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Public Consultation - Generation adequacy, capacity mechanisms and the internal market in electricity

Vattenfall welcomes the opportunity to respond to the consultation on "Generation adequacy, capacity mechanisms and the internal market in electricity"

In summary Vattenfall considers that;

- A well functioning price formation is the core in the solution to address any generation adequacy concerns. The price formation gives necessary scarcity signals and provides a very clear signal that further adjustments may be necessary. This could be the case when the system is put under pressure e.g. when demand is at high levels or to manage sudden changes on the supply side e.g. when the wind is not blowing.
- In a well functioning price formation an active demand curve can be an essential factor.
- The Member States should define the level of generation adequacy that is desired and acceptable for society within a particular area. The level is imperative when deciding if and how much capacity to procure. Any procurement should be done in collaboration on a regional level.
- TSOs should have the task to ensure the decided generation adequacy level. If they in continuous evaluations consider it necessary to maintain the level they should have the mandate to procure a strategic reserve. The ambition should be to have as small strategic reserves as possible
- The strategic reserve must distort the price formation as little as possible, i.e. it should not depress prices in forward, day-ahead, intraday or real time markets. To affect the markets as little as possible it should be sold at the technical maximum price used in the market. The strategic reserve should only be used as a last resort measure to make demand meet supply in real time. Thus, the strategic reserve must be surrounded by strict rules of its use and must be monitored by competent authorities.

General comments

Vattenfall considers that the long run adequacy and security of supply in the electricity market is best ensured by exposing all actors to true market prices in the power markets. In addition, the costs of scarcity in extreme situations may be substantially lowered if future infrastructure investment enhances the possibility of distribution networks and customers to react whenever market fundamentals (extreme weather, etc) are signalling extreme scarcity.

In the current public debate the requirement on the electricity market is that involuntary load shedding should not occur under any circumstances. On the other hand, realistically, a one hundred per cent generation adequacy would be prohibitively expensive. An administratively set capacity margin or an aim to ensure supply being met at all times disregarding costs may imply that too much or too little capacity is covered leaving society with either inefficiently high costs or a security of supply that falls below the social optimum.

Lack of EU wide co-ordination will result in over-capacity and less cross border trade, both leading to higher costs. This is why a EU approach is necessary and we expect the Commission to take a more pro-active stance than they have done so far.

Thus, it is of utmost importance that Members States clearly defines the generation adequacy level that is desirable from society's point of view. The desired level should be used by TSOs when assessing generation adequacy and to decide if the system is to be concerned adequate or not. If the statistical evaluation done by the TSOs shows that supply is more likely to fail to meet demand than the decided generation adequacy level prescribes the conclusion would be that generation adequacy is insufficient. If the TSOs find generation adequacy to fall short of the desired level they should have the task to procure reserves to the extent necessary to restore the system to the decided level.

Efficient and non-discriminatory utilization of the European transmission grid is a prerequisite for the development towards a true pan-European electricity market. Further integration of the European grids by expanding the transmission capacity is a measure that should be considered before considering capacity mechanisms. Further market integration by the European target model is imperative and will support efficient utilization of generation and grids.

The generation adequacy assessments should include capacities within the area that is being evaluated as well as possible cross border flows. This calls for regional co-operation between neighboring states/areas to avoid double-counting of capacities etc and making sure that every capacity is taken into consideration. In addition non co-ordinated use of capacity mechanisms may imply over-capacity and thus inefficiently high costs.

Vattenfall views that the TSOs should have the responsibility to secure the decided generation adequacy level. Hence, they would have the task to secure that the amount of capacity in the power system (production or active demand) corresponds to the amount of capacity needed to maintain the generation adequacy level society wants. The responsibility falls in the category of capacity mechanisms. If a capacity mechanism is introduced it is of *utmost importance* that it does not interfere with price formation. The capacity mechanism should only be used to "keep the lights on" i.e. help so that supply meets demand in operational hour. It must be transparent, predictable and contribute to a well functioning electricity market where each player is responsible for their commitments. It should be reversible and encourage demand response. A capacity mechanism should not deter profitability by crowding out generation and

demand adjustments excluded from the mechanism as this would erode long run system security. A strategic reserve used as a measure of last resort is one solution that does not destroy price formation. In any case implementation of capacity mechanisms should be based on a thorough analysis of the underlying factors for the lack of capacity and the likely development of these factors.

Reply to questions in the consultation:

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

Undistorted market prices provide accurate incentives for investments in generation capacity. Centrally administered prices interfere with the price mechanism thus hindering the true value of electricity to be discarded in all time frames. Hence, as long there are no regulatory distortions the energy only market will provide sufficient price signals both for short term energy production and future investments in production capacity. An undistorted power market is best in providing clear price signals to investors what kind and what volume of future capacities is needed even if market conditions are changing by subsidised intermittent RES technologies. However the hours power plants are scheduled are decreasing, this does not mean that well-adapted, flexible power plants could not earn their costs in the electricity market within just a few hours of the year. Especially flexible power plants benefit from short-lived price peaks. Therefore market distortions like price caps and priority access of certain technologies should be abandoned. In addition subsidies could be structured so that supported or prioritized production reacts to price signals. An example is the decentralized CHP units in Denmark where subsidies were restructured so to encourage active market participation.

(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?

Yes, special treatment of particular technologies in deed affect and will discourage investments in technologies providing characteristics needed. Any support scheme distorts price formation in an energy only market and thus to some extent an efficient investment ensuring generation adequacy. The extent of the price distortion is connected to the characteristics of the generation production technologies. The earnings also becomes more weather dependent as the system becomes more weather dependent, making also investments in flexible plants depend more on stochastic weather conditions. This increases risk and lowers willingness to invest. In so far that intermittent sources take their own balancing costs and the development is evolutionary this would be included in normal market risk. However Vattenfall believes that the energy only-market can deliver strong signals to invest in a reasonable amount of flexible capacities and demand response needed to balance intermittent RES as long as the development of subsidised RES capacities is widely predictable both in volume and in technology mix. To ensure the desired level of system adequacy the energy only market could be accompanied by a (small) strategic reserve that does not repress incentives for those flexible options.

Priority dispatch is only a real problem when the remuneration and costs to renewables are disconnected from the market scarcity valuation and costs. As for example wind and solar would be bid into a market at fairly low costs disregarding a priority dispatch regime, this only

becomes a problem when the generator does not face balancing costs or are remunerated disregarding the market value of production in the area in which she operates.

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?

Yes, the establishment of cross-border markets in the aligned timed frames will accommodate security of supply. Day ahead and intraday markets are considered supportive for balancing carried out in the real time market. Properly established the markets will provide necessary price signals furthering security of supply. A price that accurately reflects scarcity is a superior short and long run mechanism to any administered measures.

Requiring TSOs to share resources available in the real time market i.e. the balancing from a common merit order will advance real time security of supply and cost efficient balancing.

(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?

It should be ensured that any price caps or possibly distorting market arrangements hindering true market prices to be revealed are removed across Europe. Consequently, it should on European level be ensured that all generation resources compete on equal terms, be dispatched based on the market prices and that each and all are responsible for their imbalances.

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

With today's metering technology it is not currently possible to instantaneously control or stop the physical delivery to customers belonging to a specific supplier (although Vattenfall recognises that there is a developing strategy to achieve this through the establishment of smart grids). Without such a physical link between customer and supplier, it is not possible to disconnect a specific client when his particular supplier lacks the means for the agreed delivery. The security of supply therefore can be regarded as a public good.

The discussion on capacity mechanisms addresses the public good characteristic of this fundamental responsibility in liberalised electricity markets. As long as security of supply is regarded a public good there may be a need to implement a centrally managed reserve. Vattenfall considers that the market arrangement should be such that the market by itself could ensure a level of generation adequacy that would be acceptable to consumers. The first step would be to remunerate demand and supply flexibility through allowing correct scarcity prices.

As security of supply is regarded a public good Member States should define the level of generation adequacy that is acceptable for the society. Member States should thereafter give TSOs the responsibility to maintain the decided level in a cost efficient manner.

(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 Member States are to decide the level of generation adequacy of supply that should be met within an area. The TSOs should be given the task to secure the desired level. In the extent technological solutions are established that make it possible to instantaneously control the supply to a particular customer that consumer could theoretically choose a lower standard compared to others, The roll out of smart meters maybe a milestone for individualising the security of supply.

(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:

Generation adequacy must be measured against the level of generation adequacy that is decided upon by Member States. To further develop the ENTSO-E methods, a first action could be to develop benchmarks on these adequacy requirements. However, generation adequacy should not be measured according to geographical borders but rather follow the electrical infrastructure. Whenever this leads to a cross border area it calls for a coordination of the assessment of the involved Member States.

Overall, Vattenfall support that generation adequacy takes into account cross border connections and thus are more regional than national. Through the coupling of day-ahead, intraday and balancing markets this contribution is becoming more reliable and should thus be fully acknowledged in the national assessments.

a. National level

There are no sound reasons to differ between national and regional levels as cross border capacity needs to be accounted for. Hence, generation adequacy assessments should include the regional perspective by including import possibilities from neighbouring areas in the assessment rather than taking a strictly national perspective. The idea is that resources that can provide flexibility can compete instead of every country building its own capacity through capacity remuneration mechanisms. Hence, by including cross-border capacity in the assessments build up of over-capacity would be counteracted. A concrete example on the inclusion of cross-border capacity in the generation adequacy assessment is the Swedish TSO that previously included imports in its yearly calculation of generation adequacy for "normal winter" and "10-year winter" (a very cold winter, appearing only every tenth year).

b. Regional Level

There are no sound reasons to differ between national and regional levels as cross border capacity needs to be accounted for.

c. European Level

Generation adequacy assessments at European level should take into account the possible capacity closures also due to economic reasons and not only based on technical lifetime, see for example question 2 on the impact of support system on the economic lifetime of plants. On the other hand, the contribution from demand response resources should be more clearly

included. With increasing demand response, the total generation capacity level will be a result of economic optimisation by the market actors between the supply and demand-side resources. Demand reacting on price signals diminishes the often recited threat that peak load capacities cannot earn margins to cover their investment costs. Thus, it would work like in all other commodity markets

(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?

Generation adequacy, preventing involuntary load shedding and recurring blackouts is a real time issue. More focus should hence be on the design and monitoring of the balancing markets. Thus any assessment should transparently show the amount of balancing reserves contracted by the TSOs, and on how these resources are used. In general flexibility can be provided by most power plants and the capacity structure is in principle a result of an economic optimisation.

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

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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?

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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?

No, not in addition what will be needed to ensure the decided level of generation adequacy

(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 methods to assess generation adequacy should be transparent but allow for system differences. There should be a standard requirement on member states to decide a target level within an area. The decided level may differ between member states but must be the same within a specific bidding area. Additionally, acknowledging for different systems such as hydrobased, nuclearbased, a mix, a large amount of renewables, etc should mean that the EU task should be to facilitate an exchange of experiences with regard to keeping the lights on in extreme situations in different systems.

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

Vattenfall considers that the market should have the possibility to perform its functions and that capacity mechanisms is not a suitable way to adjust market performance. Capacity mechanisms could be used to ensure technical stability of the system, and thus not interfere with market functioning or price formation. The volume of procured strategic reserves should be updated and justified periodically by the TSO in order to be kept at a reasonable level aligned with the decided generation adequacy level.

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

a. to ensure that new *flexible* resources are delivered?

The idea that energy-only market cannot deliver new investments is a self-fulfilling prophecy. Some pre-requisites are needed for that not being the case. First, there must not be any regulated maximum prices. Second, demand must be equipped with the expertise and knowledge to react on prices. Thirdly energy politics have to be reliable in a way that the capacity development of technologies influenced by political decision is predictable in general.

In times of scarcity, flexible demand is necessary to clear the market. The market clearing price shows at what level consumers are willing to waive their electricity demand in that particular moment. This market clearing price is very important as the scarcity rents are needed to finance investment costs of peak load plants used very few hours.

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

Vattenfall consider demand response very important for establishing well functioning markets. Preferably, demand participation should be so developed and a natural part of the whole sale market that no extra contracted resources in times of high system stress would be needed. In case the system is under pressure this should be reflected in the market prices, if they reach sufficiently high some consumers will choose not to consume electricity because that is economically rational from their perspective.

(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?

In theory, and as Nordic practice shows, in practice, a strategic reserve can be used to reward non-competitive resources as an insurance to keep the lights on. A strategic reserve offers a low distorting, easily manageable and later abolishable tool providing insurance against insecurity about the remaining ability to prevent involuntary load shedding or blackouts.

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?

As long as the strategic reserve is controlled by the TSO, used as a last resort measure and never interfere with the price formation it would not deteriorate competition. Not to interfere with long term investment signals it must not be used before the market has attempted to clear. Thus, investors in new peak load capacities are not crowded out by subsidised capacities. It should only be used to as a last resort to in real time help supply meet demand. To ensure that normal market dynamics are allowed to work, any strategic reserve should preferably be dispatched at value of lost load alternatively at the technical max price used. This technical max price must be considerably higher than normal scarcity prices so to ensure that no competitive adjustments are crowded out.

(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?

Any capacity market or payment is distorting the market. In any case implementation of capacity mechanisms should be based on a thorough analysis of the underlying factors for the lack of capacity and the likely development of these factors.

To be least distortionary, the model should be comprehensive and treat all capacity the same and give them the same payment. This would be expensive for the consumer but is perhaps the model, after a strategic reserve, that would distort competition and the functioning of the internal market the least. Many of the selective models have the problems to set the right parameter so that not overcapacities occur and expose even more power plants to precarious financial situations.

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?

In case a capacity remuneration mechanism is introduced Vattenfall considers a strategic reserve targeting the wanted characteristics most compatible with well functioning markets irrespective of generation mix.

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

All models except the strategic reserve are irreversible. If a strategic reserve is introduced the level of generation adequacy to maintain is important. This level will guide the TSO to procure cost efficient amounts of capacity at the right place. The cost efficient procurement is contrary to the capacity wide models which steer towards inefficient over contracting of capacity.

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

The model that is considered to affect the costs for final consumers the least is the strategic reserve, a capacity arrangement procured in competition.

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

Any capacity mechanism introduced must not interfere with the price formation by suppressing prices. If the resources that are a part of the mechanism only is used as a last resort measure. A prerequisite is that the market is allowed to perform its functions i.e. there is no regulated maximum price that distorts the market outcome. Flexibility is found on the supply and the demand side of the market. On the supply side generation that can be controlled to change its level of production is more or less flexible both in terms of increasing as well as decreasing the amount of power injected. On the demand side we have the ultimate form of flexibility i.e. the consumer that adjusts its consumption of electricity based on the price. Flexibility would be encouraged in case the capacity mechanism is targeting a particular characteristic, (i.e. response time and controllability.)

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

No.

(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, especially to be used in benchmarking

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

a. Should any criteria be added to this list?

Member States should have the task to decide on a desired and acceptable level of real time security of supply. The generation adequacy assessment behind the decision to implement a capacity mechanism must be addressed based on decided level of real time security of supply. This requirement would decrease the possibility for over contracting and building up overcapacity. Thus, the level will, when checked in the generation adequacy assessment provide necessary information when evaluating the necessity to introduce a capacity mechanism in an area.

Any capacity mechanism should not address other purposes than balancing the market.

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

Criterion 5 is most important. Bullet a maintains the level playing field in the internal market. Bullet b gives incentives to react on scarcity signals on all sides of the market (demand/ supply and in between (storage)). It is important to note that it should not undermine incentives in new technologies but that does not mean that it should be misused to subsidise politically favoured technologies. The market power addressed under bullet c can be best handled by demanding criteria 6. .