European Network of
Transmission System Operators
for Electricity

EUROPEAN COMMISSION CONSULTATION ON GENERATION ADEQUACY, CAPACITY MECHANISMS AND THE INTERNAL MARKET IN ELECTRICITY

ENTSO-E RESPONSE PAPER

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Contents

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INTRODUCTION

The European Network of Transmission Operators for Electricity (ENTSO-E) is pleased to respond to the EU Public Consultation on generation adequacy, capacity mechanisms and the internal market in electricity. This consultation, in conjunction with the publication of the communication on the internal market, highlights the objectives, outcomes and, more importantly the challenges with achieving the goals of the EU target model for electricity. ENTSO-E strongly supports the main thrust of this communication which recognises the importance and need for the full implementation of the EU target model and the associated network infrastructure as prerequisite for the long term efficient outcomes as well as providing the foundation for the appropriate levels of security of supply that the EU citizens ultimately requires.

However ENTSO-E recognises that the target model is not yet complete, there is much infrastructure still to be built and that many Member States have or are considering implementing forms of Capacity Mechanisms. ENTSO-E share the concerns of the Commission in how this may ultimately impact on the efficacy of the internal market and the overall cost of electricity to the final consumer. Nevertheless there needs to be recognition that Member States determine their own level of security of supply and that these standards and make up of power systems have an interacting relationship on adjoining power systems. In addition the need to "guide" and "support" markets to deliver on related policy objectives especially renewable energy also interacts. To manage these often conflicting objectives there may well be a need for appropriate additional features in the market design in some regions in parallel with a well-functioning energy market. However these need to be well designed, complementary and reflective of the market signals and targeted to address real, and not perceived, issues at hand.

In this last regard ENTSO-E and its member Transmission System Operators are best placed to provide the necessary engineering and technical analysis to determine threats to generation adequacy and its associated impacts on security of supply. In addition there is an emerging trend particularly with increasing variable renewable resources that shortages in flexibility, in its broadest term, are increasing threats to system security. This creates challenges, in the first instance, to developing the necessary tools and metrics to assess the issues and then, where appropriate, to design appropriate incentive and market mechanisms to efficiently address the issues, which may not include capacity mechanisms at all. This creates challenges to formulating guideline criteria. The proposed criteria in the consultation are designed, on the one hand, to try and ensure that poorly and inefficiently designed mechanisms are subject to State Aid approvals, but may inadvertently on the other hand stifle the necessary market innovations to meet the challenges posed by the emerging policy objectives.

ENTSO-E and its members are actively working on solutions to address these challenges both for the operational issues it poses today but also for the evolving power systems needs of the pan-European system. ENTSO-E believe that it is only with our active involvement in meeting these challenges that the internal market and the underlying pan European power system can deliver on "*what EU citizens aspire to most: economic growth, jobs, secure coverage of their basic needs at an affordable and competitive price, and sustainable use of limited resources.*" To this end ENTSO-E is available to meet the Commission to discuss the matters raised in the Communication and Consultation.

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Finally detailed answers to the twenty questions raised in the consultation are provided. These are grouped into four distinct sections that follow:

- Investing in the Internal Energy market
- Assessing Adequacy
- Mechanisms to Address Adequacy Concerns
- Framework for Assessing Market Mechanisms

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1 INVESTING IN THE INTERNAL ENERGY MARKET

(1) Do you consider that the current market prices prevent investments in needed generation capacity?

Evidence is limited to definitively link current market prices with a lack of investment which is resulting in broader system adequacy issues. However there is a range of factors, both inside and outside the electricity industry, which are increasing the level of risk in large scale irreversible capital investments generally. These factors increase the uncertainty of market prices and can prevent needed investment.

Within the industry mechanisms for reducing unnecessary risk should be explored. In this regard the full implementation of the EU target model and build-out of the necessary transmission grid infrastructure in a timely manner is a necessary and pragmatic first step. This will break down the barriers to trade, both intra and inter Member States within the EU, and provide the backbone network for efficient trading of electricity and engineering security required to meet the needs of society. Member States efforts to implement the target model and the Third Energy Package are welcomed along with the recent developments from the EU Commission on pan European energy infrastructure delivery.

In addition it is important to understand the broader context in which investment decisions including entry and exit from markets are made. In particular given the high level of capital required to build a modern power plant it is reasonable to expect a degree of certainty on the return on this. In this context, current and expected market prices play a significant role. However the global access to capital funds, their relative costs and the stable political and regulatory environments associated with the investment also play significant roles. In the last number of years the increased indebtness of sovereign states, particularly in Europe has significantly impacted on the availability of financial funds, their relative cost and the appetite for risk of investors. Combined with this, there is significant regulatory uncertainty. The timely implementation of the EU target model in Member States is therefore crucial. Coupled to this, the growing participation of RES-E, which is both directly (financial supports schemes) and indirectly supported (priority dispatch and access), has increased the volatility in market prices generally and has been at the expense of running hours of the marginal fossil fuel plants. These all play material parts of both entry and exit decisions by generators.

The policy objective of increasing RES in the energy mix has increased the risk on conventional generation investment. However it is not clear from the Ten Year Network Development Plan (TYNPD) (2012-2020) and associated adequacy assessments (Scenario Outlook Adequacy Forecast (SOAF) 2012-2030) whether this will lead to real Security of Supply (SoS) issues in Europe.

In addition in these assessments and forecasts a considerable amount of generation is assumed to be built even though they are not yet firm. This creates uncertainty with respect to future system adequacy. To best manage this uncertainty it might be advisable to design long term mechanisms which contribute to the necessary Security of Supply (SoS). These mechanisms should also be considered in parallel with issues and challenges from other policy objectives especially higher RES.

Generically called Capacity Mechanisms (CM), these schemes, if required, should address not only adequacy, but also emerging flexibility issues and may be locationally dependent, particularly for weakly interconnected systems or regions.

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(2) Do you consider that support (e.g. direct financial support, priority dispatch or special network fees) for specific energy sources (renewables, coal, nuclear) undermines investments needed to ensure generation adequacy? If yes, how and to what extent?

Support schemes lead to changes to the existing market outcomes and as a consequence can reduce the efficiency of the market, which might inadvertently affect future generation adequacy.

This particularly applies to the integrated European Market for electricity with inhomogeneous RES support schemes in each country. Under such a framework RES generation facilities will be built where the most attractive support scheme is in place. Other important factors such as the ability to integrate RES injections into the grid or the environmental conditions for a particular RES play a lesser role. While the need for supports are well understood to meet broad policy objectives outside of the electricity industry, they need to be both proportionate and appropriate.

However where the support is material or intrusive to the operation of the market then the application should be questioned as there may be a reduction in overall social welfare. Excessive, inappropriate or badly designed support schemes can potentially undermine the investments needed to ensure generation adequacy. For example the use of supports at low levels of RES-E seems proportionate and reasonable. However to reach the levels outlined in the energy roadmap 2050 it is not clear whether their level and nature will lead to increased social welfare. In that regard ENTSO-E welcomes the Commission bringing forward guidance notes on support mechanisms and looking at market sensitive supports as being more market-complementary. ENTSO-E would note though that priority dispatch and access is also a support and, in their current format, is likely to lead to inefficiencies with increasing levels of RES-E. There may be merit in examining this going forward as well. In addition to these direct supports ENTSO-E does have concerns over hidden supports to any specific sector of the market.

ENTSO-E does believe that significant changes in policy and the disproportionate use of support mechanisms undermine investor confidence in non-supported technologies. This might lead to medium to long term unintended outcomes which could impinge on system adequacy. However this is not yet born out in the TYNDP and adequacy assessments carried out by ENTSO and its member TSOs. In addition there is evidence that more distinct security issues are emerging especially the need for a faster-acting flexible plant which may be required at specific locations. It is not clear in these cases whether supports are undermining investment in needed generation adequacy or other needed capabilities. In this regard greater co-ordination between supports to meet policy objectives and changes to market design to meet the medium to long term needs of the pan-European power system appear to be essential to achieve both objectives efficiently. For example, it might be more efficient or necessary when designing the level and structure of RES-E support mechanisms that there is strong co-ordination and a consideration of the potential increased need in flexible services.

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(3) Do you consider that work on the establishment of cross-border day ahead, intraday and balancing markets will contribute to ensuring security of supply? Within what timeframe do you see this happening?

Work on the establishment and the proper functioning of cross border forward, day ahead, intraday and balancing markets will enhance security of supply at a European level through better use of existing assets. It does not, however, guarantee security of supply to meet a given standard which is set at national level. One important factor in releasing cross border flows assisting generation adequacy is the efficient utilisation of close to real time available transfer capacities. In this regard the full implementation of the EU target model with all participants being balance responsible will most likely enable this to make a material impact on system security.

Improvements in these areas will play an increasing contributory role in order to unleash the latent potential of more efficient usage of existing resources. However there needs to be a sustained period of stable regulation and experience with these evolving markets before investment in new resources will be made solely to satisfy these cross border markets.

(4) What additional steps, if any, should be taken at European level to ensure that internal market rules fully contribute to ensuring generation adequacy and security of supply?

The security of supply of the system is not solely satisfied by meeting necessary adequacy levels. It is only in meeting a broader range of capabilities including flexibility and infrastructure that the needs of the power system can be met. It is in consideration of this broader range that the following additional steps are proposed.

- European infrastructures priorities and Projects of Common Interest (PCI) should be in line with TSOs grid expansion plans. The ENTSO-E Ten Year Network Development Plan and associated TSO long-term grid development studies are the benchmark for analysing these priorities. Indeed their importance to the long term benefit of electricity and the EU citizen is such that they are projects which are invariant of market design.
- Simplification of procedures for permitting and financing transmission investments. This includes appropriate incentivisation for the build of transmission.
- There is merit in examining the need for a framework (market products) for the provision of necessary system services to maintain adequate power system reliability while meeting broader policy objectives.
- Focus on moving support schemes (including RES-E) to at least more market price sensitive structures, and ensure more coordination at European level on this topic.
- Interactions between European-level and national-level policy objectives should be more considered. In particular Security of Supply has an EU wide impact yet the responsibility to ensure it lies on Member States. Steps taken at the European level to integrate energy markets, while enhancing SoS from a European perspective, should not prevent Member States from defining a different level of SoS from their neighbours and securing it. Coherence must be ensured between energy market rules and National responsibilities on Security of Supply. In particular, market integration should not lead to cooperation issues between Member States, such as free riding possibilities on Security of Supply

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- A consideration of the impact of Member State and EU policies external to the energy market including but not limited to fiscal, monetary and carbon policy, their impact on the desired outcomes of the IEM and the investment environment.

(5) What additional steps could Member States take to support the effectiveness of the internal market in delivering generation adequacy?

Several needed additional steps are described below:

- Facilitate transmission grid extension. Coherent grid development and investment plans between member states and a stable regulatory framework with appropriate incentivisation for network facilities are vital in order to reduce the uncertainties in grid/generation investments.
- Full implementation of the 3rd package.
- Continual focus by relevant authorities to ensure that competitive forces are allowed to operate in the interests of the consumer.
- Integrating all material levels of supported technologies, both direct and indirect, including RES-E fully into the market to include all balance responsibility.
- Appropriate and necessary observability and controllability for the TSO of all material generation sources including RES-E on the power systems connected to either the transmission or distribution networks.
- Encourage the timely and efficient development of Demand Side Management.
- Ensuring any price caps are appropriate and necessary and do not unduly distort genuine market outcomes.
- Acceptance of genuine market outcomes.
- Long term stable energy policy

(6) How should public authorities reflect the preferences of consumers in relation to security of supply? How can they reflect preferences for lower standards on the part of some consumers?

Enabling the preferences of consumers in relation to security of supply is at an embryonic stage globally but its potential is clear, particularly in the world where there is increased variability and uncertainty arising from a move to RES. In this regard Europe is leading the field in attempting to materially release this potential as soon as possible. The first key aspect of this is the roll out of time of use metering to the broadest level of consumer. This will enable electricity to be accurately determined in the system at different times and ultimately facilitate distinguishing consumer preference in the long run. Smart Metering is an important part in this. ENTSO-E supports the Commissions focus on the roll out of smart metering to 80% of the consumers by 2020 unless there is a clear negative cost benefit.

Secondly the use of novel wholesale products to access this latent customer preference may not only have benefits and efficiencies in the energy market but also in the necessary system services needed to operate the power system. In this regard ENTSO-E would have concerns that the true social welfare benefits may not accrue particularly if DSOs are

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unilaterally allowed to design retail products to the exclusion of 3rd party aggregators and more importantly without co-ordination with Member State TSOs and ENTSO-E. To this end ENTSO-E does welcome the Commission's IEM communication with regard to aggregators but believes that TSOs and ENTSO-E should have necessary and proportionate rights on the necessary design and implementation of demand side products that ultimately go toward the management of the significant system areas and synchronous areas.

Finally any system wide adequacy standard will not in all cases reflect the real preferences of consumers for security of supply. In case they require a higher level of security of supply they can equip themselves for this with, for example, emergency backup generation. In case the standard adequacy level is higher than theirs, they should be able to make load shedding offers in energy markets, directly or through aggregators. In the very long term, security of supply could become more and more a private responsibility, but until then political decisions remain necessary.

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2 ASSESSING GENERATION ADEQUACY

(7) Do you consider that there is a need for review of how generation adequacy assessments are carried out in the internal market? In particular, is there a need for more in depth generation adequacy reviews at:

a. National,
b. Regional; and
c. European level

At a National, Regional and European level useful adequacy assessments are already carried out. However there is always a need to review the assessments used for determining the security of the power system particularly in light of evolving and changing policy objectives. In this regard the policy objectives of a more integrated electricity market coupled to the desire for increased RES-E resources poses a number of challenges that must be fully considered. The level of reliability and security that interconnection flows are accounted for between Member States and between Member States and Third countries also poses challenges. In addition the increasing contribution of variable RES-E and how it is translated into medium and long term adequacy credits is challenging both at the intra and inter Member State contexts.

In particular ENTSO-E is already committed to examining possible changes with particular regard to treatment of RES-E resources. These range from small changes to existing methodologies to fully implementing probabilistic adequacy assessments in the short and long term. However any changes need to consider the conflicting objectives of depth of analysis with the associated need for increasing requirements against the timely production of useful outlook reports.

Furthermore it is not clear that generation adequacy on its own (a 'macro' comparison between load and available generation conducted over a period of time, usually a year, highlighting the most critical hours where this falls below acceptable standards) is the only measure of short and long term system security. With the advent of variable RES-E there is rising evidence that balancing and flexibility metrics may also be required to correctly identify system needs. In addition the nature of plant portfolios and demand profiles across the European system is raising challenges in direct comparisons and the appropriate mechanisms for analysis. One particular example of this is that predefined timestamps used for short term and long term deterministic adequacy assessments do not allow a full assessment of the problems that occur from time interdependency issues (e.g. when and for how long would the water in reservoirs last if it were constantly used?).

Nevertheless ENTSO-E and its member TSOs are actively developing the tools and techniques to address these issues over time. Following the 3rd package National adequacy assessments are already prepared in accordance to Regulation (EC) 714/2009 by Member State TSOs. These are then utilised by ENTSO-E in developing a European-wide Ten Year Network Development Plan, including a European generation adequacy outlook which is published every two years. This aims to ensure greater transparency regarding the entire electricity transmission network in the Community and to support the decision making process at regional and European level. In this regard ENTSO-E will seek input from stakeholders on potential improvements of this process.

However there appears to be a clear rational at the appropriate stage to report adequacy and other security metrics in a timely fashion and for such a period of time that the forecasts can provide usable information to the market and help inform decision makers. In this regard the adequacy reports generated at a National Level and co-ordinated at a European level by

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ENTSO-E are a useful source of information. In the future, ENTSO-E is looking into providing a global pan-European adequacy assessment, utilising a standardised approach in addition to other assessments at National or Synchronous system contexts. However there are significant challenges in accomplishing this. This pan-European overview is also needed to develop the cross border energy exchanges envisioned under the Framework Guidelines for Electricity Balancing.

(8) Looking forward, is the generation adequacy outlook produced by ENTSO-E sufficiently detailed?

- ***a. In particular is there a need for a regional or European assessment of the availability of flexible capacity?***
- ***b. Are there other areas where this generation adequacy assessment should be made more detailed?***

ENTSO-E provides Generation Adequacy Assessments which meet all current requirements. These are outlined in regulation (EC) 714/2009 Art. 8.4: The European generation adequacy outlook referred to in point (b) of paragraph 3 shall cover the overall adequacy of the electricity system to supply current and projected demands for electricity for the next five-year period as well as for the period between five and 15 years from the date of that outlook. The European generation adequacy outlook shall build on national generation and demand outlooks prepared by each individual transmission system operator. In addition the ENTSO-E Draft Network Code on Operational Planning and Scheduling also requires ENTSO-E to report on short term adequacy.

Before considering providing additional information there needs to be a pragmatic view taken on the quality of the data that is available and also the needs of the system. In that regard the further ahead a forecast is attempted the greater the uncertainty is. This is especially true with respect to generation and load-shedding investments. In addition the impact of the stability of regulation on the evolution of an energy portfolio can be profound. This is evident in the increase in connection requests for photovoltaic following the announcement of a reduction in future supports. Stable regulation is a necessary requirement to facilitate long term investments and robust analyses. Otherwise, the range of uncertainties is overwhelming as illustrated by the difference between A (only certain generation investments are considered) and B (additional generation investments needed but not yet certain are considered by the TSO on top of certain generation investments) scenarios in the Scenario Outlook and Adequacy Forecast (SOAF) reports.

In shorter timeframes the maintenance schedules of generation units also have significant impact on the adequacy of systems and are inherently difficult to predict. In this regard the recent publication of the REMIT and forthcoming European transparency regulation are to be welcomed.

Arising from the increasing policy focus on RES- E probabilistic approaches for assessing the secure and efficient balancing of system, both today and into the future, are becoming more prevalent. SoS is becoming not only a question of adequacy but also flexibility in both generation and demand. Some member TSOs, who have high levels of RES-E or high climatic sensitivity, are already performing these types of analysis. ENTSO-E is examining how this expertise might be leveraged to allow for a rapid evolution of these methodologies. Future improvements might include climatologic assessments, feasible after the procurement of a Pan-European Climate Database in 2013. Although the Climate Database is an important prerequisite for generation adequacy analysis with high share of RES, it is not the only precondition.

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(9) Do you consider the Electricity Security of Supply Directive to be adequate? If it should be revised, on which points?

The Directive 2005/89/EC on Security of Electricity Supply and Infrastructure Investment is adequate in what it was meant to achieve, however some clarifications maybe in order

The Security of Supply directive enforces the duties and rights of Member States to ensure their security of supply. However the level of Security of Supply deemed appropriate is currently set by the Member States. Where these standards fundamentally differ between Member States they result in unintended consequences for the outcomes of other policy objectives. In particular the EU target model may not be sufficient in itself to meet these diverse requirements. As such clarification about the relative priorities of the directives would be helpful.

Article 5 Related to this, "*maintaining balance between supply and demand*" of directive 2005/89/EC does not indicate clearly the responsible party for structural generation adequacy problems. This article only identifies the transmission system operator as responsible party for ensuring an appropriate level of generation reserve capacity for balancing purposes. A clarification of this responsibility could raise more awareness by market parties and authorities that they have a role to play.

The directive sets out clear obligations on Member States to ensure the monitoring of security of supply. This is in essence to ensure that there are signals on the medium to long term security of supply in Member States. In that regard it does not need to be revised.

(10) Would you support the introduction of mandatory risk assessments or generation adequacy plans at national and regional level similar to those required under the Gas Security of Supply Regulation?

The idea of risk assessments has some merits although when problems arise outside of the power system it only provides a partial solution. In particular, given the increased dependence of the EU energy system on imported fuel sources, under severe conditions with a low availability of RES outputs may have particularly onerous consequences for the SoS. Indeed some of these issues are already being considered in the ENTSO-E TYNDP for 2014. ENTSO-E is open to looking for opportunities of further enhancement and cooperation with other stakeholders.

Ensuring that a risk assessment is carried out on some of the potential high impact and low probability events could have merits. However, this needs to be balanced against the strategic nature of the findings at Member State, regional and European level. It is not clear if it is appropriate to publish these findings. Rather it might be more appropriate to use them as an input into emerging EU energy policy.

(11) Should generation adequacy standards be harmonised across the EU? What should be that standard or how could it be developed taking into account potentially diverging preference regarding security of supply?

The generation adequacy assessment is dependent on the portfolio structure of generation and demand in given systems. In this regard there may be merit in standardising the methodology of analysis of adequacy. While it is noted that there are significant difficulties in standardizing generation adequacy analyses methodologies across internal market because

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risks on SoS originate from structurally different issues, there would be a clear benefit in reporting in a systematic harmonised fashion the key security metrics across the internal market. This can only provide increased needed transparency that will enhance the operation of the IEM.

It would be highly desirable if stakeholders (EC, ACER, market participants) and ENTSO-E could further discuss and agree on a high-level vision on the expected scope and content of the adequacy reports. Thereafter appropriate and necessary adjustments in methodology and structure of the report could be made.

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3 MECHANISMS TO ADDRESS GENERATION ADEQUACY CONCERNS

(12) Do you consider that capacity mechanisms should be introduced only if and when steps to improve market functioning are clearly insufficient?

ENTSO-E and its member TSOs primary focus is on real time to long term operation, development and reliability of power systems throughout the EU. In this regard ENTSO-E strongly supports focusing on delivering the internal energy market and the necessary infrastructure to deliver on the long term needs of the European power system. Distortions on the market functioning from renewables support systems and priority dispatch must be minimized through market participation. Also the larger context should be stimulating adding to investor certainty – elaborated in our answer to question 14. In addition market participation by demand should also be encouraged. This will reduce barriers to trade, increase liquidity and contribute to the long term security of supply in the EU.

However if it is determined at a National level by the Member State regulatory authority and/or TSO, as appropriate, that there is a real threat to the security of supply of the system then ENTSO-E supports examining all possible avenues of addressing the issues. In this regard ENTSO-E would note that it is essential that any changes are made to address a real and verifiable physical threat to system security and not just a perceived one. This can only be identified by an expert independent organisation such as National TSOs and Regulatory Authorities. In particular there is clear evidence in systems with high penetration of RES-E that security of supply threats are not necessarily in adequacy alone but rather flexibility, voltage control and transient stability. These issues are more complex and require thorough technical analysis. It is only on the basis of appropriate technical analysis that meaningful and effective enhanced market mechanisms can be developed. These changes, where they have material effect on cross broader trading, should be discussed at European level, and its impact on the IEM objectives considered carefully.

(13) Under what circumstance would you consider market functioning to be insufficient to:

a. Ensure new flexible resources are delivered?

b. To ensure sufficient capacity is available to meet demand on the system at the highest system stress?

In general where markets do not incentivise against the real scarcities in the system there is likely to be at least inefficiencies in ensuring the market delivers on the stated policy objectives. Determining whether a market design is functioning according to requirements is a difficult task, as it can only be fully established in the long term. This is particularly the case for adequacy issues, considering the long lead times, high sunk capital costs and long life times of assets in the electricity sector. However, the fact that market design changes increases regulatory uncertainty should not in itself prevent necessary change to occur. Rather it should be used as a high bar benchmark to assess the likely inefficiencies that will occur without the change being made. In that sense decisions made today have impacts on the Security of Supply for many years to come.

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According to the current legislative framework security of supply is a national responsibility. There are different ways to assess whether the required adequacy is available or not - for example:

- Technical studies, such as adequacy assessments for Security of Supply.
- Market value – if markets are in place for the scarce products (capacity/capability) then the price will reveal the scarcity of the good.

The responsibility for detection and remedial actions to energy market insufficiencies will depend on the market design. The energy market functioning with respect to ensure sufficient capacity to be available to meet demand at the highest system stress can be estimated by checking that relevant markets exist and if they clear or have a good liquidity. This means that long term (forwards or futures for maybe up to 5 to 8 years into the future), short term (day-ahead and intraday) and real-time markets (e.g. balancing) should exist in appropriate market areas and clear (i.e. there is a crossing point between supply curve and demand curve) or have a good liquidity. The conclusions that can be inferred in case these conditions are met depend on the market design. However in this regard it is important that all technologies are subject to the same market prices and the discipline this brings over time.

(14) In relation to strategic reserves:

a. Do you consider that the introduction of a strategic reserve can support the transition from a fossil fuel based electricity system or during a nuclear phase out?

The question implies that in a transition arising from policy change to either a low carbon electricity system or one where nuclear is phased out there is a need for some form of additional compensation mechanisms to address a perceived security of supply issue. ENTSO-E does not believe that this is necessarily true and would caution that appropriate technical studies would need to be performed in such transitions to identify if and what type of physical scarcity might arise.

Introducing strategic reserves may support the transition from a fossil fuel based electricity system or during a nuclear phase out. Since the strategic reserves are a reversible instrument, it can be designed as a short term mechanism in order to overcome temporary market challenges and dispose reserves if these are not needed anymore.

b. What risks, if any, to effective competition and the functioning of the internal market do you consider being associated with the introduction of strategic reserves?

Risks to effective competition can be materially mitigated, if the strategic reserves are designed so that they do not compete with commercial resources neither in the short nor in the long run. To achieve this activation rules, volume and procurement approach are important design parameters in a strategic reserve. The strategic reserve should only be activated at high prices, e.g higher than the commercial bids at the day-ahead market. If the strategic reserve is activated at too low a price (that is lower than the day-ahead spot price) it will cap spot prices as units in the strategic reserve run before commercial capacity in the merit order distorting both the short term as well as the long term energy market.

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The size of a strategic of a strategic reserve should be kept small in order to keep investment incentives in the market. The procurement rules and activation rules determines whether a slippery slope effect materializes and the pace of a potential slippery slope. The activation rules should be transparent reducing investor uncertainty. The running hours of a strategic reserve are an indicator of the functioning of the market and potential slippery slope effects.

In order to mitigate cross border distortions the activation rules should be coordinated between Member States utilising the benefit of the strategic reserves. Sweden and Finland are a good example of this.

Finally implementing a capacity mechanism that transfers some adequacy responsibility from the market towards a central entity (e.g. TSO) should not be underestimated. This ultimately undermines the role of the market in providing adequate supply by itself.

(15) In relation to capacity markets and/or payments:

a. Which models of capacity market and /or payments do you consider to be most and least distortionary and most compatible with the effective competition and the functioning of the internal market, and why?

ENTSO-E does not consider it appropriate to highlight any particular capacity market or payments over another. These have all been constructed to solve specific technical, economic, regulatory and political issues and are made in the context of specific member state energy policy, natural resources, geography and make-up of the existing portfolio and expected future consumption. It is only with a full consideration of these often interacting and competing drivers that a preference can be determined. Nevertheless some high level principles in consideration of mechanism are made in the response to Q19 and Q20.

However outcomes and examples of how capacity mechanisms can distort the internal market are provided:

- Strategic reserves with activation rules poorly designed in such a way that they implicitly cap spot prices or lower them;
- Asymmetric application of capacity payments for import and export, particularly between countries in the internal market, or as currently seen on the border between Russia and Finland;
- A capacity market or a system of capacity payments that results in over-investment (can be mitigated to a degree by coordination on cross border imports between Member States);
- Capacity mechanisms that do not incentivise location may lead to inefficiencies and unusable capability in weakly connected regions or constrained transmission areas;
- Badly designed product definitions and incentive structures in a capacity market. An example of this is harmful lock-in effects if Demand Side Management is not properly valued, or indeed prohibited from partaking, in the product definitions;
- Badly designed Capacity mechanisms can lead to a substantial competitive disadvantage for non-national producers and force a neighbouring country to introduce their own Capacity Mechanism as well whereas the broader regional system situation does not require it;
- Price, as opposed to quantity, based mechanisms increase risks to potentially under or over delivery of the necessary investments.

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b. Which models of capacity market and /or payments do you consider to be most compatible with ensuring flexibility in a low carbon electricity system?

ENTSO-E notes that capacity mechanisms designs implemented to date have been focused on adequacy and not necessarily flexibility. ENTSO-E also notes that much of the payments for flexibility in today's systems are paid for by the TSOs through system services contracts. With the advent of increasing RES-E there will be greater flexibility needs on power systems that might require new solutions. ENTSO-E and National TSOs are actively exploring possibilities in this area already.

c. Are there any models of capacity mechanism the introduction of which would be irreversible, or reversible only with great difficulty?

A clear vision of how market design should evolve is required before there is any consideration of introducing any capacity mechanism. Only with this vision can efficient market enhancements be designed and a consideration made as to whether they need to be transitionary or permanent. However it is noted that the introduction of even supposedly temporary capacity mechanisms in existing markets, inside and outside the EU, have proved difficult to remove. This has arisen due to no or poorly defined exit criteria. In many cases these Capacity Mechanisms have only been designed out by a fundamental review of the energy market. These projects take many years to move from discussion to fruition and are costly. In effect the introduction of Capacity Mechanisms is a paradigm shift that changes the dynamics of the market and is difficult to reverse.

The issue of contract duration has an influence on the reversibility of a Capacity Mechanism. Very long term contract times make the mechanism hard to rule out. A balance must be found to provide guarantees to market parties without creating excessive lock in effects.

(16) Which models of capacity mechanisms do you consider to have the least impact on costs for final consumers?

It is not possible in general terms to advocate any capacity mechanism over another as stated above. However it is true to say that any capacity mechanism is likely to come with additional cost for consumers on top of the energy only market. This cost is required to increase adequacy or to bring more capability in the system and should be compensated somehow. However with well-designed capacity mechanisms this cost should lead to a power system with a more appropriate long term adequacy capability, therefore bringing benefits in terms of reduced Loss of Load costs. Member States should always consider alternatives and take the cost into account when deciding which solution to implement.

To ensure least costs for consumers the capacity mechanism should avoid both over- and under investments. To achieve this where there are strong competitive forces at play a market based procurement allowing for competition is likely to achieve the most efficient outcomes. In addition the mechanism should be precisely targeted and, where possible, the costs allocated using a mechanism that provides an incentive for market participants in a way limiting or preventing shortage in adequacy/capability. Furthermore harmful lock-in effects should be avoided by creating a level playing field where different types of resources can compete including demand side management. Well-designed product definitions and

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incentive structures will help to ensure that only resources that contribute to reliability are remunerated.

These Capacity Mechanisms (excluding strategic reserves) should have a long term scope. In addition they need to be designed so that they incentivise shorter term availability commitments. This is in order to ensure the system needs are met and that there are sufficient balancing service providers in order to preserve SoS and liquidity in balancing markets. This is particularly important with increasing RES-E.

(17) To what extent do you consider capacity mechanisms could build on balancing market regimes to encourage flexibility in all its forms?

The balancing market is well suited to control whether resources involved in a capacity/capability mechanism deliver on their performance commitments. A capacity mechanism should not distort innovation and flexibility that may emerge as a result of price signals in balancing markets. Moreover product definitions and incentive structures of a possible capacity/capability mechanism should not create adverse incentives to those created by other market mechanisms in other timeframes. In this context incentive structures and structures used in balancing markets are an important element as close to real time capacity and capability problems truly materialise.

(18) Should the Commission set out to provide the blueprint for an EU wide capacity mechanism?

It would be very complex to ascertain the appropriate level of capacity adequacy for each individual Member State – and a one-fits-all solution is unlikely to be appropriate. Rather it is the view of ENTSO-E that the EU Commission should promote coordination of compatible product definitions and incentive structures in capacity mechanisms to minimize distortions on the European cross-border trade and ensure compatibility with the IEM objectives and functioning. This also includes ensuring compatibility between energy and capacity markets. It is ENTSO-E's belief that competition requires a level playing field. In addition regulatory competition between neighbouring market designs should be avoided.

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4 FRAMEWORK FOR ASSESSING CAPACITY MECHANISMS

(19) Do you consider that the European Commission should develop detailed criteria to assess the compatibility of capacity mechanisms with the internal energy market?

The European Commission already has the authority to monitor and enforce the integration of energy markets in Europe as set out in the relevant directives and regulations on Member States subject to the principle of subsidiarity and national prerogatives as appropriate.

European legislation on State aid control limits the range of mechanisms and tools available to Member States to enact their policies. This should always be taken into account when implementing a mechanism at national level, and ENTSO-E supports the idea of creating a level playing field for electricity in Europe. ENTSO-E would like to underline that there is a wide range of Capacity Mechanisms and that some of them do not need to be considered as State aids.

For the categories of Capacity Mechanisms that would be labeled as State Aid, State aid control legislation would apply. ENTSO-E would welcome Guidelines reminding these rules and detailing how they, and other existing relevant rules, apply to Capacity Mechanisms.

Apart from legal aspects, ENTSO-E supports the idea that common principles on Capacity Mechanisms and/or strategic reserves should be shared at the European level, to ensure the consistency of market designs and their compatibility with the internal energy market and its objectives.

ENTSO-E believes that it is more appropriate for the EU to develop general principles rather than detailed criteria. Additionally, detailed criteria could put too much and unnecessary constraints on energy policies and may ultimately threaten Security of Supply.

(20) Do you consider the detailed criteria set out above to be appropriate?

a. Should any criteria be added to the list?

b. Which of the criteria if any should be given the most weight?

Building on the answer to Q19 ENTSO-E believes common guiding principles, and not criteria, should be shared to inform the design of Capacity Mechanisms, if they are required. In our opinion, the main principles which have to be respected by any capacity mechanism are:

1. Necessity: There is a need for a long term vision of what market design is appropriate to meet the needs of evolving policy and underwrite the needs of the EU Citizen. It is in this context that before implementing capacity mechanisms there should be reasonable analysis to support that the current and possible future market design will fail to deliver the right investments and that there may be a risk to security of supply. This assessment should be based on technical analysis from at least the National TSO or Regulatory Authority as appropriate.
2. Regional and cross-border compatibility: Capacity Mechanisms market designs should be consistent with the European energy markets, their functioning and their objectives.
3. Cross border contribution to security of supply: There needs to be a consideration of the contribution that cross border flows play in at least the assessment of, and possibly the remuneration of, adequacy in security of supply.

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4. Market-wide: Flexible generation, storage, demand response, interconnectors or other means can contribute to system adequacy, and their potential contribution has to be taken into account on a level playing field in case a capacity mechanism is implemented. Any Capacity Mechanism should not prevent, disincentive or discriminate the use of solutions which can be an alternative to additional generation capacity. Specific requirements should be defined and any solution allowing to meet the needs identified should be eligible, taking into account its technical specificities and limitations.
5. Coherency: Capacity mechanisms designed to maintain sufficient level of system capability (availability and flexibility) should be coordinated with support mechanisms for RES-E (as the most relevant existing and expected source of supported technologies) as there can be correlation between these distinct requirements. To assist this co-ordination at a minimum there should be appropriate technical studies by National TSOs and ENTSO-E conducted before the implementation of Capacity Mechanism to inform the necessary coherency.
6. Level investment playing field : Capacity Mechanism may create distortions between states. Substantial competitive disadvantage for non-national producers shall be avoided, in particular if they could lead a neighbouring country to introduce a Capacity Mechanism too, whereas the system situation does not require it, to ensure a level playing field for its market participants. In addition regulatory competition between neighbouring market designs should be avoided.
7. Clear Exit Criteria: In case a Capacity Mechanism is implemented as a transitory measure, the duration of the capacity mechanism should be specified or clear criteria should be provided allowing to assess its duration.
8. Cost-efficiency: Member State should always consider alternatives and take the cost into account when deciding which solution to implement.
9. Forward Looking: Capacity markets and in particular the products being traded in those markets should be organized sufficiently forward-looking, as there is evidence that short-term products do not efficiently contribute to security of supply.
10. Physical commitments : For a Capacity Mechanism to bring real added value, capacities involved in the mechanism should be committed to ultimately deliver the services they are valued for. This can for instance take the form of bidding commitments on balancing mechanisms, or availability constraints. Failure to abide by this responsibility should lead to penalties.
11. TSO cost neutrality: Capacity mechanisms should have no impact on the financial health of TSOs. Security of Supply costs are not directly related to network investment requirements.

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