

European Commission

Consultation Paper

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

11/15/2012

1. INTRODUCTION

The EU objective in the field of the energy policy is to deliver sustainable and secure energy and a competitive internal market for energy. The internal market should allow the development of deep and liquid electricity markets, both long term and short term, which along with a functioning emissions trading scheme, effective energy efficiency measures and targeted support for new low carbon technologies, can drive the investments for a low carbon electricity system. Ensuring generation adequacy does not mean merely building new generation facilities. Energy efficiency measures and demand side participation in the market are equally important to ensuring a balance between supply and demand. The result should be a competitive market which delivers security of supply alongside the benefits of competition.

However, ensuring generation adequacy in electricity markets has become an increasingly visible topic in the policy discussion.¹ One element of the discussion is the need to ensure that new flexible resources are delivered to complement wind and solar power generation in particular. Wind and solar power generation can mean large and sometimes sudden swings in the amount of energy being fed into the system. As with any other change in electricity supply or demand, this needs to be balanced by deploying fast acting generation, releasing stored electricity or consumption responding. It will be critical as we transform our electricity system that the right market incentives are there to invest in this flexibility.

The other element of the discussion is the need to ensure sufficient capacity is available to meet demand on the system at times of highest system stress. Typically, this is during periods of high electricity demand in winter, such as the particularly high demand during February 2012. Additional generation capacity which must be brought on line to meet demand during these periods has only limited times during which its owners can recover fixed costs. As the replacement needs of both infrastructure and generation capacity grow, this becomes more difficult.

The studies which have been undertaken reach different conclusions about whether these concerns are justified and whether they actually reflect likely short or medium term problems. Different studies also suggest different policy responses to the challenges which are identified.

¹ See for example: IEA (forthcoming) Securing Power during the Transition: Generation Investment and Operation Issues in Electricity Markets with Low-Carbon Policies ENTSO-E (2012) Communication Paper on Capacity Remuneration Mechanisms EWI (2012) Untersuchungen zu einem zukunftsfähigen Strommarktdesign Endbericht, März 2012, Ecofys (2012) Notwendigkeit und Ausgestaltungsmöglichkeiten eines Kapazitätsmechanismus für Deutschland – Zwischenbericht ; DECC (2011) Electricity Market Reform (EMR) White Paper, Ofgem (2012) Electricity Capacity Assessment - 126/12 Rapport Poignant – Sido (2010): groupe de travail sur la Maitrise de la pointe RTE (2011) Rapport au Ministre chargé de l'industrie, de l'énergie, et de l'économie numérique sur la mise en place du mécanisme d'obligation de capacité prévu par la loi NOME, SEM Committee (2012) Committee CPM Medium Term Review - Final Decision Paper SEM-12-01

Some Member States have implemented or now plan to implement capacity mechanisms, which are interventions designed to ensure that identified gaps in the (future) available electricity generation capacity are filled. Other Member States and the IEA consider normal market operation can deliver the investment which is needed to ensure generation adequacy and security of supply.

This consultation paper on generation adequacy examines how the work being done to complete the internal market, roll out smart technology and facilitate the participation of demand in the market will help address concerns about market failures and incomplete markets. The paper also describes how generation adequacy is assessed in the internal market legislative framework and the tools for addressing generation adequacy concerns. Finally, it sets out possible approaches to ensure that the distortionary impact of market interventions to ensure security of supply are limited and that these interventions meet clear common criteria.

The questions and discussion in this consultation paper reflect our current thoughts on ensuring generation adequacy and security of electricity supply in the internal market. We invite comments on all the questions directly raised and any other reflections which respondents may have.

Based on the responses we receive, and on further reflections and engagement with Member States and stakeholders, we will consider whether additional measures in this area are needed, for example a Commission recommendation on the design of capacity mechanisms, or eventually legislative proposals.

Please, submit your response to this public consultation **by 07 FEB 2012** at the latest to the following e-mail address: ener-generation-adequacy@ec.europa.eu

The Commission will make the responses it receives public. If you do not want your submission to be made public, please indicate it accordingly in your submission.

2. INVESTING IN THE INTERNAL ENERGY MARKET

Before they build new generation facilities to supply consumers with, investors must expect to make a return on their investment. A well-functioning market should deliver generation adequacy as consumers, suppliers and generators contract with each other for the amount of electricity they require and are likely to need in the future.

If market prices are not high enough for generators to recover the investments needed to reach the desired level of generation adequacy this means there is a "missing money" problem.

2.1. The internal energy market supporting security of supply

Directive 2005/89/EC (the Electricity Security of Supply Directive) recognises that a high level of security of supply requires a transparent and stable regulatory framework, liquid wholesale markets in the internal market and cross-border cooperation in relation

to security of electricity supply. It emphasises the importance of facilitating new generation capacity and new entrants to the market, as well as other practical steps to improve market functioning, including facilitating demand side participation.²

Since the adoption of the Electricity Security of Supply Directive in 2005, the adoption of the Third Package and other measures are transforming electricity market functioning all of which will help contribute to security of supply. By delivering integrated day ahead, intraday and balancing market arrangements, needed to allow market participants to manage production and consumption in all timeframes, the work programme to 2014 for the development and implementation of EU wider network codes is also an important part of delivering generation adequacy.³

The proposed Energy Infrastructure Package will accelerate the completion of needed interconnection between Member States. The recently agreed Energy Efficiency Directive is expected to deliver energy savings, including in electricity consumption, and promotes demand side participation in balancing markets, reserve markets and other system services markets.⁴ Work is being done on the roll out of smart meters by 2020 and on the development of the protocols which will allow them to be deployed effectively.⁵ All this will be critical to enabling consumers to fully participate in the market and contribute to maintaining supply demand balance, and to the deployment of storage technologies in the market.

2.2. Market developments

Even in extremely critical times during the last number of winters, for example in February 2012, the need for involuntary disconnection has been avoided. It is even likely that during these periods there were industrial users who would have been willing to reduce their consumption of electricity if they had been able to get the very high prices for electricity on wholesale markets for doing so, as happens in Nordic markets.

However, some in the energy industry have increasingly expressed concerns that it is no longer possible to justify making final investment decisions for retaining existing or building new generation capacity, as a result of depressed prices and running hours. In Germany in particular, there have been concerns that existing conventional capacity could be withdrawn from the system.⁶ To some extent this might be the natural response to the changing needs of the system and/or to historical overcapacity, but it could also be the sign of capacity shortages in the future.

³ See planning for development at: http://ec.europa.eu/energy/gas_electricity/codes/codes_en.htm.

⁴ Article 15(8) of text agreed by Council and Parliament.

⁵ See for example the work of the Smart Grids Task Force (SGTF) set up by the European Commission and the subsequent Commission Recommendation of 9 March 2012 on preparations for the roll-out of smart metering systems (2012/148/EU) and the Communication Smart Grids: from innovation to deployment (COM/2011/0202 final).

⁶ See the Ecofys (2012) report for a description of these concerns.

2.3. Potential causes of a missing money problem

The simplest reason such a missing money problem could arise is where prices are administratively fixed at too low a level. This could be a result of price caps on wholesale markets.

The wholesale electricity-only market broadly sets prices based on marginal, or operating, costs, and the increased use of wind and solar power, with low or zero operating costs, drives wholesale prices down for long periods. Moreover, as a result of the economic slowdown revenues decline as there are fewer periods where peak prices are reached, allowing utilities to recover costs not covered with off-peak prices. This is a particular concern for investment financed through debt.

In addition, a missing money problem could also arise for different reasons – there are potential technological, political/regulatory and operational barriers which can prevent the market delivering the necessary price signals to ensure the appropriate generation mix.⁷ For example, barriers can have the effect that prices do not rise sufficiently high when capacity becomes tight to make it economic to invest in the generation capacity needed to meet demand. Moreover some consumers may have a different willingness to pay for the additional generation necessary to avoid rare disconnections as a result of generation inadequacy. At present public authorities must implicitly or explicitly establish the appropriate standard on behalf of all consumers. In this regard barriers to energy efficiency solutions and demand side participation are particularly relevant.

QUESTIONS

- (1) Do you consider that the current market prices prevent investments in needed generation capacity?
- (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?
- (3) Do you consider that work on the establishment of cross-border day ahead, intra-day and balancing markets will contribute to ensuring security of supply? Within what timeframe do you see this happening?
- (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?
- (5) What additional steps could Member States take to support the effectiveness of the internal market in delivering generation adequacy?

⁷ For a description of different reasons for the market to fail to deliver generation adequacy see for example Joscow, Paul, (2007) "Competitive electricity markets and investment in new generation capacity" in *The new energy paradigm* (ed. Dieter Helm), Oxford University press.

- (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?

3. ASSESSING GENERATION ADEQUACY

In the internal energy market investment decisions and trading take place in the context of integrated markets. Transmission system operators also cooperate with each other in the management of the system, which will increase with the implementation of new network codes on system operation.

3.1. European generation adequacy assessments

As part of the process of developing the ten year network development plans ENTSO-E produces EU wide generation adequacy assessments.⁸ Their main results for 2020 show "[g]eneration adequacy ... is ensured within the whole ENTSO-E system in most situations and for each reference point of the forecast period".⁹ They consider that the additional capacity not yet notified to transmission system operators but which is required to ensure generation adequacy is likely to be delivered based on reasonable regional economic considerations.

This important report is currently the main Europe-wide assessment of generation adequacy. It provides a very useful picture of developments at the European level. However, there are still national differences in what data are collected and how generation adequacy is assessed, as ENTSO-E makes clear stating "the reader should bear in mind that not all TSOs / national data correspondents consider [adequacy reference margin] or not all of them have provided this data within the ... data collection process".¹⁰ There have also been some criticisms of the different treatment of interconnection or different types of generation, in particular wind generation, which results in it being assessed as not making a contribution towards generation adequacy. These concerns in part reflect how the report is built on national reports, rather than starting from a European or regional assessment. However, as ENTSO-E acknowledges, the methodology which the report uses is still being developed in important respects, and is likely to be changed in the future.

⁸ Required by Article 8 of Regulation (EC) No. 714/2009.

⁹ The Scenario Outlook & Adequacy Forecast 2012-2030 and supporting documentation can be found at <https://www.entsoe.eu/system-development/system-adequacy-and-market-modeling/soaf-2012-2030>.

¹⁰ Introduction to Section 4.3 of ENTSO-E Scenario Outlook and Adequacy Forecast. The adequacy reference margin is equal to the spare capacity plus margin against peak load.

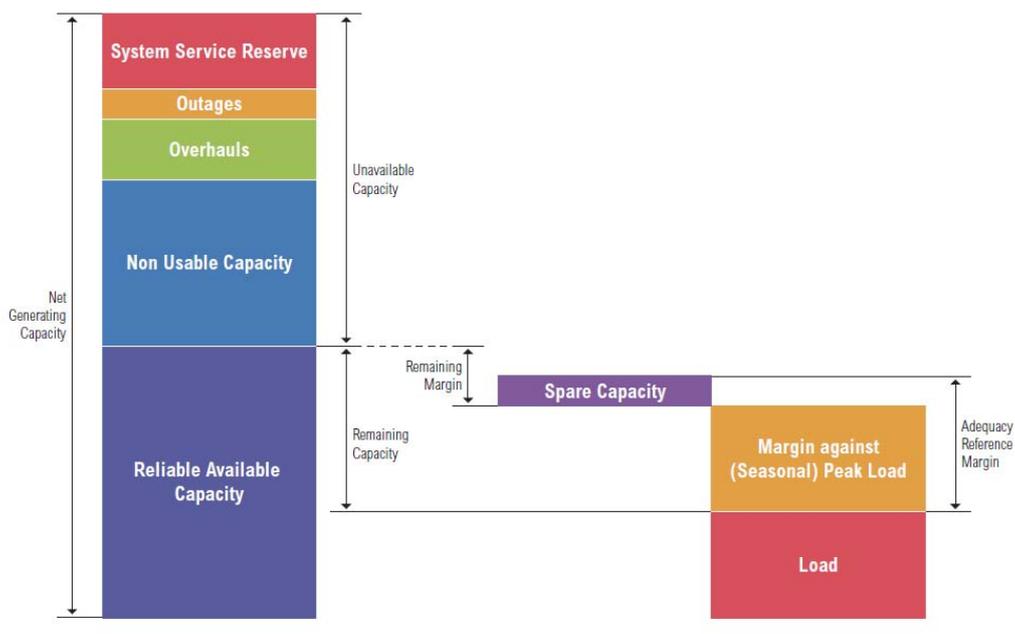


Figure 1 ENTSO-E schema for analysing generation adequacy

Currently, the ENTSO-E generation adequacy assessment does not focus on the flexibility of the system, and its ability to cope with large swings in the feed in of variable wind and solar generation, although ENTSO-E does recognise the importance of this issue.¹¹ At a national level transmission operators do monitor this closely, but particularly in the context of the internal energy market and the integration of intraday and balancing markets there may be a need for integrated regional and European assessments of the availability of flexible capacity.

3.2. National security of supply assessments

Member States monitor security of supply and produce bi-annual reports as required by the Electricity Directive and the Electricity Security of Supply Directive.¹² These reports, which are often produced by national regulatory authorities, assess the projected balance of supply and demand for the next five year period and the prospects for security of electricity supply for the following five to fifteen year period. Many Member States rely heavily on analysis carried out by transmission system operators, who are in any case consulted in their preparation.

These reports rely on different methodologies in different Member States, in particular to the treatment of interconnector capacity to meet demand and the reliability of variable wind and solar generation. This reflects the extent to which security of supply has often been considered primarily on a local basis. To an extent this can make sense, if the problems which emerge are local in their impact because of the difficulty transporting electricity long distances and the need for local system support. However it can also leave individual Member States to use very conservative assumptions or even

¹¹ See for example ENTSO-E (2012) Communication Paper on Capacity Remuneration Mechanisms.

¹² Article 4 of Directive 2009/72/EC and Article 7 of Directive 2005/89/EC

discounting the potential for cross border solutions to generation adequacy issues despite increased integration of systems and markets.

3.3. Towards a more coordinated approach?

A well-functioning internal market contributes to ensuring adequacy and security of supply in all Member States. There is already a high degree of interdependency between Member States, and this will deepen in the future. EU and national energy policy development needs to take account of how each national electricity system is affected by decisions in neighbouring countries. Working together will help to keep costs down and more easily ensure security of supply. To get full benefit from this also requires a coordinated approach to the estimation of required and available capacity.

QUESTIONS

(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
- b. Regional Level
- c. European Level

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

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

(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?

(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?

4. MECHANISMS TO ADDRESS GENERATION ADEQUACY CONCERNS

The Electricity Directive provides for Member States to implement special tendering procedures or equivalently transparent and non-discriminatory procedures in case the generation capacity to be built under the normal authorisation procedure is not sufficient

to ensure security of supply.¹³ One way of implementing such procedures is the introduction of a capacity mechanism which ensures a longer term stream of revenue to (selected) generators and commits consumers to pay for the capacity provided.

4.1. Strategic reserves

The most basic capacity mechanism is a strategic reserve. Here capacity is procured, but kept for deployment in emergency situations generally by the transmission system operator. Often this reserve is made up of old plants which would otherwise be retired as uneconomical. The strategic reserve is withheld from the market or only bid into the market at extremely high prices. When it is dispatched by the transmission system operator during times of extreme scarcity it then also becomes the price setting plant meaning the strategic reserve effectively acts as a price cap in the market. Strategic reserves do not affect the market during normal periods and, because they are easily reversible, can be useful for supporting the transition away from fossil fuel based systems or facilitating nuclear phase outs.

Strategic reserves have interacted well with energy only markets where they have been used in Sweden and Finland, causing a minimum of distortion. Nonetheless, it is important that they be properly implemented – there must be clear rules as to when they can be deployed, in particular they should not be used to keep prices low, which could result in high emissions from inefficient old plants and discourage the development and deployment of new and more efficient technologies, including storage and demand side response. It is also important that such strategic reserves not be established in such a way that they reinforce the position of incumbents.

4.2. Capacity payments and markets

Other capacity mechanisms target generation capacity which continues to participate in the normal energy market. There are several varieties of such mechanisms:¹⁴

- (1) a capacity payment which is a fixed price paid for available capacity or
- (2) a capacity market where either: (a) the required quantity is centrally fixed and procured, for example by the transmission system operator, or (b) based on their customer profile, suppliers are obliged to buy an administratively determined quantity of certified capacity from generators on a market parallel to the normal energy market.

Capacity markets can be based on financial hedges against high prices which provide a steady cash flow to generators, or as payments for physical availability. Different variants of capacity mechanisms have been widely used in the United States, with varying degrees of success in achieving their aims.¹⁵ Because of their complexity,

¹³ Article 7 of Directive 2009/72/EC.

¹⁴ See Finon, D., Pignon, V., (2008) *Electricity and long-term capacity adequacy: the quest for regulatory mechanism compatible with electricity market* Utilities Policy 16 - for a survey of various designs of capacity mechanisms.

¹⁵ See for example, ISO New England (2012) *Using the Forward Capacity Market to Meet Strategic Challenges*.

capacity payments and capacity markets can have very deep effects on market operation, so that it becomes difficult to subsequently remove them. This is particularly the case where the mechanisms commit payments for long periods of time. This also makes it hard to correct for any distortions which later become obvious.

4.3. Capacity mechanisms in the internal market

In the internal market, the introduction of such mechanisms has led to difficult issues of design, complexity and cost. For example, in the single electricity market between Ireland and Northern Ireland a capacity payment is determined by the regulator *ex ante*, which is paid to all available generators. This has created difficulties in cross border trade with Great Britain with a capacity charge being imposed on exports and capacity uplift provided to imports to compensate for the effect of the payment on market prices. Spain also operates an explicit capacity payment, which was recently reviewed. This review in large part resulted in the design and operation of the mechanism in such a way to correct for the impact of other regulatory interventions, notably support schemes for particular other generation.

France is currently developing a capacity market based on supplier obligations to address concerns about meeting the peak demand in winter. The French Competition Authority has expressed reservations both about the need for such a mechanism and the impact on competition of its introduction, given the dominant position of EDF.¹⁶ The Competition Authority also points to problems in the French market as a result of regulated prices. The French Commission de Régulation de l'Énergie considers that the introduction of a capacity mechanisms will be particularly complex and requires coordination at the European level.¹⁷

As part of a wider programme of electricity market reform, which seems to result in government taking a more direct role in the market, the UK also intends to implement a capacity mechanism. This is despite currently very high capacity margins; the UK foresees increasing tightness as a fifth of existing generation capacity is due to close and new capacity is likely to be variable wind and solar and less flexible nuclear production. The UK system is likely to be based on a centralised capacity market. However, many details are still being developed, and many details of how the model would work, or when it would actually be implemented, are not yet clear.¹⁸

Meanwhile Italy is also planning to implement a system of reliability option contracts between generators and the transmission system operator, and Germany is providing for a system which would allow the regulator to approve contracts between transmission system operators and generators to ensure that generation capacity which is needed for grid stability reasons is not closed down.

Incompatible or poorly designed capacity mechanisms risk distorting trading, production and investment decisions in the internal market. They also risk discouraging innovative

¹⁶ Autorité de la Concurrence Avis n° 12-A-09 du 12 avril 2012.

¹⁷ Délibération de la Commission de régulation de l'énergie du 29 mars 2012.

¹⁸ UK Draft Energy Bill, May 2012

solutions, for example energy services providers who control demand based on wholesale market prices. If capacity mechanisms become more common in the internal market the potentially distortionary effects will become greater. Member States who continue to rely on normal internal market rules are affected by the capacity mechanisms implemented in their neighbours, and might even feel compelled to intervene on their own markets to compensate for the effects of decisions in their neighbours.

QUESTIONS

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

(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?

(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?

(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?

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

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

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

5. FRAMEWORK FOR ASSESSING CAPACITY MECHANISMS

The Electricity Security of Supply Directive requires Member States to ensure that measures which they adopt are non-discriminatory and do not place an unreasonable burden on the market actors, including market entrants and companies with small market shares. Member States must also take into account the impact of the measures on the cost of electricity to final customers.¹⁹

Capacity mechanisms attempt to ensure that electricity undertakings (often suppliers) assume the responsibility to provide or pay for generation capacity which they would not otherwise do, or at least not to the same extent, considering only their own commercial interests. It is possible therefore that such a mechanism constitutes a public service obligation.²⁰ Such obligations must be clearly defined, transparent, non-discriminatory, verifiable and guarantee equality of access for electricity undertakings of the Union to national consumers.²¹ When introducing public service obligations, Member States must be able to show they are necessary, proportionate and transitional in nature.²² In general the Commission considers that it would not be appropriate to attach specific public service obligations to an activity which can be provided satisfactorily under normal market conditions.

Obligations associated with capacity mechanisms will normally lie on suppliers or transmission system operators. However, generators will be the beneficiaries of the overall mechanism, receiving either cash payments or capacity certifications with a market value. Depending on design, State aid could therefore be involved in the payments to generators resulting from the mechanism. The test which the Commission applies to assessing State aid normally entails assessing if:²³

- The measure pursues a well-defined objective of common interest
- The measure is targeted at a well-identified market failure, i.e. the aid is needed because of a persistent inability of market forces, within an appropriate regulatory framework, to lead to materially more efficient outcomes in the market or to address important other public policy concerns.
- The policy instrument is appropriate to pursue the objective as compared to other alternatives, i.e. there is an adequacy between the problems encountered (objective) and the aid measure, in terms of its efficiency and effectiveness

¹⁹ Article 3(4) of Directive 2005/89/EC.

²⁰ See note of DG Energy and Transport on Directives 2003/54/EC and 2003/55/EC on the internal market in electricity and natural gas: measures to secure electricity supply 16.01.2004.

²¹ Article 3(2) of Directive 2009/72/EC.

²² Judgement of the Court in Case C-265/08 " First, such an intervention must be limited in duration to what is strictly necessary in order to achieve its objective... Secondly, the method of intervention used must not go beyond what is necessary to achieve the objective which is being pursued in the general economic interest... Thirdly, the requirement of proportionality must also be assessed with regard to the scope *ratione personae* of the measure, and, more particularly, its beneficiaries".

²³ These principles have been implemented, amongst others, in the 2008 Guidelines on State aid for Environmental Protection (EAG) OJ C 82 of 1.4.2008.

- The measure is necessary, i.e. it changes the behaviour of the beneficiaries and provides the right incentive framework
- The measure is proportional and limits the aid to the minimum so as to avoid any over-compensation
- The measure has a limited distortive impact on competition and trade in the EU, in particular in contributing to the integration of the internal energy market or not foreclosing national energy markets.

It is clear that the common aim of internal market and competition rules is to avoid distortive schemes at national level. Our view is that a coherent approach can and should be developed to ensure market interventions to deliver on clearly defined security of supply purposes, and ensuring that measures comply with the requirements of both, energy policy and competition policy. Our initial view is that the criteria set below should be considered.

Potential detailed criteria to apply to capacity mechanisms

- (1) *The necessity for a capacity mechanisms 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:*
 - *increased interconnection and in particular the completion of identified projects of Common interest.*
 - *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:*
 - *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).*
 - *distorting the commercial behaviour of generators in the day ahead and intraday markets.*
 - *distorting investment signals in the internal market leading to inefficient locational choices.*
 - *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;*
 - *The incentive on consumers or generators to respond to high prices at periods of scarce capacity should not be diminished.*
 - *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;*
 - *The mechanism should not strengthen or maintain the market power of incumbent firms.*
 - *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.*

QUESTIONS:

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

6. NEXT STEPS

The questions and reflection in this consultation paper reflect our current thoughts on ensuring generation adequacy and security of electricity supply in the internal market. We invite comments on all the questions directly raised and any other reflections which respondents may have.

Based on the responses we receive, and on further reflections and engagement with Member States and stakeholders, we will consider whether additional measures are needed, for example a Commission recommendation on the design of capacity mechanisms, or eventually legislative proposals

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Annex 1 Improving market functioning to help deliver generation adequacy

<i>Barriers to the market delivering generation adequacy</i>	<i>Policy responses</i>
<p style="text-align: center;">Technical</p> <p>Real time metering and billing is not in place for many consumers – reducing their ability to act on the market</p> <p>Implementation of energy efficiency measures through the whole energy chain</p>	<p style="text-align: center;">Facilitate technology deployment</p> <p>Roll out of smart grids and market arrangements to take advantage of demand response, demand side management, cogeneration and distributed generation</p> <p>Ensure efficient use of existing capacity</p> <p>Support the deployment of electricity storage technologies</p>
<p style="text-align: center;">Regulatory/political</p> <p>Political response to high prices demanded</p> <p>Difficulty distinguishing between market abuse and scarcity pricing</p> <p>Non-intervention often considered not credible</p>	<p style="text-align: center;">Facilitate competitive markets</p> <p>Wholesale: long term & spot</p> <p>Competitive retail markets</p> <p>Effective market oversight</p>
<p style="text-align: center;">Operational</p> <p>Problems in functioning of balancing markets</p>	<p style="text-align: center;">Reform balancing markets</p> <p>Improve intraday markets</p> <p>Ensure cost reflective balancing arrangements</p>