facilitate demand side participation (including demand side response and electricity storage)?

- Measurability is a necessary precondition, and requires the deployment of appropriate technologies;
- Market arrangements should make sure it is tradable and that prompt wholesale prices are not artificially dampened, in order to ensure the incentivisation of demand side participation;
- The possibility of long-term agreements between TSOs and producers/energy storages should be explored. Some positive example can be learnt from gas side on LNG storages.

E7: How can NRAs support, or incentivise TSOs and DSOs to invest in “smart networks”? What actions are needed, in particular from regulators, to promote more active distribution networks? Do we sufficiently reward avoiding “dumb” investments?

- DSO-TSO co-operation and clarification of roles in network development and data exchange.
- Reasonable R&D costs should be accepted in economic regulation in order to develop new demand response and energy storage technologies.
- The requirements and incentives should arise from end-consumers (domestic and commercial) and lead to DSOs, suppliers, third parties or even the consumer himself offering products. A specific regulatory framework for these products could be required, with a strong involvement of NRAs

E8: How should NRAs influence the competition debate, for example on support schemes, regulated tariffs, capacity remuneration mechanisms, etc.?

- RES supports should be more market based and include balance responsibility;
- Contribute to establishment of reserve markets;
- Accepting price volatility and price spikes (reflecting scarcity), and exposing consumers to this price fluctuation is important to enhance the price elasticity of demand. On the other hand, considering the current technical barriers, the role of regulated tariffs in limiting the development of Demand Side Response should not be overestimated.