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DONG Energy response to EC Consultation Paper on Generation Adequacy, Capacity Mechanisms and the Internal Market in Electricity

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We would like to thank the European Commission for the opportunity to respond to this consultation, and for its preparation of the related material.

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DONG Energy agrees with the Commission that the implementation of a well-functioning internal electricity market and pushing for timely build-out of the necessary electricity infrastructure must be a priority. Moreover, efficient usage of existing electricity infrastructure is of crucial short term importance.

It must, however, be acknowledged that correcting all present electricity market imperfections and construction of all the required electricity infrastructure will take time. The fast influx of large volumes of renewable generation also brings new challenges to the system.

Therefore, electricity market design needs to adapt in the short, medium and long run to ensure security of supply and a cost efficient path towards an energy system based on renewables. Specifically, it is crucial that markets provide incentives to invest in new and existing flexible thermal plants to a level that ensures timely and adequate generation capacity going forward. Any such market adaptations to ensure adequacy of supply must be coordinated on a regional level or carefully designed to address specific local and national challenges in order to prevent distorting effects on trade and the security of supply of neighbouring areas. Also, such measures should in general be designed in a way that minimises distorting effects on existing markets and their price signals.

Please find below our response to the specific questions raised in the consultation paper.

Development of the internal market

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

Currently, the price signals from the market are insufficient to drive new investments, but this should be seen in the light of the situation in most European countries, where historically there has been enough capacity to ensure security of supply. Thus, whether the liberalised market can drive new investments remains to be seen as the need for new capacity increases in the future. That being said, market prices are in general driven down by low-marginal cost renewables. Additional income streams from vital ancillary services are currently non-existent, not high enough or too uncertain to compensate for the reduced revenue from lower wholesale prices.

(2) Do you consider that support for specific energy sources (renewables, coal, nuclear) undermines investments needed to ensure generation adequacy? If yes, how and to what extent?

The CO₂ reduction target and the ETS should be the main driver of investments in low carbon solutions. In the initial phase it was well understood, that the ETS needed to be supplemented by targeted renewable policies, largely based on subsidies. Without such policies the renewable industry would never have taken off. Such subsidies influence market prices. Preferably the ETS should play a stronger and stronger role, so that external costs could be internalised in the energy price. Instead we have seen an ETS playing a weaker and weaker role, allowing subsidies to undermine energy prices.

Because subsidies provides an additional value stream for renewables, the need for remuneration on the wholesale electricity market is relatively lower and the wholesale electricity price signals – seen in isolation – will be distorted. This, coupled with the fact that most renewable generation technologies have very low marginal costs will drive wholesale electricity prices down and decrease the revenue potential for other non-subsidised technologies.

While DONG Energy aims to ensure that low carbon technologies such as offshore wind eventually becomes cost competitive, the downward effect on the wholesale price could have an impact on the appetite to invest in flexible thermal generation as the penetration of low carbon generation increases across the EU.

The answer is to pave the way for a stronger ETS, that can diminish the need for subsidies for low carbon technologies. To that end, subsidies for coal are extremely harmful in developing clearer incentives, not only for low carbon, but also for letting the market develop to give incentives to flexible capacity.

(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?

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Yes, successful market integration could contribute to ensuring security of supply in two ways. *Firstly*, integrated day ahead markets should be able to deliver sufficient capacity to cover demand and, hence, ensure security of supply. Lack of infrastructure and price caps (formal or informal¹) might cause local or regional market imperfections that could endanger long term security of supply.

Secondly, integrated and well-designed intraday and balancing markets should be able to deliver sufficient fast response capacity to cover the balancing needs of the electricity system. Additionally, these markets are likely to become more important to generators' stream of revenue and could therefore support the long term security of supply.

The implementation of a European wide day ahead and intraday market within the target date of 2014 seems realistic if the current momentum is sustained. There might be pockets of low integration, but overall the regional markets ought to be well integrated. The challenge is more one of missing infrastructure and distortion of prices through TSOs' use of reserves.

With respect to the balancing markets we are more pessimistic by the lack of progress in the market integration. Since, balancing markets are likely to be of crucial importance to the cost efficient transformation of the European energy system, we are worried by the fact that the 2014 target is not met and suggest that a pragmatic approach is taken implementing simple solutions in time instead of sophisticated solutions too late.

We acknowledge the ambitious Framework Guideline on balancing markets issued by ACER, but see a real risk that the resulting Network Code will be much less ambitious.

We therefore urge the Commission and ACER to continue the push for a timely integration of balancing 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?

In general, a well-functioning internal market for energy is crucial to ensure generation adequacy and security of supply in the most cost efficient way. With

¹ Formal price caps are set by power exchanges for technical purposes to allow for market clearance. Informal price caps can take various shapes. One example can be the rules for activation of the Swedish/Finish strategic peak load reserves stating that the reserves are activated at a price 0,1 EUR/MWh above the highest commercial bid and might be significantly below the formal price cap.

that in mind, work at the European level should be focused on two areas: harmonised concepts and ensuring sufficient network infrastructure.

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With respect to *harmonised concepts*, the guiding principle should be that generation adequacy and security of supply should be seen on a regional – and not a national – level. National initiatives to ensure sufficient domestic capacity are likely to distort trade and result in welfare losses.

With respect to ensuring *sufficient network infrastructure*, both development of new cross-border capacity and efficient use of existing infrastructure should be of highest priority. Increased interconnection capacity and regional transmission capacity offer the potential to share resources with the right capabilities and is a cost efficient and reliable source of security of supply. Market design changes should therefore aim to exploit these advantages and focus on timely build-out of the crucially needed internal and cross-border network infrastructure. The development of new interconnectors should be based on sound business cases and socio-economic benefits from efficient use of resources (renewables and back-up capacity). The capacity available to the market on all interconnectors should be as close to the nominal capacity as possible.

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

Initiatives to remove market imperfections and improve the functioning of the internal market should be a top priority for Member States. Initiatives can be grouped into three categories: a) allowing for free price formation, b) a commercial approach to balancing, c) procurement of ancillary services and d) consider new targeted measures to overcome local issues, with least possible impact on electricity prices.

a) Allow for free price formation

- An ability to capture the scarcity rent associated with price spikes at times of high demand is crucial for incentives to invest in new generation capacity and should not per se be seen as signs of market power abuse and, hence, unwanted
- Acknowledge that price spikes have low impact on average prices
- While consumers via retail companies can be hedged from facing very high prices a political and public acceptance of generators getting the scarcity rent from price spikes under high demand is necessary for the energy market to reach an efficient outcome
- Consumers with flexibility capabilities should be enabled to react to the price signals provided in the different electricity market segments

b) The approach to balancing and security of supply should be as commercial as possible

- The roles of market players should be clearly and unambiguously defined to allow the market to operate most efficiently

- All products needed for the stability of the system should be well-defined and procured in an explicit and transparent manner. Pay-in-kind trade between TSOs should be prohibited
- c) Efficient, fair, transparent and stable procurement of ancillary services
 - TSOs' bilateral procurements in neighboring areas should be transparent e.g. in terms of prices and based on a principle of reciprocity
 - Demand (quantity procured and specifications) should be based on transparent principles for the investors to be able to account for a potential revenue stream in their business cases
 - The division of roles between suppliers and consumers of ancillary services and the market operator should be well-defined and focus should be on ensuring that suboptimal incentives are avoided
- d) New targeted measures to overcome local capacity adequacy challenges, cf. to answers to Q 12-19 below.

(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?*

The key must be price signals sent to consumers, and consumers' ability to respond. Consumers can react in the short term markets if balancing prices are attractive. If a consumer attaches a low value to a stable supply of electricity the consumption could be bid in (through an aggregator) to the market for Frequency Containment Reserves (Primary Reserves). More locally, contracts can be made on the disrupt ability of flexible consumption to avoid investments in the distribution grid. Moreover, (large) consumers can react to the longer markets via the day ahead or forward markets. This should reflect the consumers' willingness to pay for a higher standard.

Assessing generation adequacy

(7) *Is there 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 national, regional or European level?*

Yes. A review of the way assessments are done today and the transparency as such would provide important information to investors. DONG Energy suggests improvements in the following three areas:

- Today, Transmission System Operators apply different methods and definitions in their national assessments of generation adequacy. Methods and definitions should be aligned to a higher degree in order for an aggregated assessment to be useful. Specific methodological suggestions can be found in (8b)
- The level of transparency and disclosure of information concerning assessment methods should be increased
- The issue of national versus regional assessments should be dealt with actively. Specifically, generation adequacy assessments should be

coordinated and carried out on a national and regional level. The concrete regional level should be determined by the degree of interconnection between relevant markets. Including too few or too many countries in a regional assessment could result in a distorted generation adequacy assessment.

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(8) *Is the generation adequacy outlook produced by ENTSO-E sufficiently detailed? 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?*

The ENTSO-E generation adequacy outlook could be improved by becoming more detailed. To increase transparency the overall methodology used by ENTSO-E in generation adequacy assessments (as illustrated in Figure 1 in the Consultation Paper) could be improved in the following way:

1. Coordination of data collection
2. Disclosure of which specific generation (on a plant level) is included in different subcategories (e.g. Reliable Available Capacity, Non Usable Capacity etc.)
3. Disclosure of how different types of generation (and interconnectors) are treated with regards to availability in each subcategory
4. Disclosure of assumptions in the modelled forecasting of generation adequacy (prices, capacity build-out etc.)

A regional assessment of availability of flexible capacity would be important to enable the analysis of capacity adequacy. However, it requires coordination of the definition of flexibility criteria. In our answer to Question 13 we also mention that reliability in the future electricity system is a matter of both quantity (adequacy) and quality (flexibility). If no explicit definition is made, with requirements referring to for instance a Network Code, the comparison between countries will have no meaning.

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

DONG Energy finds the intentions of the Directive, and specifically the requirements for Member States reporting on capacity adequacy, very relevant.

That being said, in order for the reporting procedure to be as effective as possible, we believe a tighter implementation of the directive is needed. Specifically, more detailed reporting of the projected balance of supply and demand for the next five year period and also an evaluation of the prospects for security of supply in the longer term should be assessed in more detail in the Member State's reports.

Regulation on a European level that aims to ensure a more comprehensive assessment of security of supply by specifying an assessment method, requiring a high degree of transparency, and assessing the method of dealing with regional interdependences as indicated in (7) and (8) would be relevant

information for investors and policy makers in the transition of the energy system..

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(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?*

Yes, we would support the introduction of mandatory assessments of generation adequacy, including flexibility needs of the systems. We would also support a high degree of transparency of the assessments. We do, however, not support active generation adequacy planning, since this is likely to do more harm than good in creating a market framework where investments are driven in a competitive environment based on commercial terms.

(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?*

We support a harmonised approach to the generation adequacy analyses implemented in the EU based on common and transparent standards. Additionally, we support the implementation to allow for generation adequacy analyses to cover larger area than the Member States in isolation.

Due to the diversified nature of the generation adequacy in place today and the new challenges arising in the electricity system the implementation of a harmonised approach to generation adequacy analysis is crucial to the cost efficient realisation of the EU climate objectives.

With respect to how to take into account potentially diverging preferences regarding security of supply we refer to the answer to Question 6 emphasising the importance of price signals.

Capacity markets

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

We believe the current state of the electricity markets calls for immediate actions to meet local needs of maintaining a flexible back up base of assets to guarantee security of supply. In parallel we consider that all necessary steps to improve market functioning should be taken.

Improving the market functioning should follow two main avenues: correcting present market failures and physically integrating markets through improved network infrastructure in line with our answers to Questions 4 and 5. Also, due consideration should be given to creating well-functioning shorter term markets since these will be an important element in the integration of variable renewable sources.

The general principles should be enhancement of competitiveness, transparency and stability in the market design and promotion of a clear division of roles and responsibilities in the market and for TSOs.

DONG Energy recognises that the market design continuously needs to be revisited to make sure that it provides the incentives needed for ensuring the functioning of the system. It is critical that the economic viability of assets that will be necessary in the future is not undermined in a transitional phase – where e.g. renewables are coming on the system much faster than the necessary infrastructure can be build. In line with that, the current market can be improved in a continuous effort to produce the right prices on the right products for the system to work efficiently.

In the light of the transition to a future with a significant share of variable generation where forecasts of net demand (gross demand minus demand served by variable resources) become ever more important, TSOs need to look carefully at getting the right products, i.e. the right mix of capabilities from existing and new capacity. This is important in order to meet the new challenges of ensuring system quality and that supply and demand are balanced in every second.

Net demand forecasts should be used to estimate the requirement for the resource capabilities/flexibility of current and new resources that most cost-effectively over investment timescales meet the desired level of system quality. These capabilities can be both traditional ancillary service functions and less traditional balancing functions as short-cycle stop-start and aggressive dispatch or ramping options (how fast and how frequently a resource can be turned off and on), and up-ramp and down-ramp rates and ranges.

In line with traditional ancillary service markets the new capability services should be considered when optimising the market design. These services/products and “markets” should, however, be designed with an appropriate investment horizon in mind and could be contracted on a forward basis.

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

- a. to ensure that new flexible resources are delivered?***
- b. to ensure sufficient capacity is available to meet demand on the system at times of highest system stress?***

The reliability of the future electricity system is a matter of both quantity (adequacy) and quality (flexibility). If markets are not integrated and well-functioning, transmission capacity unavailable, price spikes not accepted, demand side in-activated and other sources of flexibility not valued and utilised, then electricity markets would most likely not be able to provide the required security of supply and investments in terms of generation adequacy and flexibility.

As indicated above the quality and capability of the available and new capacity and resources are in many markets not valued in a transparent and market-based way. In markets that have experienced a fast transition to a high share of variable generation this is often problematic.

Flexibility will be in greater demand, it will need to acquire greater value, and that value needs to be reflected properly in decisions at investment timescales. In the current transition phase towards a low carbon electricity market there is a risk that assets providing these system services are not sustained and that Transmission System Operators are not assessing the need and creating the incentives for flexible generators to stay in the markets for the duration of the transition phase.

(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?**
- 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?**

If deemed necessary to account for expected capacity gaps and achieve security of supply standards DONG Energy believes that a targeted mechanism like the 'Strategic Reserve', if carefully designed is a feasible approach for complementing the market during a transitional phase. A strategic reserve will enable a targeted approach to address the needs of the system when it is clearly under stress taking into account flexibility, timing and location of the generation or responsive demand. Importantly, a well-designed strategic reserve mechanism will also have a minimum influence on the wholesale energy price. Ideally a strategic reserve will thus be phased out automatically, as the underlying core market structures become more robust.

Resources remunerated through a strategic reserve should only be dispatched in times of physical system stress, and such situations need to be clearly defined and known to the market. The strategic reserve capacity should only be dispatched after all other available capacity have been dispatched in order to distort price signals as little as possible.

A Strategic Reserve should only be activated at a very high price (in theory close to Value of Lost Load) in order to avoid the reserve acting as a de facto price cap in the market.² A pragmatic activation price could be set at the maximum allowed price at the exchange bearing in mind that if that price is often reached it should be increased. It is therefore important that a strategic reserve is regulated by clear and well-known criteria and is used only as a last

² If a Strategic Reserve is acting as a price cap it will introduce a market imperfection and the marginal peak producer will not be able to cover his fixed costs. Consequently, with a Strategic Reserve acting as price cap, there will be no incentives for new build of marginal peak capacity lowering the security of supply.

resort and not to avoid scarcity prices as these are needed to bring forward additional investments.

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

As mentioned above, we believe the strategic reserve with an activation price equal to the price ceiling at the exchange is the least distortionary capacity mechanism. A market wide capacity mechanism would have several drawbacks, but in general we find that there are too many design challenges associated with a market wide capacity mechanism, which would likely to lead to frequent adjustments and regulatory uncertainty.

A market wide capacity mechanism will significantly impact the wholesale electricity price and distort the investment signals given by the existing market. Furthermore, there is a risk that this kind of capacity mechanism will raise costs to consumers due to potential overcapacity, failures of market design and administrative costs. Another challenge is that a market wide capacity mechanism assumes that the capacity product is separate from the energy product and can be clearly defined, but generation capacity has different capabilities in terms of e.g. flexibility and is not homogenous.

Finally, once implemented, it is difficult to turn back to normal market conditions or adjust to new market developments as investment decisions would be based on the expected long term payment from market wide capacity contracts.

If a capacity market is opted for it should be designed with an incentive structure to enhance the employment of flexibility. For example, the auction process can be divided into different tranches according to firm flexibility criteria, where the most flexible tranche of firm capacity is cleared first and so forth.

This requires the TSOs set a target mix of resource capabilities from a net demand forecast and allocate the quantity of capacity to each tranche.

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

The success of a capacity mechanism and, hence, the cost to consumers will be very dependent on the following principles:

- Minimal distorting effect on existing markets – relative price signals should reflect relative scarcity in supply and the need for flexibility at a given point in time
- Adaptability to adjust to any current market situation following pre-set guidelines and full transparency in any adjustments in order to provide a stable investment framework
- Full transparency in the capacity procurement decisions and a liquid market place with well-functioning price formation for investors to be able to factor in a potential revenue stream from supplying capacity in long term investment decisions
- Minimal distortion of cross-border trade – sharing renewable resources and back-up capacity across borders should be affected as little as possible

A capacity mechanism that remunerates only the quantity of MW (adequacy) and not the quality of the services (flexibility) that can be provided is likely to be more expensive in a market with high share of variable resources and a greater need to react to variable production.

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

We do not believe capacity mechanisms which aim to solve a (transitory) capacity adequacy challenge in parts of Europe can only build on balancing market regimes for the following reasons:

The reserves procured in the traditional balancing (ancillary service) markets are supposed to cover outages on generation units and cables in operation and short term errors in the forecasting of renewables output. These reserves are called for on short notice defined by ENTSO-E in the operational handbook. The sequence is that fastest reserves jump in (almost) instantaneously and is re-established by slower reserves within a timeframe of minutes. To solve a generation adequacy challenge by increasing the amount of these reserves will be very expensive since only fast responding (and running) reserves can be used.

A capacity adequacy challenge in parts of Europe is rooted in the fact that renewables in the future will cover most of or a substantial part the electricity demand (and in some regions this is the case today). The challenge is how to keep a flexible generation base to meet consumption in the 5 days with no or little wind. The operational reserves are not meant to do this and cheaper and slower strategic reserves can be activated via the day ahead market resulting in a lower cost of ensuring system security if designed properly.

That said additional income streams from balancing markets will reduce the need for a capacity mechanism in the first place. As mentioned earlier these markets, however, tend to be unstable and lacking in transparency which reduces the value for investments.

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

No, an EU-wide capacity mechanism seems not to be necessary since the capacity adequacy challenges are local (or maybe regional), but not EU-wide.

However, we would propose that the Commission provides a blueprint for the principles of how local or regional capacity mechanisms can be designed to minimise adverse effects on the market and trade.

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

Yes, it would be appropriate to develop some criteria to assess the compatibility of capacity mechanisms with the internal energy market. See comments below.

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

- a. Should any criteria be added to this list?**
- b. Which, if any, criteria should be given most weight?**

We would give the most weight to (2), (5), (6). Additionally, we would like to make the following comments:

With respect to (1a):

- it should be acknowledged that new interconnector capacity takes years to complete and that socio-economic suboptimal disinvestments might as a result be inevitably even if new infrastructure is planned
- Analysis documenting the identified need should be based on harmonised principles and made public

With respect to (3), we believe that any mechanism should be introduced only to handle a specific concern. Hence, it should be removed if this concern is removed. It will of course be difficult to estimate ex ante when the concern is removed, but some assessment criteria should be published for review.

With respect to (4), in principle yes. But it seems difficult with the current target model of European electricity market integration. A utility cannot guarantee the existence of available MWs in an area where it is not physically located. Countertrade in the intraday market cannot help since it would require up-regulation in the short area to free up MWs on the interconnector.

With respect to (7), it is stated that the mechanism should be technology neutral. Depending on the interpretation of this there is a risk that capacity is only perceived as firm capacity and not incentivised because of the quality of the services it can deliver to the system. This does not harmonise with a least cost approach. Hence, the mechanism should be technology neutral, but certain

criteria will have to be fulfilled in order for the capacity to support the needs of the system in relation to activation and duration time etc.

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