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Answers to the questions of the

Consultation Paper on generation adequacy, capacity mechanisms and the internal market in electricity

Public consultation of the European Commission

Section "Investing in the internal energy market"

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

   The current level of market prices of commodities (electricity, fuels and CO_2 emission allowances) leads to contribution margins that are not sufficient to cover capital costs of new generation capacity. At least for the German market, this is mainly due to the current situation of surplus generation capacity. Based on the shut-down of nuclear and old thermal power plants accompanied by an increasing share of renewables, it can be expected that the German electricity market will ask for new thermal generation capacity at the end of this decade to achieve the required reserve margin.
   Yet it is not evident that the current design of the energy market does in general prevent necessary investments. In the future, with a re-developed competitive energy market environment but with insufficient generation adequacy it is expected that high electricity prices emerge that are adequate to incentivise additional capacities.

2. Do you consider that support (for example 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?

   In principal, any support for specific energy sources implies a certain distortion of energy market functioning. In addition, a support design that is not well coordinated with the remaining competitive market and continuous and unforeseeable modifications of the support design will further impede investments.
   With regard to a reliable provision of generation adequacy, the impact is dependant on the kind of supported generation technology and further conditions of support. For example with support schemes as present today in many European countries, fluctuating renewables like wind and solar are not obliged to contribute to generation adequacy. Hence, they do it only to a very limited extent due to their fluctuating behaviour. Whereas support of thermal power plants would address the provision of generation adequacy. Nevertheless, a competitive energy market producing a clear price signal has to be preferred.

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?

   The ongoing market coupling of national electricity markets (both day ahead, intraday as well as balancing) will primarily lead to a more efficient use of present generation capacities across Europe. In principle, market coupling further increases security of supply, yet the extent considerably depends on the synchronicity of load and available generation in the market areas coupled as well as the simultaneous available transmission capacity both between and within the market areas. As well the use of electricity storages abroad is limited due to restricted transmission capacities. For example, the possibility for Germany to utilize Scandinavian storages in order to compensate renewable fluctuations will be limited even in the year 2050 to 5 GW[1].
   However, a good and early example for advantageous market coupling is the Nord Pool market within Scandinavia. In the case that the European Commission would further promote market coupling, an advanced European wide market coupling might be established within five years.

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?

   Internal market rules and intensified market coupling are able to contribute to ensuring generation adequacy and security of supply for all markets when the following conditions are met:
   - (European) Energy policy and regulation has to provide stable framework conditions for a long term perspective to provide a strong fundament for investment decisions.
   - Support schemes, taxes and levies, irrespective of which generation technology and commodity is affected, have to be coordinated throughout the European markets. For example national single-handed support of renewables (both with regard to kind of technology and share in the electricity demand) and the introduction of (different) capacity mechanisms only in individual countries have to be avoided.
   - No price floors and caps for electricity and further commodities are introduced (for example price floor for CO_2 in Great Britain) and no regulated price guarantees are given to both consumers and individual generation technologies. The latter applies in particular to the support of renewables by fixed feed-in-tariffs and market premiums as for example in Germany. This heavily undermines the functionality of the competitive market.
   - No guaranteed feed-in privilege regardless of the actual generation and load situation as it is granted nowadays to renewables in most of European countries. This as well heavily undermines the competitive market.
   - Several measures to achieve fundamental objectives of European energy policy have to be better coordinated and parallels avoided. This applies in particular to the objective to reduce CO_2 emissions. The ETS scheme has therefore been introduced as an instrument that follows the principles of competitive markets. And

[1] Prognos: Bedeutung der thermischen Kraftwerke für die Energiewende. Study. Berlin, 2012

even the present development of the price level proves that the market is well working. With the promotion of renewables on the basis of separate support mechanisms, the European Commission has introduced a second measure to reduce CO_2 emissions, thus the same objective like the one of the ETS. The current low level of CO_2 allowance prices is as well a result of the increasing share of supported renewables. Readjusting measures to artificially increase the CO_2 allowance price would constitute a further distortive intervention and would cause additional disturbance for the competitive market.

- National markets have to be connected by sufficient transmission capacities in order to provide and enhance the technical possibility for international electricity trade and market coupling. However, this further requires an adequate grid within the individual market areas.

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

   Individual Member States have to neglect or remove all legislative schemes and regulations that constrain the competitive market, see as well question no. 4. These encompasses privileged support of renewables and of any generation technology without any market orientation, price floors and caps as well as further regulations on investments and closures of power plants (confer to German regulations with respect to decommissioning of conventional power plants recently introduced).
   No Member State should introduce market designs, especially capacity mechanisms, that are not coordinated with neighbouring markets or that have unilateral impacts on the profitability of assets in neighbouring markets. Also the implementation or the further development of existing renewable promotion schemes should be coordinated between the neighbouring markets.
   In order to fully take advantage of market coupling and increased international grid capacities, as well the national grid has to be strengthened accordingly.

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?

   In general, supply of electricity has to be guaranteed to the consumer with highest reliability at any time. In the case that individual consumers are able to dispense with security of supply or to reduce their contemporary load by demand side management, they should have the ability to participate in a non-discriminatory manner at corresponding markets. Consumers like private household end-consumers not taking part at wholesale electricity markets would therefore require the introduction of supply dependant electricity tariffs. However, demand side management should participate at the market by bidding based on its true costs, i.e. there should be no further financial support or regulation of demand side management impeding the use of other measures that are more cost effective to provide security of supply.

Section "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 Level

      Against the background of strengthened international grid capacities and market coupling, generation adequacy assessments limited to national levels lead to redundant surplus capacities that probably are not entirely required in order to fulfil adequacy requirements. Hence, approaches considering only national systems are not cost optimal for well interconnected countries and thus should not further be prioritised. However, generation adequacy assessments should concern further possible system security challenges within a certain market area, see for example Germany where large portions of renewable generation is located far from load centres.

   b. Regional Level

   c. European Level

      To b.) and c.) Adequacy assessments on regional (and European) level contribute to minimize the capacity required in order to guarantee system security for the whole considered area. An increased simultaneous treatment of market areas will generally enhance this effect and is thus preferable.
      Other effects even lead to an increased need for multinational adequacy assessments. For example the feed-in of renewables alters the physical load flows between market areas and thus the loading of interconnectors. With the wind feed-in in the Northern part of Germany, additional loading of the interconnectors to the Netherlands and to Poland is caused that reduces the possibility for electricity trade and provision of capacity from abroad.
      However, an assessment considering several market zones requires appropriate methodological approaches including consistent data sets and market scenarios. Synchronicities of actual load and available generation as well as the simultaneous available transmission capacity between and within market zones have thereby to be considered. This implies a well defined coordination between the parties involved for defining methodologies and data considered. Further on, the analyses have to be based not only on single time steps like selected hours. Rather sufficient continuous time sequences with adequate time resolution covering in particular the fluctuating behaviour of renewables has to be considered. An approach that addresses these issues is steadily being developed and applied for the ten year network development plans derived by ENTSO-E.

8. Looking forward, is the generation adequacy outlook produced by ENTSO-E sufficiently detailed? In particular,

   a. Is there a need for a regional or European assessment of the availability of flexible capacity?

      Yes, there is a need. As mentioned in the response to question no. 7, an assessment on regional or European level contributes to avoid redundant capacities required to maintain system security. This further applies to the provision of flexibility to the system. However, with respect to flexibility, an adequate consideration of the synchronicity of load and available generation and simultaneous available transmission capacity is crucial. Furthermore, the assessment has to rely on continuous time-series and not on selected points in time.

   b. Are there other areas where this generation adequacy assessment should be made more detailed?

      The following summarizes the points that would be advantageous for a sufficient generation adequacy assessment:

      - Enhancement of the regional scope of market areas that are simultaneously dealt with for the generation assessment. It should thereby be ensured that the synchronicity of load and available generation as well as transmission between the market areas is considered. Furthermore, a common approach has been used by the parties involved.
      - In order to encompass as well the required flexibility of the system, continuous time-series covering sufficient time-periods and with adequate time resolutions to cover the fluctuating behaviour of load and renewable feed-in should be considered.
      - The provision of reserve power and further system stability services should be considered.
      - It is not clearly stated in the ENTSO-E's adequacy forecast report to which extent the generation capacity expectations consider the current discussion on lacking profitability and economically driven decommissioning of conventional power plants. There should be a consistent approach how to deal with this issue.

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

   The directory gives the Member States the possibility to define and to apply measures in order to guarantee the security of supply. It thereby had to be ensured that these measures are non-discriminatory and do not impose any unacceptable burden on market participants. However, this is not further detailed. A revision should consider a better elaborated definition of measures that do not distort the competitive energy market.

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?

    It is crucial to account for several kinds of risks when assessing system security. For example outages of generation assets are already taken into account during the determina-

tion of the generation adequacy by ENTSO-E to a certain extent. With an extended approach following the criteria given in answer to questions 7c and 8b, further risks and as well generation adequacy at regional level are taken into account. However, the consideration of individual risks (like outages of generation and transmission assets, non-availabilities of fluctuating renewables, loop flows in meshed transmission grids) should be explicitly demanded when defining approaches to assess system security.

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?

    With expanded coverage of market areas for the adequate assessment, a common definition of the adequacy standard is advantageous. This could be measured according to the loss of load expectation (LOLE) concept. For different market areas, different values of the LOLE corresponding to the respective preference could be taken into account.

Section "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?

    The introduction of capacity mechanisms potentially influences in a negative manner the competitive principle of the energy market. Hence, capacity mechanisms should generally not be introduced. Instead, any reason for the insufficiency of the market environment to incentivize adequate generation capacity has to be removed.

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?

    To a.) and b.) A flexible resource has to achieve sufficient contribution margins during a comparable low number of hours compared to resources that are operated in a more constant manner. In general, this condition applies as well to a generation resource that is required to cope with times of highest system stress. In order to achieve adequate contribution margins, the competitive market should be able to generate sufficient high prices during these time periods. This especially applies not to markets with regulated and price caps or to markets where generation resources are taking part that are privileged and financed by other means (for example renewables by a support scheme like the one in Germany).

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?

       Strategic reserves are not adequate to support the transition from a fossil fuel based electricity system to one that is mainly based on renewable energies. Strategic reserves have to be applied only to provide local grid stability in the case that the grid is temporarily not developed appropriately. After the grid has been reinforced, the utilisation of strategic reserves has to be terminated.

    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?

       In the case that strategic reserves are applied only with the purpose to provide local grid stability and are not at all participating at the energy market, compare answer to question 14a, there should be no risks to effective competition and the functioning of the energy market. If not, payments attributed to strategic reserves would advantage assets providing strategic reserves in the competitive market.

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?

       The basic fundament of competitive markets has to be energy only markets. In a competitive and not distorted market environment, energy markets are expected to generate incentives for generation capacities. In order to enable effective competition, any further market intervention (like support of renewables based on guaranteed feed-in privilege and prices, price caps, et cetera) has to be prevented.
       However, a capacity mechanism that is least distortionary to the whole energy market has the following properties:

       - Any technology and market participant is allowed to take part in the capacity mechanism. There is no discriminatory prequalification that excludes individual technologies (conventional and renewable generation technologies, storages as well as load facilities) and that privileges neither existing nor new assets. This ensures that the cost optimal option to provide capacity is chosen.
       - The revenues achieved through the capacity mechanism add to revenues from competitive energy markets which are potentially not sufficient to generate adequate contribution margins. No capacity has to be profitable only due to participation in the capacity mechanism; it can obtain further revenues at the energy market. With the competitive energy only market, the actual operation of the assets is optimized.
       - The capacity that has to be provided in order to guarantee system security is procured by a competitive mechanism ensuring that the capacity provision is cost optimal.
       - Renewables have to take part in the whole market environment with the same possibilities and obligations that other generation technologies have; there is no guaranteed price and feed-in privilege.

- The same design of the capacity mechanism is introduced in all Member States, no differentiation between Member States is made and there is no introduction only in single Member States. As well the required capacity is determined based on an approach that considers the whole of Europe and available transmission capacities, see answers to questions on the assessment of generation adequacy. Furthermore, the design of the capacity mechanism is hold stable and not object to permanent and unforeseeable modifications.

The following properties and design options would distort the competitive market:

- Privileging of individual technologies and of existing or new assets: Any restriction could exclude options that are more cost optimal and could lead to redundant capacities. Furthermore, this could pose an additional threat to existing assets in the competitive market (for example existing assets are pushed out of the market by new capacities that would not enter the market without a capacity mechanism).
- Different designs of capacity mechanisms are introduced in individual Member States or capacity mechanisms are introduced only in single Member States. Different design options and national capacity mechanism will interfere and affect, probably disadvantageous, the foreign markets.
- The price achieved for reliable capacity at the capacity mechanism is predetermined and not a result of competitive mechanisms.
- Renewables are privileged by guaranteed income and feed-in privilege to the system.

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?

   The need for flexibility in an electricity system should be expressed in a competitive market environment by appropriate high prices at energy markets. A dedicated capacity mechanism or payment scheme for flexible assets would constitute a privilege for certain technologies and would thereby discriminate other assets.

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

   Every design of capacity mechanism is irreversible to a certain extent. In general, any intervention into competitive markets is distortionary and implicates irreversible impacts.
   A distinctive example for irreversible market interventions is the promotion of renewables based on support schemes with guaranteed feed-in privilege and tariffs like in Germany. As a result, electricity prices at wholesale markets and operation hours of conventional power plants are significantly reduced. Both impacts cause decreasing profitability of these assets that are required for provision of system security. As one consequence, the introduction of capacity mechanisms is discussed which as well will lead to further market distortions. To sum up, it can be assumed that avoidance of elementary distortions of the competitive energy market, like due to an inadequate market integration of renewables, would be more efficient.

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

    In general, a capacity mechanism that causes distortion in the competitive energy market as little as possible will have the least impact on costs for final consumers. This capacity mechanism will show the properties as discussed in question 15a.

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

    Balancing market regimes focus on the short term provision of capacity to an electricity system in order to cover forced outages and short-term forecast errors of system operation. Since technical conditions have to be met by balancing regimes, there are strong prequalification rules for interested participants. Whereas the objective of capacity mechanisms is to incentivise capacity that is required in a long term perspective to guarantee system security and that is simultaneously not profitable in the competitive energy market environment. This capacity mechanism should not include technical prequalification rules as discussed in question no. 15a and 15b.
    With respect to these different purposes and consequently varying designs, capacity mechanisms cannot build on balancing market regimes.

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

    Primarily, it has to be ensured that any distortive impact on the whole competitive energy market (for example guaranteed prices and feed-in privileges for renewables, any price regulation and caps, et cetera) has to be removed before introducing a capacity mechanism. If it is proven that the competitive energy market is anyhow not able to provide the economic basis for adequate security of supply, the EU Commission should define a blueprint of a capacity mechanism that is harmonized and binding for the Member States. Yet, the distortion of the internal energy market due to the design of the capacity mechanism should be as small as possible.

Section "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?

    Yes, in order to derive a blueprint of a non-distortive and competitive capacity mechanism for the whole of the European Union and to support the discussion with the individual Member States, the European Commission should develop corresponding criteria.

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

a. Should any criteria be added to this list?

Yes. The implementation of a capacity mechanism should not be an instrument to compensate for a disadvantageous and not competitive design of the overall energy market and energy policy that is not market oriented. In particular, renewables have to be better integrated into the market by abolishing guaranteed prices and feed-in privilege as currently set in place in Germany. Before assessing the need for capacity mechanism, these reasons of further market distortions have to be removed as well.

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

In principle, all criteria are crucial. However, the most weight should be given to criteria 1, 2, 5, 6a, 7 and 8.

Potential detailed criteria to apply to capacity mechanisms

1. *The necessity for a capacity mechanism should be clearly established in the context of:*

   a. *The potential of the identified needs being met in the normal operation of the internal energy market, in particular:*

      i. *increased interconnection and in particular the completion of identified projects of Common interest.*

      ii. *steps to encourage effective competition by addressing the position of dominant undertakings.*

   b. *Alternative, less distortionary measures which could be taken, for example steps to improve energy efficiency or reduce electricity demand.*

   c. *Removing barriers to the effective participation of demand in the electricity market.*

2. *The effectiveness of the capacity mechanism addressing the identified market failure should be demonstrated and that it is additional to what would have occurred under normal market rules.*

3. *The duration of the application of the capacity mechanism should be clearly limited and clearly specified,*

   a. *The impact on the market of the introduction of capacity mechanisms should not make it difficult to reverse that decision in the future.*

   b. *The necessity of retaining reinstating a capacity mechanism should be subject to review.*

4. *Any capacity mechanism should be open to electricity undertakings operating in other Member States, to the extent they are able to make the electricity available in markets to which the capacity mechanism is established.*

5. *Any capacity mechanism should not act as a barrier to cross border trade or competition in the internal market by:*

    a. *artificially altering trade flows or the location of production, in particular by:*

        i. *restricting the ability of electricity undertakings in the Member State to sell their electricity to customers elsewhere in the internal market, (i.e. capacity physically located in a Member State should not be reserved for that Member State).*

        ii. *distorting the commercial behaviour of generators in the day ahead and intraday markets.*

        iii. *distorting investment signals in the internal market leading to inefficient locational choices.*

        iv. *distorting investment signals in the internal market leading to the displacement of new investment from one Member State to another.*

    b. *distorting dynamic incentives/crowding out;*

        i. *The incentive on consumers or generators to respond to high prices at periods of scarce capacity should not be diminished.*

        ii. *The mechanism should not undermine incentives on the electricity market to deploy new techniques for demand reduction or electricity storage and generation.*

    c. *creating market power or exclusionary practices;*

        i. *The mechanism should not strengthen or maintain the market power of incumbent firms.*

        ii. *The mechanism should not act to maintain inefficient market structures or undertakings, acting to deter new entry.*

6. *To be non-discriminatory a capacity mechanisms should*

    a. *be allocated after an open competitive bidding process.*

    b. *allow demand response and energy efficiency solutions to bid into capacity markets on an equal basis to generation.*

7. *Not be confined to any particular generation technology, i.e. being tech. Neutral (insofar as the mechanism is directed towards security of supply concerns – this may not apply if other objectives are also being pursued).*

8. *Capacity mechanism should be at least cost:*

   a. *The direct costs imposed on suppliers or others electricity undertakings must be kept to the minimum necessary.*

   b. *Persons providing capacity under the obligation must not be overcompensated.*

   c. *Any selection process in the mechanism should be conducted in a transparent, open and non-discriminatory way which is market based.*

   d. *The duration of any compensation to generators under the mechanism should be clearly justified.*

9. *Costs associated with capacity mechanisms should be allocated to the beneficiaries of secure energy supply with different classes of consumers being treated in a non-discriminatory way.*

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