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C (2014) 5083 final

<p>In the published version of this decision, some information has been omitted, pursuant to articles 24 and 25 of Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty, concerning non-disclosure of information covered by professional secrecy. The omissions are shown thus [...].</p>		<p style="text-align: center;">PUBLIC VERSION</p> <p>This document is made available for information purposes only.</p>
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**Subject: State aid SA.35980 (2014/N-2) – United Kingdom  
Electricity market reform – Capacity market**

Sir,

## **1 PROCEDURE**

- (1) Following pre-notification contacts, the UK authorities notified to the Commission on 23 June 2014, in accordance with Article 108(3) of the Treaty on the Functioning of the European Union (TFEU), a measure to support capacity providers in the electricity market in Great Britain ("the measure").
- (2) In the course of the pre-notification contacts and the notification process the Commission received several submissions alleging the incompatibility of the measure with Article 107(3)(c). Sections 2 and 3 in this Decision include the main arguments, the observations of the UK and the Commission's assessment.

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## **2 DESCRIPTION OF THE MEASURE**

### **2.1 Overview of the measure**

- (3) The liberalisation of electricity markets and their increased integration in one internal electricity market creates challenges for ensuring generation adequacy<sup>1</sup>. With the development of a competitive internal electricity market with multiple producers and unbundled network operators, no single entity can on its own ensure the reliability of the electricity system any longer. The role of public authorities in monitoring and ensuring security of supply, including generation adequacy, has consequently become more important.
- (4) The United Kingdom (UK) have estimated that the electricity market in Great Britain (GB) will reach critical levels of generation adequacy around 2017/2018. The measure has been designed as a capacity market where the UK will organise centrally-managed auctions to procure the level of capacity required to ensure generation adequacy. The auction will be open to existing and new generators, demand side response (DSR) operators and storage operators. Successful bidders will receive a steady payment during the duration of the capacity agreement in return for a commitment to deliver electricity at times of system stress called on by the System Operator. Financial penalties apply if beneficiaries do not deliver the amount of energy according to their capacity obligation. The measure will be financed through a levy on electricity supplies.

### **2.2 Legal basis, duration, budget and governance arrangements**

- (5) The legal basis is the Energy Act 2013. Secondary legislation in the form of Electricity Capacity Regulations and Capacity Market Rules are expected to be adopted by the Parliament on 1 August 2014 and will govern the implementation of the measure. Aid will not be effectively granted until 2016 for DSR operators and until 2018 for all other capacity providers.
- (6) The UK seek state aid clearance for a period of 10 years although they have not communicated an end date for the Capacity Market. The UK will conduct reviews to assess the extent to which the Capacity Market effectively delivers on its objectives and remains the most effective form of intervention to address underlining market failures. The review will follow a two-stage process:
- The first stage requires Ofgem to carry out a five yearly review of those areas of the Capacity Market design that are covered in the Capacity Market Rules, looking at the effectiveness of the scheme and whether its existing arrangements are fit for purpose.
  - The second stage of the five yearly reviews involves the Government taking a holistic view of the Capacity Market and its objectives in order to address the high-level

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<sup>1</sup> Commission Staff Working Document "Generation Adequacy in the internal electricity market - guidance on public interventions". SWD(2013) 438 final

question of whether the Capacity Market is still needed in the future or should be phased out. This will be informed by the Government's annual internal consideration of whether to run the Capacity Market auction as well as the findings of Ofgem's first stage review. The Government will carry out public consultations consult as part of this review process.

- (7) The gross capacity revenues that go to providers of capacity have been modelled to be between GBP 0.9 billion and GBP 2.6 billion<sup>2</sup> in the period between 2018 to 2024 with payments highest in years when significant levels of new build capacity are required. In the period between 2016 to 2017 –only open to DSR operators- the expected capacity payments are expected to be between [...]\*
- (8) The measure will be implemented by the Government, the energy regulator (Ofgem), the Delivery Body (National Grid – 'NG'), the Settlement Body (a new Government-managed institution created under the Energy Act 2013) and the settlement service provider (Elexon). A brief high-level description of their roles and responsibilities is set out below.

#### *The Government*

- (9) The Government will remain responsible for the strategic oversight of the Capacity Market and for changes to the Regulations governing the scheme and to ensure continued accountability for key aspects of the Capacity Market design. The Regulations will include for example general eligibility criteria for entry to Capacity Market auctions, functions of the System Operator for delivery of the Capacity Market, and the settlement of payments.

#### *Ofgem*

- (10) The Government will design the Rules for the Capacity Market, but once adopted by Parliament and after the first capacity auction in 2014, the market regulator Ofgem will be responsible for amending them. The Capacity Market Rules include technical rules and procedures concerning pre-qualification and capacity auctions, the contents of capacity agreements and the obligations of capacity agreement holders. When considering to change the Rules, Ofgem will be bound by a set of objectives enshrined in the Regulations, which ensures transparency and confidence in the governance of the Capacity Market. Ofgem will also be responsible for the resolution of disputes between applicants about the outcome of pre-qualification.

#### *National Grid*

- (11) The System Operator will undertake the delivery role for the Capacity Market, including: providing advice to Ministers on the security of supply outlook and recommending the amount of capacity to auction in order to meet the reliability standard; pre-qualifying

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<sup>2</sup> In 2012 prices

\* *Business secret*

auction participants, administering the capacity auctions and issuing the contracts (so-called "capacity agreements") with the successful bidders; developing and administering new supporting procedures such as the provision of Capacity Market warnings.

- (12) The Government will set out the delivery functions of the System Operator in secondary legislation, which will become 'relevant requirements' enforceable by Ofgem. This will give the Government certainty about what will be delivered and a clear basis for Ofgem to manage NG's performance in its delivery role. A panel of technical experts will provide independent scrutiny of on NG's advice on the recommended amount of capacity to auction.

#### *The Settlement Body*

- (13) The Government will set up the Capacity Market Settlement Body to provide ultimate accountability, governance and control of the settlement process and payments disbursed under capacity agreements. The Settlement Body will be a private company owned by the Government and limited by shares. It will be responsible for setting its own internal governance so that it is able to meet its obligations, but the Government will retain overall control over it.

#### *The settlement service provider*

- (14) The Government announced the decision to contract functions out to Elexon Ltd. through the Official Journal of the European Union in February 2013. Elexon will operate as the settlement service provider, with responsibilities for carrying out calculations and determinations of capacity payments. Elexon's role as settlement service provider will be similar but more limited than the role it currently has under the Balancing and Settlement Code. A contract between the Settlement Body and Elexon will outline the details of the service to be delivered, the cost of that service and performance monitoring arrangements.

### **2.3 Beneficiaries**

#### *Eligibility*

- (15) Capacity providers will participate in the Capacity Market on the basis of 'Capacity Market Units' (CMUs). It is at CMU level at which pre-qualification applications are made, capacity agreements are held, obligations apply in times of system stress and penalties/over-delivery payments are calculated. Generation capacity (both existing and new), storage and DSR will be able to participate. The eligibility criteria are set out in recitals (16) to (18).
- (16) Generating units (defined with reference to: providing electricity, being capable of independent control, net output measured by half hourly meter(s), capacity in excess of 2MW) may participate individually as a CMU or in the aggregate with other eligible generating units under the following conditions:

- The units all form part of the same Trading Unit (i.e. power station); or
  - All the units are connected to the system at the same Boundary Point; that is the same site, but the Trading Unit concept does not apply; or
  - The aggregate capacity of all the units is between the minimum (2MW) threshold and 50MW (effectively embedded generation spread across several sites;
- (17) DSR CMUs are defined with reference to a commitment to reduce demand, with the DSR provider being (i) a DSR customer; (ii) owning the DSR customer; or (iii) having contractual DSR control over the DSR customer. Such commitment should cause the DSR customer to reduce the import of electricity (as measured by half hourly meters) and/or export electricity generated by on-site generating units which are owned by the DSR customer. In addition, each component should be connected to a half hourly meter and the provider's total DSR capacity should be between 2MW and 50MW.
- (18) The Capacity Market excludes capacity providers already in receipt of support from other measures. The following resources are not eligible to participate in the Capacity Market:
- Low-carbon generating plants receiving support through the Contracts for Difference (CfD) or small scale Feed-In-Tariff.
  - Renewable generators receiving support through the Renewables Obligation (RO), unless they choose to forego receiving RO payments (they will be allowed to participate once their RO contracts expire).
  - Plants in receipt of the Renewable Heat Incentive (RHI) – this is because the RHI has been designed to complement the RO and, in future, the CfD for renewables.
  - Plants in receipt of funding from the UK Carbon Capture and Storage (CCS) Commercialisation Competition – because the CfD for CCS has been designed to provide them with the additional support needed to be commercially viable.
  - Technologies in receipt of funding from the EU New Entrants Reserve 300, which aims to support emerging low carbon technologies such as CCS and tidal energy as they will also be eligible to receive support under the CfD.
  - Plants which were awarded 15 year contracts by NG to form part of the Short-Term Operating Reserve immediately prior to the initial Electricity Market Reform (EMR) policy proposals in 2010.

*Ineligibility of interconnected capacity to the first Auction (scheduled in December 2014)*

- (19) The UK submits that finding a way of enabling generating plants or DSR from outside GB to participate in the Capacity Market on equal terms as GB generation has proven complex and difficult. The EU Target Model, Third Energy Package and EU Network

Codes require that interconnectors are treated as transmission capacity, and that the flow of energy across borders is determined solely by electricity price differences. As a result, the UK has not yet been able to find a model which is compatible with the rules being implemented across the EU to harmonise the workings of wholesale electricity markets and which would enable interconnected capacity to participate effectively, while protecting the interests of consumers.

(20) The UK explained that interconnected capacity will not be eligible in the first auction (December 2014) due to the following constraints:

- Capacity to procure: A new methodology to de-rate the interconnector contribution in the auction would be needed. Closer cooperation with other member states on assessing generation adequacy are needed to eliminate potential free riding where countries have different reliability standards.
- Prequalification: It is currently not possible for the Delivery Body to independently complete the prequalification stage for a foreign plant. Cooperation with foreign TSOs on measurement and verification, dispatch for testing and data-sharing platforms would be needed.
- Auction: The auction would be open to gaming if foreign plant were allowed to participate. A new methodology would be needed to limit the amount of foreign generation up to the de-rated capacity of the interconnector. Furthermore the price-taker threshold is likely to be different in another market, meaning that the auction clearing price set in GB might not be appropriate for a plant in another market and a zonal auction might be necessary.
- Delivery: The obligation to deliver entails that generators must generate when a 4 hour capacity market warning is called. In another market, this could result in out of merit dispatch, causing market distortion. This would not render an additional security of supply benefit to the UK in a world where market coupling is fully implemented with electricity flows already responding to scarcity pricing.

(21) For 2014 only, in the absence of direct participation by interconnected capacity, the expected contribution from interconnection at times of GB system stress will be reflected in the amount of capacity auctioned. For example, if 1GW of imports are expected to be available at times of GB system stress, the amount of capacity auctioned in the Capacity Market will be reduced by 1GW.

(22) The UK has committed to enable the participation of interconnected capacity as of 2015 and is seeking a solution that meets the following objectives:

- where possible, capacity procured from non-GB sources must physically deliver electricity to the GB system at times of system stress;
- where there is no physical delivery of electricity to the GB system at times of system stress, penalties equivalent to those faced by GB capacity should be imposed; and

- the solution must be compatible with the EU Target Model and Third Energy Package requirements, and maximise compatibility with the internal energy market.

#### *Pre-qualification process*

- (23) Participation in the Capacity Market is not mandatory, although it will be mandatory for all licenced, eligible capacity to participate in the pre-qualification process, even if it does not intend to bid. The purpose of the pre-qualification is to ensure participants in the auction can deliver the capacity they offer, and the System Operator is able to adjust the amount of capacity to auction based on the volume of capacity opting out of the auction.
- (24) Any eligible capacity that opts out of the capacity auction will not be exposed to Capacity Market penalties for non-delivery, nor will they be eligible for any payment for over-delivery. Such capacity will be able to opt back into subsequent auctions and can participate in the secondary market. As with ineligible plants, the amount auctioned will be reduced to account for the amount of capacity of plants opting out.
- (25) To ensure reliable capacity is ready for the delivery year, the System Operator will undertake pre-qualification checks ahead of the auction to confirm the eligibility and bidding status of all potential capacity. Pre-qualification requirements will vary for different types of capacity (e.g. for generation and DSR).
- (26) As part of their pre-qualification application, applicants have to meet both generic and specific pre-qualification requirements, which vary depending on whether the unit is an existing or prospective generating unit, or a DSR unit. The generic requirements include basic administrative detail (contact details, licence status, corporate structure, location and various Directors' declarations), whilst existing generation units have to also demonstrate their historic performance. Prospective units will have to provide evidence of planning consent and connection agreement, a detailed construction plan and details of their expected capital expenditure relative to the duration of the capacity agreement being sought. They will also be required to lodge credit support (i.e. collateral) as an indication of their seriousness to participate in the auction and to deliver an operational unit by the start of the delivery year.
- (27) The System Operator will publish technology specific de-rating factors in advance of the pre-qualification window. These factors are based on class type historic performance over the previous seven years and represent the average expected contribution of plants at times of system stress on a technology specific basis. The relevant factors will apply to all plants of a specific technology, irrespective of their age or status. Capacity providers which are successful in the capacity auction will receive payments (at the auction clearing price) proportionate to their de-rating factor multiplied by their connection capacity (volume which their physical grid connection permits them to export onto the system). One of the purposes of the penalty regime is to fine tune the level of payments from this estimated performance level to the actual performance level of individual plants.

## 2.4 The Auctioning process

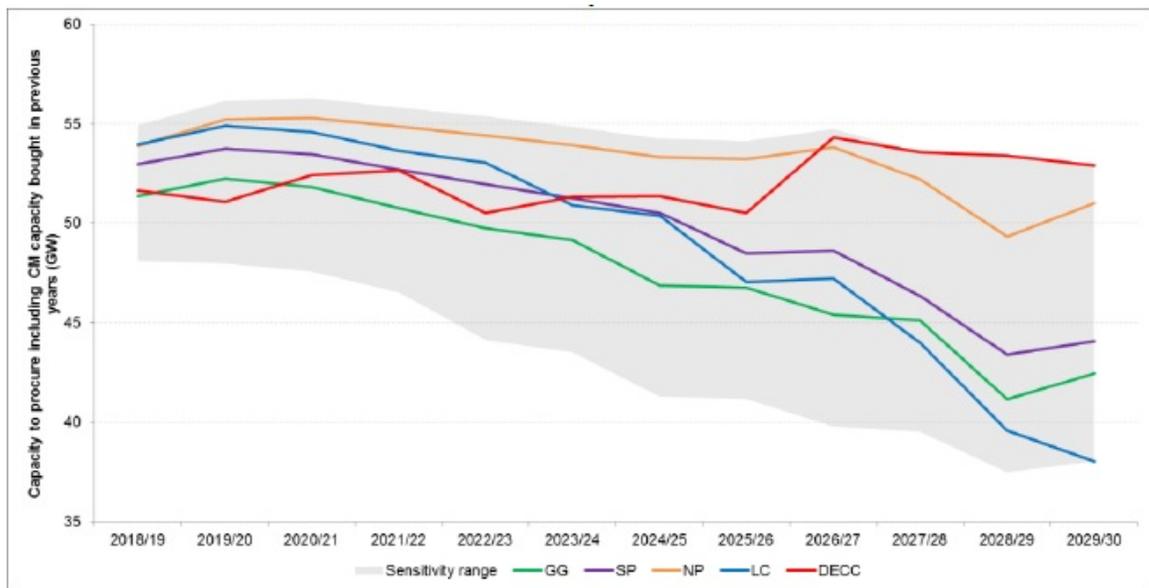
### *Establishing the amount of capacity to auction*

- (28) The decision whether to run the capacity auctions will be taken annually and it will be informed by the independent electricity capacity assessment carried out by the System Operator. Looking 15 years ahead, NG will assess the likely evolution of future capacity margins, the contribution of interconnected capacity and DSR, and recommend the amount of capacity needed to deliver the enduring reliability standard. The Government will therefore be able to annually assess whether a capacity auction is needed.
- (29) The decision on how much capacity to contract in each capacity auction will be informed by an enduring reliability standard. A reliability standard is an objective level of security of electricity supply, and will be the basis for establishing a demand curve in advance of each capacity auction.
- (30) The UK notes that no electricity system can ever be 100% reliable, and there is always some trade-off between the cost of providing additional back up capacity and the level of reliability achieved. Establishing a reliability standard allows this trade-off to be made as it identifies the point at which additional security benefits are outweighed by the costs of providing capacity. It aims to give investors and market participants clarity over the Government's long-term security of supply objectives and to help reduce costs to consumers. It also aims to ensure that the Government cannot contract more than the economically efficient level of capacity, which prevents over-procurement of GB capacity.
- (31) The Government has set an enduring reliability standard for the GB electricity market equal to a loss of load expectation of 3 hours/year. This translates as a system security level of 99.97%. The loss of load expectation is the number of hours/periods per annum in which, over the long term, it is statistically expected that supply will not meet demand, and which reflects the economically efficient level of capacity. The reliability standard has been established on an enduring basis, but there will be an opportunity for the Government to review it should it prove necessary.
- (32) The reliability standard will guide how much capacity is auctioned in the Capacity Market. Each year, the System Operator will set out how much capacity is needed to meet the reliability standard and will provide advice to the Government by 30 May. The recommendation on the amount of capacity to contract in the capacity auctions to meet the reliability standard will be based on NG's assessment of different scenarios for the level of electricity demand and the amount of capacity provided by power plants which are not eligible for capacity payments, e.g. low carbon generation.
- (33) The System Operator uses a range of demand scenarios as well as sensitivities to account for uncertainties in weather, plant availability, interconnector flows and levels of embedded generation. The System Operator then nets off capacity that is not able to

participate in the first auction (for example low carbon plant receiving other support (e.g. CfDs) and interconnection).

- (34) The System Operator then uses a ‘robust optimisation’ methodology which minimises the worst possible outcome in terms of cost of capacity and unserved demand across the scenarios and sensitivities. The modelling results in a set of options for a single amount to procure and a recommendation. Figure 1<sup>3</sup> shows the range in capacity to procure that could be required in the period 2018 to 2030.

**Figure 1: Estimates of the capacity to procure under different scenarios (GW / years)**

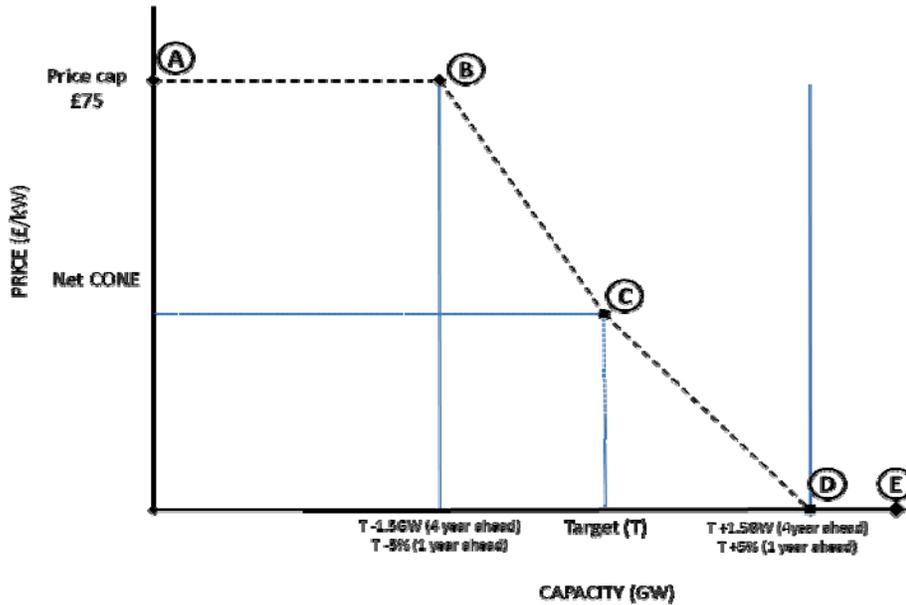


- (35) The Government will take the final decision over how much capacity to procure in each auction on the basis of a demand curve, which is derived according to the methodology set out in the recitals below.
- (36) The demand curve will give the Government some flexibility on the amount of capacity to contract from year to year depending on cost. The sloping demand curve will allow a trade-off to be made between reliability and cost, so that less capacity is procured in a given year if the price is very high. It also helps mitigate gaming risks because it provides an auction price cap, and flexibility to procure less capacity if the price is high – both of which reduce opportunities for participants to push up prices by exercising market power.
- (37) The Government will publish the demand curve in advance of each capacity auction. The demand curve gives the relationship between the price of capacity and the amount of capacity in the auction demanded by the System Operator. Each demand curve will be constructed around the target capacity level required to meet the reliability standard indicated by the System Operator and an estimate of the reasonable cost of new capacity

<sup>3</sup> NG EMR Electricity Capacity Report June 2014. Page 56. The different scenarios are explained in pages 25-29.

(the net cost of new entry or ‘net-CONE’). The intersection of these target capacity and net-CONE fixes one point in the demand curve. Figure 2 below presents an example of the capacity demand curve.

**Figure 2: Illustrative capacity demand curve. Source: UK authorities**



- (38) Net-CONE will be determined based on the expected clearing price of capacity in the auction and will be revised if necessary for each auction, for instance based on new engineering cost estimates for new build and on information gained in previous auctions. The cost of new entry will be based on estimates of the capital cost of new built capacity provided by a report<sup>4</sup> commissioned by the UK authorities assuming a 7.5% hurdle rate and a 25 year payback period.
- (39) Alongside the target capacity level and the net-CONE, other key parameters of the demand curve are: the auction price cap (the maximum price at which Government is willing to procure capacity), the price taker threshold (the maximum price at which existing plants can offer capacity in the auction<sup>5</sup>) and the minimum level of supply needed to hold the auction (a minimum competition requirement). The Government will confirm the final auction parameters for each capacity auction just before the relevant pre-qualification window opens.
- (40) The auction price cap determines the top of the demand curve – i.e. the price at which no more capacity will be auctioned. The purpose of a price cap is to protect British consumers from unforeseen problems with the auction, such as a lack of competition or abuse of market power by participants. However, setting the auction price cap too low could put off bidders and reduce competition, so it is important that the price cap is set at

<sup>4</sup> Electricity generation cost model. 2013 update of non-renewable technologies. April 2013. Prepared by Parsons Brinckerhoff for the Department of Energy and Climate Change. PIMS Number: 3512649A

<sup>5</sup> See recitals (53) and (54)

a level that encourages competition in the capacity auction, and allows the market to set an efficient price for new capacity based on participants' judgement of the risks and potential returns in the electricity and capacity markets. Getting the level of the price cap right depends on an assessment of the degree of uncertainty around the central estimate of net-CONE.

- (41) The Government set the price cap at the level of GBP 75/kW because this is above the modelled clearing price in the auction under a range of credible scenarios, yet not so high as to allow plants to exercise significant market power if there is limited new build participating. It also acts to ensure that new build cannot seek to recover all its fixed costs in its auction bid – it must take at least some account of energy market revenues and capacity market payments beyond the initial contract length for the project to be viable.
- (42) The Government will also have a further opportunity ahead of the auction to satisfy itself that there is sufficient competition in the auction. Parties that have prequalified to participate in the auction must commit two weeks ahead of the auction if they will offer capacity into the auction. The Government can then review the list of capacity units that will be participating in the auction – considering for instance the volume of supply offered, the mix of technologies, and the ownership of units being offered – and can cancel the auction if it is not satisfied that the process would be sufficiently competitive to achieve value for consumers.

#### *Auction frequency and format*

- (43) The capacity auction is held every year for delivery in four years' time: e.g. the 2014 auction will be for delivery in 2018/19, with the delivery year running from 1 October 2018 to 30 September 2019.
- (44) A further year-ahead auction will be held in the year immediately prior to the delivery year of the main auction. The process for setting the demand curve for this auction is the same as that for the main (four-year ahead) auction – with the final decision taken by the Government based on an analysis provided by the System Operator. The one year ahead auction ensures the right amount of capacity is procured when more accurate demand forecasts are available and is important for enabling DSR capacity (which finds it difficult to participate in an auction four years ahead of delivery) to actively participate in the mechanism.
- (45) Some capacity will be held back from the four year ahead auction and 'reserved' for the year ahead auction. The amount of reserved capacity will be based on an assessment of the amount of the cost-effective DSR that could participate in an auction, and will be made public when the demand curve for the four year ahead auction is published.
- (46) If demand falls between the four-year ahead and year ahead auctions, the amount of capacity auctioned in the year ahead auction will be reduced. However, because the year ahead auctions provide a better route to market for DSR, the Government commits to procure in the year ahead auctions at least 50% of the capacity reserved four years

earlier. Flexibility will be retained to remove this guarantee if DSR does not prove cost-effective in the long run or if the DSR industry is considered sufficiently mature.

- (47) The Government expects to run four year and one year ahead capacity auctions every year, but once prequalification for an auction has been completed, the Government will be able to make a final decision about whether to hold a capacity auction.
- (48) The Government will have discretion to cancel/postpone the auction at any point up to the start of the first round of the auction. If the Government does not choose to cancel the auction, the auction will automatically proceed. Once the auction has started, the Government only has discretion to reject the result of the auction if there is evidence that NG, as delivery body, has not run the auction in accordance with the rules. If the Government does not choose to cancel the auction, the auction is automatically validated. Once an auction has commenced, there will be no Government discretion to influence its outcome.
- (49) Each Capacity Market auction will be a descending-clock, pay-as-clear auction in which all successful participants are paid the last-accepted bid. The auction is run on the basis of pre-defined rules. The auctioneer announces a high price at the beginning of the auction and eligible participants submit bids to indicate how much capacity they are willing to supply at that price. This process is repeated in successive rounds according to a pre-determined schedule until the auction discovers the lowest price at which demand equals supply. All successful participants are paid the same clearing price (pay-as-clear model). In addition, there exist a number of measures aimed at minimising gaming risks and ensuring an efficient outcome.
- (50) When deciding how much capacity to provide at any given capacity price, participants are expected to factor in the possibility of earning revenues on the energy market. Expected energy market revenues will vary by provider depending on their expected load factors, wholesale prices and fuel and carbon costs.
- (51) There will also be two 'transitional' auctions limited to DSR capacity to support the growth of this sector and ensure it can compete in the Capacity Market in the future. The first DSR auction is scheduled for 2015 for a delivery year of 1 Oct 2016 to 30 Sept 2017; the second DSR auction for Q4 2016 for a delivery year of 1 Oct 2017 – 30 Sept 2018.

#### *Price takers and price makers*

- (52) To mitigate market power in the auction, potential capacity providers who have successfully pre-qualified are classified as either 'price takers' (who cannot bid above a relatively low threshold) or 'price makers' (who can). Existing capacity providers will be by price takers by default.. New entrants and DSR resources will be classified as price makers, and will be free to bid up to the overall auction price cap. The UK submits that this distinction reinforces incentives for participants to bid at true value of their capacity and mitigates the risk that existing plants with lower costs may seek to set a high price in years where new entry is not needed. According to the UK, the price taker threshold

should be set at a level that captures the majority of existing plant, while being at a price low enough to mitigate gaming risk. The price taker threshold has been set at GBP 25/kW (50% net CONE) for the first auction. This is high enough to capture the majority of existing plant. The UK's modelling suggests that this will capture around 80% of existing plant. GBP 25/kW is also significantly below the expected cost of new entry. As a result, a price taker threshold of GBP 25/kW also mitigates gaming risk.

- (53) Existing plants with particularly high costs can be allowed to participate as price makers (and bid higher than the price taker threshold), but they have to provide a justification for needing a higher level of payment (for example a board certificate and business plan presented to the provider's board). This justification must be provided to an appointed third party who will certify receipt of it to NG. Ofgem will be able to request this information from the third party using its information gathering powers as part of any investigation into abuse of market power.
- (54) Any existing providers that bid at a price above the 'price maker' threshold and do not receive a capacity agreement in the auction, but continue to operate in the delivery year, are likely to be investigated by Ofgem, which may use the information provided alongside the price setting auction bid.
- (55) New entrants will be able to set a price without justifying their bid, though if it were perceived that they were seeking to exercise market power this could be also subject to investigation by Ofgem as part of its normal enforcement role. The level of bid would in any case be capped by the price cap set in the demand curve provided in advance of the auction.

#### *Capacity Agreement duration*

- (56) If successful at the auction, capacity providers are awarded a capacity agreement at the clearing price. The length of available capacity agreements varies to ensure a level playing field between capacity providers.
- (57) Most existing capacity providers will have access to one year agreements; capacity providers undertaking capital expenditure above a GBP 125/kW threshold (refurbishing plants) will be eligible for capacity agreements of up to a maximum of 3 years; capacity providers undertaking capital expenditure above GBP 250/kW (new plants) will be eligible for capacity agreements up to a maximum of 15 years. Agreements longer than 1 year will only be available to participants in the four year ahead auction.
- (58) To ensure regulatory certainty and foster investors' confidence in the mechanisms, the key terms of a capacity agreement will be 'grandfathered'<sup>6</sup> (subject to any future regulation to the contrary). These key terms are:

- agreement length;

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<sup>6</sup> A grandfather clause is a provision in which an old rule continues to apply to some existing situations while a new rule will apply to all future cases

- capacity price and entitlement to payment;
- capacity obligation and de-rating figure;
- completion milestones and termination fees applicable;
- maximum liability for penalties.

(59) The rationale for longer term contracts for new entrants is to help promote competitive new entry into the market. Allowing new entrants to receive a long term contract enables new entrants to secure lower-cost financing for their investment. This can help mitigate barriers to entry for independent firms who cannot finance investment in new capacity on the back of revenues from other plant in their portfolio. By encouraging competition in the market, longer term contracts can therefore help lowering costs for consumers in both the energy and capacity markets. Longer term contracts should also reduce the risk that participants with high investment or refurbishment costs load all of these costs into a single year agreement.

## **2.5 Secondary market (trading)**

(60) Between auction and delivery and in the delivery year/s, participants will be able to adjust their position through trading, e.g. by taking on a greater or lesser obligation, or finding alternative capacity to meet temporary shortfalls. Secondary trading is an important tool for parties to manage their risk of exposure to penalties within the Capacity Market. There are different forms of secondary trading allowed under the Capacity Market: financial trading, volume reallocation and obligation trading.

## **2.6 Delivery**

(61) The Capacity Market follows a ‘delivered energy’ model: capacity providers are obliged to deliver energy whenever needed to ensure security of supply, i.e. in real system stress situations. They face penalties if they fail to do so. The model also includes additional physical testing of capacity. Failure to demonstrate capacity to the required level on the requisite number of occasions would result in capacity payments being forfeited until successfully demonstrated.

### *The capacity agreement obligation*

(62) Under the capacity agreement obligation, system stress events are defined as any half hour settlement periods in which either voltage control or controlled load shedding are experienced at any point on the system for 15 minutes or longer. Providers will be required to determine their own response at such times, and avoid breaching any existing code or licence conditions.

(63) To ensure participants are able to adequately manage the risk of exposure to penalties, e.g. the risk that a number of plants simultaneously trip, the System Operator will publish (based on a pre-determined methodology) a notice of system stress via a ‘Capacity Market warning’. Unless this warning has been issued, a scarcity event will not trigger Capacity Market penalties or ‘over-delivery’ payments.

- (64) Capacity agreements will oblige participants to deliver a specified quantity of electricity. A provider's obligation at the time of stress events is calculated from their obligations they entered through the four-year and year-ahead auctions, plus any secondary traded obligations they entered for the specific settlement periods in which a stress event occurs.
- (65) In stress periods preceded by a Capacity Market warning of at least four hours' notice, providers' obligations will be 'load following'. That means they will only be required to be generating electricity or reducing demand up to the total level of their obligation if all capacity, for which capacity agreements have been concluded in the market, is necessary to meet demand. In a stress event where only 70% of such total capacity is necessary to meet demand, each provider will only be required to generate electricity or reduce demand up to 70% of their full capacity obligation.
- (66) Load following obligations are appropriate to ensure generators have incentives to operate efficiently in the market, and are proportionate to the harm caused to consumers by any lost load. If every participant risked being penalised for their full total capacity obligation whenever there was system stress, the Capacity Market would create signals for plants to run warm even when it was economically inefficient for them to do so – increasing both emissions and consumer bills.

#### *Penalties*

- (67) The penalty regime aims to provide capacity providers with incentives to deliver energy when needed. Units which perform below the expected level of performance will be penalised, while those that exceed the expected level will receive over-delivery payments, so that at the end of the year each unit's capacity payments will broadly reflect their performance. The penalty regime consists of three main elements:
- a monthly liability cap of 200% of a provider's monthly capacity revenues, which, given the weighting of monthly payments according to system demand, may expose providers to a penalty liability of up to 20% of their annual revenue in any one month.
  - an overarching annual cap of 100% of annual revenues.
  - a penalty rate set at 1/24th of a provider's annual capacity payments.

#### *Testing regime*

- (68) The penalty regime is complemented by a rigorous system of performance demonstrations to ensure capacity providers are able to deliver energy when needed and only receive capacity payments if reliable. This is especially important for those delivery years with no stress events in which testing providers' performance ensures that providers are physically capable of delivering as per their capacity obligations.

## 2.7 Financing of the measure and payment flows

- (69) The costs of the Capacity Market (i.e. those incurred to fund capacity payments to providers) will be paid by all licensed suppliers according to the following process:
- Payments will be profiled according to system demand – so capacity providers will receive a higher proportion of their payments during months of high demand (i.e. over the winter) and a lower proportion in periods of low demand.
  - Three months before the start of the capacity year suppliers forecast their demand over the period 4pm-7pm on all weekdays from the start of November to the end of February and notify these estimates to the settlement body.
  - Supplier charges are determined based on their forecast market share and monthly charges are levied upon licensed suppliers in order to match the payment profile to capacity providers. Supplier charges are calculated based on demand between 4-7pm on winter weekdays in order to incentivise suppliers to reduce their customers' electricity demand at the times when demand is typically highest. This should reduce the amount of capacity that is needed, and therefore will reduce the cost of the Capacity Market.
  - Supplier charges are updated to reflect actual data on market share once it becomes available as with the existing Balancing and Settlement Code (BSC) reconciliation process. This reconciliation process continues for 14 months as revised demand data is received.
- (70) All payment flows associated with the Capacity Market, for all participants, will be calculated and administered by the settlement body, assisted by a settlement service provider (Elexon). The role and responsibilities of the Settlement Body and Elexon are outlined in section 2.2 above.
- (71) Capacity payments are determined by the amounts set out in each provider's capacity agreement following the outcome of the relevant auction for each delivery year: capacity payments equal the amount of capacity that successful capacity providers have bid in the capacity auction, multiplied by the clearing price.
- (72) Funds received by the settlement body will be held in a non-interest bearing Government Banking Service bank account. The settlement body will also be responsible for collecting, holding and (where necessary) returning any collateral that has been posted by new-build generators or DSR providers as part of the pre-qualification process in advance of each capacity auction.
- (73) The principal financial flows to and from the settlement body are as follows:
- Suppliers are obliged to pay to the settlement body 'settlement body charges' on a monthly basis beginning from the financial year 2015/2016. The 'settlement body charge' will cover the administrative costs of maintaining the Capacity Market

settlement function incurred by the settlement body (and its agent). The collection of these payments will happen according to the April-March UK financial year, so to a separate timetable to other capacity market payment flows which will run according to the October-September capacity year.

- Suppliers are obliged to provide a credit cover before the start of each month in the delivery year. This cover must equal 110% of their supplier monthly charge and is intended to ensure that payment flows to the capacity provider can continue to be made in the event that a supplier defaults.
- Suppliers are obliged to pay a ‘supplier monthly charge’ to the settlement body no later than 24 working days after the end of each month in the delivery year. The supplier monthly charge is an obligation on suppliers (via a condition in their supply licence) to fund the Capacity Market.
- In the event of any under-performance against their capacity obligations during a stress event occurring in the delivery year, capacity providers will be obliged to pay to the settlement body a ‘penalty charge’. This must be paid by no later than 24 working days after the end of the month.
- The settlement body will pay providers a ‘capacity payment’. This will be an amount determined according to their capacity obligation (the amount set in the capacity auction) within 29 days after the end of each month within the delivery year. All payments to providers will be funded by the revenue from the charges levied upon licenced suppliers. In the event that a capacity provider has failed to pay its penalty charge, the provider’s payments will be withheld until the necessary penalty charge has been recovered. Actual payments to providers will take account of any obligation trading that has taken place between the auction and the delivery period.
- In the event that capacity providers over-deliver against their capacity obligations during a stress event occurring in the delivery year, the settlement body will pay an ‘over-delivery payment’. Over-delivery payments due to each capacity provider are calculated at the end of the capacity year, and are paid using the funds that have been collected as penalties over the course of the year. This will not increase the overall level of capacity payment in a given year – as payments for over-delivery will offset the penalties collected for non-delivery.
- If applicable, the settlement body will return to suppliers a ‘penalty residual supplier amount’. This will be the revenue remaining after over-delivery payments that have accumulated over the year have been paid at the necessary rate.

## **2.8 Generation adequacy in Great Britain**

### *The electricity market in Great Britain*

- (74) On 1 April 2005, the UK introduced in Great Britain a single set of wholesale electricity trading and transmission arrangements known as BETTA (British Electricity Trading and

Transmission Arrangements). BETTA is based on bilateral trading between generators, suppliers, customers and traders, and participants self-dispatch rather than being dispatched centrally.

- (75) Under BETTA, contracts for electricity are agreed in forwards and futures markets from several years up to 24 hours ahead of a given half hour delivery period. Short-term power exchanges and energy brokers give participants the opportunity to fine tune their contract positions from 1 to 24 hours before delivery. All the deals are bilateral, and are settled at the price registered on the power exchange or agreed bilaterally or through a broker.
- (76) Under BETTA, the wholesale electricity price rewards generators for their electricity and capacity, and investors must decide to invest based on their expectation of recovering the costs of this investment through selling electricity in the wholesale electricity market.
- (77) Closer to delivery, there is a balancing mechanism through which the System Operator accepts offers and bids for electricity close to real time. This enables the System Operator to balance supply and demand. At 'gate closure', 1 hour before each half hour delivery period, generators are required to inform the System Operator of the energy they are contracted to deliver and the expected output from each plant. Suppliers (retailers) must declare the amount they have contracted to buy, which should be the amount they expect their customers to consume. Finally, an imbalance settlement process makes payments to and from those market participants whose contracted positions do not match their actual metered electricity production or consumption. It also settles other costs of balancing the system. Participants face a relatively penal 'cash-out' price if their contracted positions do not match their actual consumption or production. Therefore the imbalance settlement or cash-out price incentivises participants to help balance the system in real time.
- (78) In 2012, the UK had a total of 89.2GW of electricity generating capacity. In addition, GB had export capacity of 4GW to and from France, the Netherlands and Ireland.

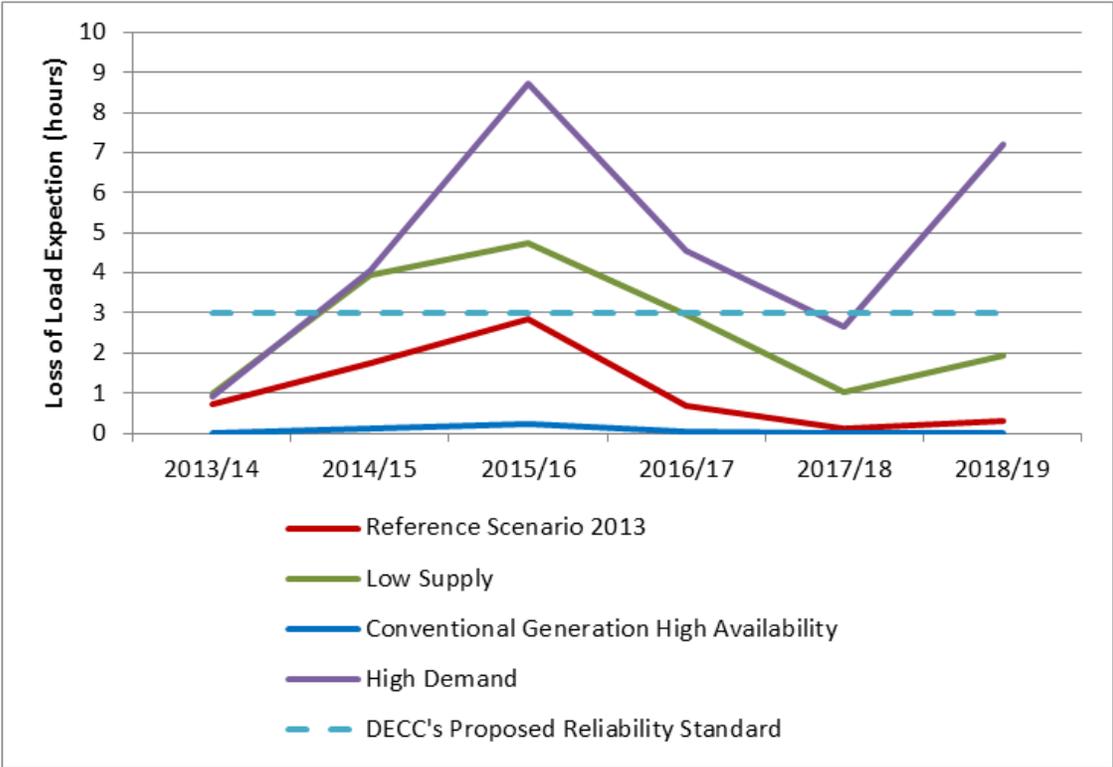
*Insufficient generation adequacy levels in the coming years*

- (79) The Reliability standard is expressed in terms of a Loss of Load Expectation (LOLE). This involves setting a standard which sets out the average number of hours per year in which demand is not expected to be met by supply in a typical year. LOLE represents the number of hours per annum in which, over the long-term, it is statistically expected that supply will not meet demand. This is a probabilistic approach – that is, the actual amount will vary depending on the circumstances in a particular year, for example how cold the winter is; whether or not an unusually large number of power plants fail to work on a given occasion; the power output from wind generation at peak demand; and, all the other factors which affect the balance of electricity supply and demand. However, it is important to note when interpreting this metric that a certain level of loss of load is not equivalent to the same amount of blackouts; in most cases, loss of load would be managed without significant impacts on consumers. The critical level established by the UK is a LOLE of greater than three hours.

(80) The Government notes that, regardless of the modelling approach chosen, the future outlook for electricity security of supply is very difficult to project with full confidence due to the sensitivity to key assumptions including electricity demand, retirement decisions, new build, the contribution of interconnection, and the availability factors of different technologies.

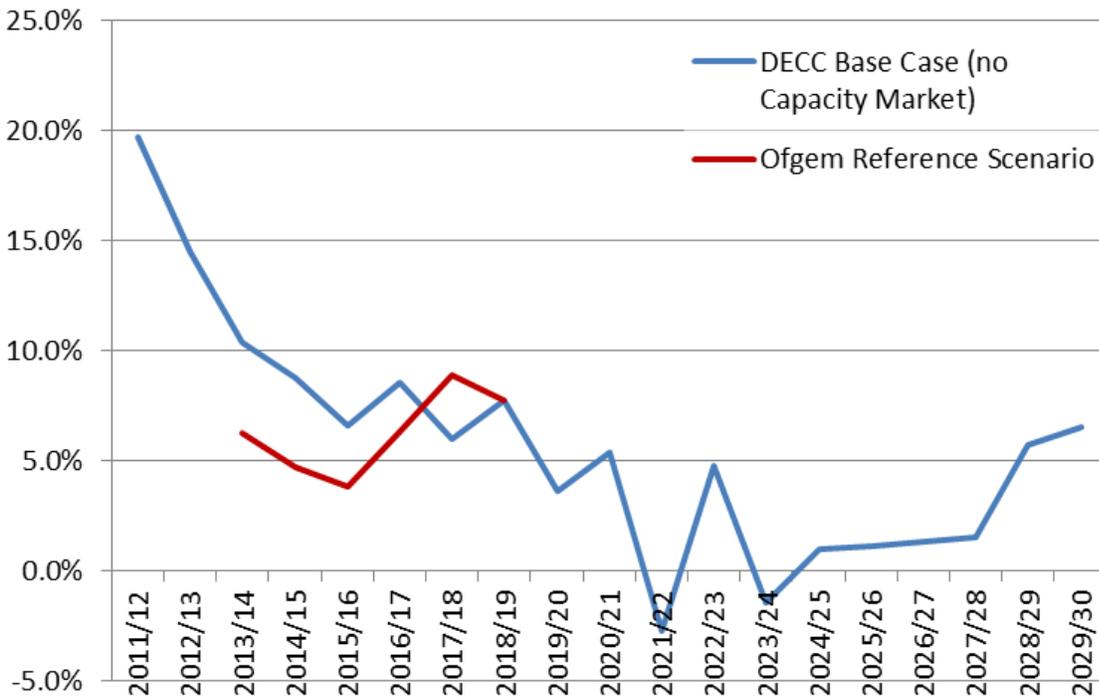
(81) In Ofgem’s 2013 Electricity Capacity Assessment, LOLE are shown to rise to up to 9 hours in 2015/16 (although noting that there is little impact in the Conventional Generation High Availability case), they then recover before rising again in 2018/19. The range of scenarios demonstrates the uncertainty with the high end of the range rising above 3 hours in 2018/19 making, according to the UK, a strong case for intervention. Ofgem's reference scenario assumes 0.75GW of net exports in the winter season.

**Figure 3: Loss of load expectation and reliability standard. Source: Ofgem, DECC analysis**



(82) The UK Department of Energy and Climate Change (DECC) has also carried out simulations of investment in generation up to 2030. DECC's Base Case scenario without a capacity market presents a similar trend to the Ofgem analysis up to 2016/17. Beyond 2016/17, DECC's Base Case scenario sees a downward trend in capacity margins continuing into the early 2020s. DECC's modelling assumes an additional 2.9GW of interconnection coming forward by 2030 and assumes that interconnectors are, on a net basis (i.e. taking all interconnection capacity together), neither importing nor exporting at times of peak demand.

**Figure 4: Long-term estimates of de-rated capacity margins. Source: Ofgem 2013, DECC analysis 2013**



*The reasons behind the decreasing levels of generation adequacy*

- (83) The UK submits that two main market failures explain why the existing market arrangements are not expected to ensure the targeted reliability standard.
- (84) The first market failure is that reliability is a public good. Customers cannot choose their desired level of reliability, since the System Operator cannot selectively disconnect them, and consumers do not respond to real-time changes in the wholesale price. It can therefore be expected that capacity providers will not provide the socially optimal level of reliability in the absence of intervention. This may also lead to high costs to society as a result of having an unreliable electricity supply. These would be external costs if they are not charged to generators.
- (85) The second market failure is the ‘missing money’ problem. The concept has been identified and described in academic literature and affects energy-only markets<sup>7</sup>. In theory the inability of consumers to select their desired level of reliability could be addressed in an energy-only market by allowing prices to rise to a level reflecting the average value of lost load, that is the price at which consumers would no longer be willing to pay for energy and allowing generators to receive scarcity rents. However, in practice an energy-only market may fail to send the correct market signals to ensure optimal security of supply and to enable investors to obtain project finance for building new capacity. This means that

<sup>7</sup> Cramton and Stoft (2006): ‘The Convergence of Market Designs for Adequate Generating Capacity’; Joskow (2006): ‘Competitive Energy Markets and Investment in New Generating Capacity’; Cramton, Ockenfels and Stoft (2013): ‘Capacity Market Fundamentals’

energy market revenues alone may fail to bring forward sufficient investments in capacity due to ‘missing money’. The reasons why this may happen are twofold:

- Inability of prices to reflect scarcity: Current wholesale energy prices do not rise high enough to reflect the value of additional capacity at times of scarcity. This is due to the fact that charges to generators who are out of balance in the balancing mechanism (cash-out) do not reflect the full cost of the balancing actions taken by the System Operator (such as voltage reduction).
- Lack of certainty that prices will rise, even if they can: At times when the wholesale energy market prices should peak to high levels, investors are concerned that the Government/market regulator will act on a perceived abuse of market power, for example through the introduction of a price cap. They are also concerned that prices simply will not rise – for example, if wind capacity performs better than expected, reducing the opportunities for more expensive dispatchable capacity to run.

(86) The UK submits that "missing money" is not a theoretical problem. Historically, GB cash-out prices have not exceeded GBP 938/MWh. The UK submits that evidence from recent scarcity situations in the GB market also indicates that prices have not risen to the levels that would have been expected. The Government and Ofgem commissioned an independent study to estimate the value of lost load, which has concluded that the average value to consumers of preventing disconnections at times of system peak is around GBP 17,000/MWh<sup>8</sup>.

(87) The UK submits that the market failures are aggravated in the short and medium term by the very rapid closure plans of existing capacity: around a fifth of 2011 GB generation is due to close in the next decade.

*Additional measures to ensure generation adequacy*

(88) In addition to the notified measure, the UK is undertaking a range of actions in the GB electricity market that could help address the market failures listed above. The three main initiatives are listed below.

(89) The first measure aims at reducing overall electricity requirements and increasing the responsiveness of consumer demand. The UK is taking steps to reduce overall electricity requirements, for example through the Green Deal and Energy Company Obligation. The UK is also pursuing opportunities to encourage both lasting reductions in demand, (which the Government terms Electricity Demand Reduction or EDR) and short term reductions in demand like peak shaving / shifting (which the Government terms demand side response or DSR).

(90) The second measure is the reform of cash-out arrangements. Imbalance or cash-out prices provide market participants with incentives to ensure that the volumes of electricity they

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<sup>8</sup> London Economics ‘The Value of Lost Load (VoLL) for Electricity in Great Britain’ (2013).

sell or consume match the volumes they have contracted to sell or consume. Reform of the way the current market operates could help to ensure security of supply.

- (91) The UK is considering making cash-out prices ‘marginal’, to include a cost for disconnections on voltage reduction into the cash-out price calculations based on the value of lost load to consumers (up to GBP 6,000/MWh), to improve the way reserve is incorporated in cash-out prices and to move to a single cash-out price. The proposed cash-out reform would need to be implemented by NG and industry, and the timeline for implementation is therefore indicative, but it is expected that reform will be fully operational by winter 2018/2019, with some incremental changes expected to be in place by winter 2015/2016.
- (92) The Government believes that the Capacity Market and cash-out reform have distinct but complementary roles in seeking to ensure security of electricity supply. It is better to pursue the Capacity Market as well as supporting reform of the cash-out arrangements, rather than simply to rely on the cash-out reform for the following reasons:
- While cash-out reform should strengthen energy market investment incentives in the long term, it is expected to have a more limited impact on overall levels of investment in the short and medium term.<sup>9</sup> This is because generators sell almost all their energy in forward markets. However, over time the cash-out reform will lead prices in forward markets to rise as generators exploit arbitrage opportunities between forward markets and the price in the balancing mechanism;
  - Cash-out reform cannot address the increased riskiness of investment in thermal capacity as the power sector decarbonises: thermal capacity will increasingly run as backup and will have to recover its fixed costs through earning high prices on the few occasions where there is scarcity and prices spike;
  - In practice, the potential for scarcity rents is only likely to induce investments if a liquid market develops for ‘reliability options’ trading around a real-time price – whereby suppliers pay generators a fixed price in exchange for an option to buy energy at a strike price. This is unlikely to emerge under the proposed reform of cash-out arrangements but could develop if a balancing electricity market is introduced that can act as a robust reference market for options trading. Ofgem is considering this proposal but it is not certain that a successful outcome will be reached.
  - Even on the assumption that the cash-out reform is implemented within the expected timeline, it is unclear whether investors will have confidence that any new arrangements would be maintained. This is because when prices are allowed to peak to high levels, it becomes increasingly difficult for the regulator to assess whether very high prices are efficient market operation or profiteering. This means that generators may be averse to offering energy at a high price (for fear of investigation for abuse of

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<sup>9</sup> Note however that cash out reform will provide significantly improved short term price signals for delivery, and therefore improved signals for investment in flexible capacity.

market), or that they may expect the Government to intervene and cap wholesale prices if price spikes became more frequent in the future.

- In the event that cash-out reforms are put in place and work well to address market failures, cash-out prices will have the potential to reduce the cost of procuring capacity through the Capacity Market, so that the price paid for capacity should fall to zero in the auction.
- (93) The third measure is completing the internal energy market and supporting greater levels of interconnection. The UK has already implemented the Third Energy Package into national legislation and submits that it is contributing to the development of network codes. In particular, the market-related EU network codes, which harmonise the timeframes in which capacity is allocated and traded, will introduce a standard set of market rules across Europe and promote the implementation of a competitive pan-European energy market. The UK submits that these changes have the potential to improve the case for interconnector investment through more efficient utilisation of the assets.

The UK also submits that it actively participates in the EU process for identifying priority cross-border projects every two years as set out in the ‘TEN-E Regulation’. These priority projects receive ‘Projects of Common Interest’ (PCI) status enabling them to benefit from potentially faster planning and permitting procedures, potential regulatory incentives, and possible access to financial support from the Connecting Europe Facility. The first PCI list was adopted in October 2013. The Government supported six interconnection projects as PCIs (to France, Norway, and Belgium, and an interconnector between Northern Ireland and the Republic of Ireland).

- (94) Ofgem is also reviewing the existing GB electricity network system planning and delivery arrangements across the onshore, offshore and interconnection regimes, through its Integrated Transmission Planning and Regulation (ITPR) project. The outcome will provide a certain and workable regulatory framework for projects like NSN (Norway), Fablink (France) and IFA2 (France) to proceed.

## **2.9 Commitments by the Member State**

- (95) The UK will enable interconnected capacity to participate in the Capacity Market ahead of the second auction in 2015. New interconnectors, in particular, will have access to the auctions which should be non-discriminatory and provide new interconnectors with adequate incentives, for example taking into account different lead times.

## **2.10 The submission by a balancing services operator**

- (96) The Commission received letters from a provider of balancing services to the System Operator, on 30 May 2014 and on 26 June 2014, alleging the Capacity Mechanism would be incompatible with the EEAG. In particular, the operator alleges the exclusion of generators with long-term "Short-term operating reserve" (STOR) contracts (see recital (18) above) would be discriminatory and would undermine investment decisions on generation that preceded the introduction of the Capacity Mechanism.

(97) The arguments of the operator are as follows:

- that, according to EEAG, generation adequacy measures "...should be designed in a way so as to make it possible for any capacity which can effectively contribute to addressing the generation adequacy problem to participate in the measure", that measures should be "...delivered through a mechanism which allows for potentially different lead times, corresponding to the time needed to realise new investments by new generators using different technologies" and that "... restriction on participation can only be justified on the basis of insufficient technical performance required to address the generation adequacy problem";
- that a STOR holder operator is not in a different situation to any other plant with a commercial power purchase agreement ("PPA")<sup>10</sup>
- that the operator currently receives an internal rate of return lower than the rate the UK Government claims is necessary to secure investment in new plant, and would not receive windfall profits as a result of participating in the Capacity Mechanism; and
- that, as a consequence and contrary to the EEAG, the exclusion of generators with long-term STOR contracts would "...undermine investment decisions on generation which preceded the measure...".

## **2.11 The submission by an operator owning existing plants**

(98) On 25 June 2014 and on 3 July 2014 the Commission received letters from an operator that has acquired existing power plants. The operator claims that the difference in treatment between existing and new plants (restricting existing plants to one year capacity agreements and imposing on them "price taker" status) raises serious concerns regarding the compatibility of the Capacity Mechanism proposals.

(99) In particular, the operator submits that such differentiation between existing and new plant:

- is without objective basis (for example, it is not based on technical characteristics);
- is liable to result in more than the minimum aid required to meet the policy objective of ensuring security of supply, since it risks accelerating the closure of existing plant, increasing the requirement for new plant;
- is inconsistent with point (226) of the EEAG which states that "[t]he measure should be open to and provide adequate incentives to both existing and future generators...";

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<sup>10</sup> Typically, a long-term contract to provide electricity at an agreed price.

- Unnecessarily restricts competition (contradictory to points (80) and (232)(c) of the EEAG) by denying consumers the possibility to express preferences as to contract length and by restricting the bids of all existing plants, irrespective of the market power of the generator.

(100) The operator submitted numerical examples relating to both a generic plant and a specific plant showing that, under certain assumptions, existing Combined Cycle Gas Turbines (CCGTs) could provide capacity at a lower price than a new entrant CCGT for any given contract duration. However, existing CCGTs could lose out in an auction against new entrant CCGTs based on the proposed Capacity Mechanism design. This is because existing CCGTs would not have access to a contract duration longer than 1 year (or 3 years in the case of existing plant requiring significant refurbishment), which would enable them to lower their bids, as a result of the increased revenue certainty provided by a longer contract.

## **2.12 The submission by operators in the Demand Response market**

(101) On 9 June 2014 the Commission received a submission from a group of aggregators of the electricity consumption of industrial and commercial customers who provide certain ancillary services to the System Operator.

(102) In particular, the operators submit that:

- Offering one year capacity agreements to DSR makes the business case for DSR less favourable while locking in fossil fuel generation by offering 15 year agreements to generation is discriminatory and incompatible with points (220) and (227) of the EEAG;
- DSR is discouraged from participating in the main auctions four years ahead, since DSR providers who hold a capacity agreement for the enduring regime are not permitted to enter the transitional auctions;
- The costs of the Capacity Market are targeted at all winter peak demand periods rather than the specific hours in which it is used, thereby blunting the economic signal to consumers to shift their demand away from peak times and discouraging DSR, inconsistent with point (224)(b) of the EEAG;
- The Capacity Market does not recognise the benefits of DSR compared to generation in avoiding transmission and distribution losses; and
- Contrary to point (233)(d) of the EEAG, the treatment of DSR strengthens the dominance of fossil fuel generation.

## **2.13 Observations by UK**

(103) The UK does not contest that the support granted under the scheme constitutes State aid within the meaning of Article 107 (1) of the Treaty on the Functioning of the European

Union (TFEU). However, the UK submits that the Capacity Market is compatible with the internal market pursuant to Article 107 (3)(c) TFEU as it leads to an increased contribution to the EU objective of ensuring security of energy supply without adversely affecting trade and competition in the internal energy market to an extent contrary to the common interest.

(104) In particular, the UK submits that the Capacity Market meets the common principles applicable to the assessment of compatibility under the Guidelines on State aid for environmental protection and energy 2014-2020. According to the UK, the Capacity Market (i) contributes to an objective of common interest (security of electricity supply); (ii) remedies well-defined market failures; (iii) is an appropriate instrument to address the objective; (iv) will have an incentive effect on participants; (v) will provide proportionate support by limiting aid to the minimum necessary; and (vi) seeks to avoid any major undue effects on competition and trade between EU Member States.

(105) Regarding the submission by the STOR operator, the UK notes the following:

- Commercial PPAs are different to contracts with the TSO, as these are the contracts that consumers ultimately have to fund directly.
- Long-term STOR providers tend to make use of project finance. The UK's advice from a range of professionals from various types of finance and internally within the UK Government is that project finance is not available to a project exposed to merchant risk. The UK also notes that the technologies used by STOR providers (Open Cycle Gas Turbines, diesel) have high short-run marginal costs (in the range of GBP 70-200/MWh), meaning such projects cannot expect to run with a load factor higher than 1-2%. As such, the project finance case is likely to have "banked" only long-term STOR revenues and little or limited wholesale market revenues, so that long-term STOR revenues should be considered to fully remunerate the investment cost. The UK therefore considers that the impact of the Capacity Market on energy market revenues would have no impact on the business case for the project. Taking a combination of annual (i.e. short-term) STOR payments and capacity payments as the counterfactual, then, due to the higher legacy price of the existing long-term STOR contracts, participation of long-term STOR providers in the capacity market could lead to overpayment [...].
- Long-term STOR providers are not per se excluded from the Capacity Market – effectively, they are given a choice as to whether to give up their long-term STOR contract (without any fear of penalty from the System Operator) and enter both the Capacity Market and the annual STOR tender process; or to choose to retain their long-term STOR contract and remain outside of the Capacity Market. The UK acknowledges that the long-term STOR contract may be an inherent part of providers' financing and that, as such, relinquishing the long-term STOR contract may require re-financing. However, the UK notes that if long-term STOR providers see a commercial case for relinquishing their long-term STOR contract and participating in the capacity mechanism, they may make the case to their lenders and seek new financing terms. Long-term STOR providers would not be required to

relinquish their STOR contract unless they were successful in the capacity auction i.e. there is no circumstance where they would be left with neither a long-term STOR contract nor capacity agreement.

- The same concerns regarding over-compensation would not be present in the annual STOR auctions. Since the STOR auctions for annual contracts occur after the Capacity Market auction has taken place, providers will be able to factor in their Capacity Market revenues before bidding in the annual STOR auctions, resulting in no overcompensation.

(106) Regarding the submission by the existing operator, the UK notes the following:

- Different capacity providers are in almost all ways treated equally in the Capacity Mechanism, except most significantly in terms of the agreement length on offer.
- Based on feedback from its October 2013 consultation, 15 years is the minimum agreement length necessary to enable new investment by independent generators requiring project finance. According to the UK, 15 years is also the minimum term which would allow an efficient commercial debt structure for a project. Commercial debt tenors are typically 7 years post construction and a 15 year capacity agreement allows debt to be structured over two such periods with refinancing mid-term (at, for example, year 7). Lenders for the initial 7 year debt term will size the debt as if it were over a 13 or 14 year term since they will be able to assume the debt can be refinanced in the middle of the capacity agreement term, due to the certainty of revenues provided by the longer capacity agreement. This allows an optimum period to amortise costs and debt service payments will therefore be lower, allowing lower bids. The participation of independent generation is required to ensure effective competition in capacity auctions
- In contrast to new plants, long-term contracts are unnecessary for existing generation as they do not need to secure finance. One year contracts are otherwise beneficial since they ensure that annual auctions are liquid and reduce the risks to consumers of locking in high prices for capacity.
- As described in paragraphs (52) to (55) above, the distinction between price makers and price takers is intended to reinforce incentives for participants to bid at their true valuation of capacity and to mitigate market power. Existing generation may obtain "price maker" status if they provide a justification for doing so. [...]. Such a justification would not need validation prior to participation in the auction – it could only be requested as part of any investigation by Ofgem into possible market manipulation. The UK argues that companies that have made honest declarations should not be concerned by such an investigation. The UK notes that companies would in any case be carrying out their own analysis of the price they might be willing to accept in an auction, and that providing a justification for price maker status should entail little additional administrative burden. .

- That the assumptions used by the operator may over-state the likelihood of existing plant losing out to new plants in auctions, in particular by:
  - Assuming the same relationship between the Weighted Average Cost of Capital (WACC) and contract length regardless of project type and source of finance, whereas the WACC for new build could be higher than for existing plant;
  - Assuming amortisation of new plant capital expenditure over the full plant life, rather than within the duration of the capacity market agreement, the latter being more likely to apply to new build project-financed CCGTs;
  - In the generic example, the capex estimate for returning plant from mothball appears extremely high (almost as high as possible without causing the plant to be reclassified as "new") and is inconsistent with evidence from the UK on actual mothball plants.
  - In the plant-specific example, using an example with a particularly high-cost existing plant which is relatively unlikely to be successful in the auction in any case and adopting a disadvantageous investment schedule which does not enable the plant to access the three-year refurbishment contract, which would, according to the calculations submitted by the operator, enable it to win the auction.
  - The UK has simulated in their own model the generic plant example submitted by the operator, making the following amendments:
    - For the existing mothballed plant, assuming required capex equal to GBP 100/kW.
    - For the new plant:
      - A scenario using the same assumptions as the operator.
      - A scenario with revised financing assumptions, namely assuming a debt:equity ratio of 65:35, that this debt is amortised in 14 years (i.e. within the 15 year contract period) and assuming capacity payments need to be equal to at least the debt service costs (plus a [...] margin) of GBP 50/kW/year, since lenders are assumed not to take merchant risk.
- The UK's simulations show that the existing CCGT would be able to bid lower than the new build CCGT.
- The UK's simulation of an auction shows that, in most cases, existing plants would be able to bid lower than new build, except for a few relatively old and low efficiency plants which appear to be uncompetitive. The analysis by the operator assumed that all existing plants bid for one-year contracts; it did not take into

account any further benefits existing plant might secure from bidding for three-year refurbishment contracts.

- The UK also explains that, with increased interconnection and demand-side response, capacity prices are expected to decline over time. The UK concludes that granting existing plant access to longer contracts increases the risk of over-compensation by locking in capacity at high initial prices and would reduce the UK's ability to revert to an energy-only market when conditions allow.

(107) With regards to the DSR submission, the UK notes that:

- 15-year capacity agreements are only available to new build generation which requires greater certainty given high up-front capital investment, not required by existing generation and DSR. As noted above in response to the new entrant's submission, the UK's view is that shorter agreements promote competition, while longer agreements reduce the costs of procuring new plant.
- The transitional auctions for DSR in 2015 and 2016 are specifically designed to grow the DSR sector by helping new DSR providers that are not yet mature enough to compete against generation in the main auctions. As such, safeguards are needed to ensure funds for the transitional arrangements are being used to develop the sector and not to provide revenue for mature DSR providers.
- Cost allocation: The cost recovery methodology reduces uncertainty for suppliers over their likely share of costs and safeguards the associated risk premium being passed on to consumers, while retaining the incentive to reduce demand since costs are still targeted on the overall period when demand is highest (4pm-7pm on winter weekdays).
- The Capacity Market ensures there is sufficient capacity on the system and it is not intended to reward other benefits, such as reduced transmission losses.

### 3 ASSESSMENT OF THE MEASURE

#### 3.1 Existence of aid

(108) Article 107(1) TFEU defines State aid as ‘any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods [...], in so far as it affects trade between Member States’.

##### *3.1.1 Imputability to the state and financing through state resources*

(109) As held by the Court, State resources encompass both advantages which are granted directly by the State and those granted by a public or private body designated or established by the State<sup>11</sup>. The Commission considers that the capacity payment constitutes a resource that is under the control of the State for the reasons laid down in recitals (110) and (111).

(110) The Capacity Market will be put in place by the UK Secretary of State for Energy and Climate Change under the powers conferred to him by the Energy Act 2013. Secondary legislation in the form of Electricity Capacity Regulations and Capacity Market Rules will be adopted by Parliament on 1 August 2014 and will govern the implementation of the Capacity Market. The State is responsible for issues such as approving the amount of capacity to auction, the pre-qualification procedures, the contents of the capacity agreements and the obligations of the capacity holders.

(111) The UK will set up a Settlement Body to provide accountability, governance and control of the settlement process and payments disbursed. The Settlement body will be State-owned and the UK authorities stated that the government will retain overall control over it. The measure will be financed through a surcharge (levy) on all licensed suppliers which will be collected by the Settlement body. The Settlement body will then order the payments to the capacity providers.

##### *3.1.2 Economic advantage conferred on certain undertakings or the production of certain goods (selective advantage)*

(112) An advantage, within the meaning of Article 107(1) TFEU, is any economic benefit which an undertaking would not have obtained under normal market conditions, i.e. in the absence of State intervention. The notified measure will allow capacity providers to receive an additional compensation beyond that which they would obtain in the electricity market (BETTA – described in section 2.8 above). The notified measure will therefore confer an economic advantage to these undertakings.

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<sup>11</sup> Case 76/78 Steinike & Weinlig v Germany [1977] ECR 595, paragraph 21; Case C-379/98 PreussenElektra [2001] ECR I-2099, paragraph 58.

(113) The notified measure will confer an advantage on undertakings in one sector of the economy (electricity production).. Therefore this advantage is selective.

### *3.1.3 Distortion of competition and trade within the EU*

(114) The notified measure risks distorting competition and affecting trade within the internal market. Electricity generation as well as electricity wholesale and retail markets are activities open to competition throughout the EU. Therefore it would normally be assumed that any advantage from State resources to any undertaking in that sector has the potential to affect intra-Union trade and to distort competition.

### *3.1.4 Conclusion on the assessment of existence of aid*

(115) In the light of the above assessment, the measure constitutes state aid within the meaning of Article 101 TFEU.

## **3.2 Lawfulness of aid**

(116) By notifying the scheme before its implementation, the UK authorities have fulfilled their obligation according to Article 108(3) TFEU.

## **3.3 Compatibility with the internal market**

(117) The Commission has assessed the compatibility of the scheme notified by the UK with the internal market on the basis of the conditions established in Section 3.9 of the Environmental and Energy Aid Guidelines (EEAG)<sup>12</sup> which set specific conditions for aid to generation adequacy.

### *3.3.1 Objective of common interest and necessity of the aid*

(118) The Commission finds that the measure contributes to an objective of common interest and is necessary as required by Sections 3.9.1 and 3.9.2 of EEAG. The measure should meet several conditions; i) the generation adequacy concerns must be identified through a quantifiable indicator and the findings must be consistent with the analysis carried out by the European Network of Transmission System Operators for electricity (ENTSO-E); ii) the measure must pursue a well-defined objective; iii) the measure must address the nature and causes of the problem and in particular the market failure that prevents the market from delivering the required level of capacity; iv) the Member State must have considered alternative options to address the problem to avoid missing the objective of phasing out environmentally harmful subsidies.

(119) First, the UK has put in place a methodology to identify the generation adequacy concern. The modelling work undertaken by the UK shows that the enduring reliability adequacy standard –indicator chosen to measure generation adequacy- may reach critical

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<sup>12</sup> OJ C 200/1 of 28 June 2014.

levels as of 2018/2019. The findings are broadly consistent with those published by ENTSO-E in its latest system adequacy report.<sup>13</sup> ENTSO-E estimates that, in Scenario A for Great Britain (which sees only the generation capacity developments which are considered secure), after 2016, remaining capacity may be insufficient to cover an adequacy reference margin in the absence of interconnector imports. The UK submits that, at least in the short- to medium-term, there is insufficient evidence to suggest that interconnectors will always flow to GB when needed and that coincident stress events in neighbouring countries are possible. The UK cites analysis commissioned for Ofgem<sup>14</sup>, which shows that interconnector flows have helped to reduce the number of GB low capacity margin hours in a year. However, for the hours of highest GB system stress (i.e. where capacity margins are below 10%) interconnection flows have not consistently helped and have sometimes worsened capacity margins in GB.

- (120) NG's Electricity Capacity report<sup>15</sup> has been examined by an independent Panel of Technical Experts ("PTE") appointed by DECC. On 30 June 2014, the DECC published the PTE's report on the analysis underpinning NG's recommendations on the amount of capacity to procure for the first auction. PTE concluded that NG's overall Scenario and model-based approach is in principle sound, and NG sought to take account of evidence and stakeholders' views. However, PTE's consensus view is that NG tended to take an overly conservative view on a few key assumptions, most notably interconnector flows which would over-estimate the amount of capacity to procure. PTE also noted that less conservative assumptions could be enough to avoid the need for procuring new generation capacity.
- (121) The UK authorities explained that they have taken into account both NG's advice and PTE's report and have considered carefully the differences in their respective analyses. For the first auction – scheduled in December 2014- NG's modelling takes stock of the evidence available: exports to Ireland (0.75GW) and 0.75GW (out of 3GW) of imports from the continental interconnectors rendering a total of 1.5 GW of cross-border trade – so the net position is zero. NG's modelling covers a range of scenarios and, in the UK's view, corresponds more closely to observed market behaviour. Uncertainties were taken into account through NG's Robust Optimisation methodology. NG presented evidence on historical continental interconnector flows on days with high GB demand. This shows that on the majority of days with high GB demand there were net interconnector imports, but this is not always the case and sometimes GB is exporting at times of high demand. NG also presented evidence on the flow to Ireland which shows that GB is generally exporting to Ireland. The UK explained that, based on the evidence presented, Ministers decided to follow the advice of NG as system operator. The UK views NG's recommendation as cautious but reasonable because even though the UK expects significant improvements in interconnection capacity in coming years, a cautious approach is prudent for the first auction. As per the PTE's recommendation, the UK committed to continue to work with NG to gather further evidence on the likely flows as

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<sup>13</sup> ENTSO-E (2014), "SCENARIO OUTLOOK AND ADEQUACY FORECAST 2014-2030", 2 June 2014

<sup>14</sup> Pöyry Management Consulting (2013) "Analysis of the correlation of stress periods in the electricity markets in GB and its interconnected systems"

<sup>15</sup> See recitals (33) and (34) for a description of NG's generation adequacy assessment methodology.

information and experience is gained with the operation of the current Day-Ahead and future Intra-Day market coupling. The UK also committed to monitoring developments on future key interconnector projects, some of which are likely to take the final investment decision before a 2015 auction. In addition, the UK expressed support to PTE's recommendation to commission further research and statistical analysis of the deliverability of UK-Continent interconnectors during GB stress hours and will be working with NG to assess ways in which the Robust Optimisation methodology can be improved.

- (122) As for the contribution of DSR, the UK submitted that holding the first auction in December 2014 will be key to revealing information about DSR and DSR potential. In response to the PTE's report, NG has suggested a joint project with the Energy Networks Association (including Distribution Network Operators) to understand the current and potential DSR capacity. In addition the UK has developed transitional auction arrangements to support the growth of DSR from 2015 to 16 and a £20 million Electricity Demand Reduction pilot. Finally the UK explained that it will also carry out evaluations of data coming from the first T-4 auction and ensure demand curves are adjusted appropriately, which will feed into NG's Future Energy Scenario process for Electricity Capacity Reports ahead of subsequent auctions.
- (123) Regarding the availability assumptions for power plants NG commissioned further evidence on plant availability from an external consultant and, as a result, adjusted upwards some of the plant availability assumptions for this latest analysis. However, NG is reluctant to use availability figures higher than ever seen before in the UK. The UK committed to continue to discuss this with industry experts which could result in changes to the methodology in the future. The UK authorities recalled that the availability assumptions are reviewed and updated each year and need to be agreed with both Ofgem and NG, to ensure consistency across all adequacy work.
- (124) The Commission appreciates the initiatives launched by the UK to address the recommendations from the PTE. The Commission considers that some of the issues identified by PTE are serious; in particular the appreciation of an overly conservative estimate that interconnectors render a zero-net contribution during stress events. The Commission notes that the difference at stake between the estimations by NG and the PTE is 0.75GW or 1.5% of the amount of capacity to be contracted in the first auction. The Commission takes notes of the UK claim that there is not yet robust evidence of how interconnector flows will operate under the new model and historical evidence suggests that flows into GB from the continent will not be as high as the PTE estimated. In this respect, the Commission notes that the UK commits to the following:
- Reassess the contribution of interconnectors during stress events and review the methodology accordingly as of 2015;

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<sup>16</sup> See recital (7)

- If the ex-post assessment shows that if the contribution of interconnectors in the four year ahead auction planned for 2014 was under-estimated, reduce correspondingly the amount of capacity to procure in the year-head auction planned in 2017.
- Will continue to ensure that the capacity to be procured is based on the expected availability of conventional generation during high demand situations and not on annual or seasonal averages.
- The UK is committed to working with the Commission to develop standards used for generation adequacy assessment to ensure adherence to European best practice.

(125) The Commission considers that these commitments address the methodological concerns over the contribution of interconnectors during stress events.

(126) Second, the measure aims at procuring the necessary amount of capacity to meet the reliability standard. The measure therefore has a well-defined objective. In exchange for receiving capacity payments, capacity providers commit to deliver energy at times of system stress. The methodology to establish the amount of capacity to tender will be informed by an annual security of supply assessment by the System Operator.

(127) Third, as described in recitals (83) to (86), the UK has identified two market failures that prevent the market from bringing the necessary capacity to meet the established generation adequacy standard. The table below explains how the measure addresses each market failure.

**Table 1: How the measure addresses the identified market failures**

Market Failure	How the Capacity Market addresses the market failure
Reliability is a public good	Rather than depending on the energy market to derive the optimal level of capacity (which is sensitive to how the value of lost load is determined in the market), the UK has set an enduring reliability standard (a loss of load expectation of 3 hours/year). The annual capacity auctions will procure the level of capacity that delivers that standard. The Capacity Market also promotes a more active <i>voluntary</i> demand side response – with parties receiving capacity payments for reducing energy use at times of scarcity – to reduce the need for <i>involuntary</i> disconnections. The Commission accepts that as long as individual real time metering is not available, that reliability displays many of the characteristics of a public good. However, in the future with the roll out of smart technology this will become less important as consumers will be able to manage their consumption in response to scarcity signals from the markets.
Missing money	The Capacity Market addresses the ‘missing money’ problem by giving capacity providers certainty on a part of their revenues. In effect, they exchange the possibility of part of their scarcity rents for a capacity payment. In return, they guarantee to provide capacity when needed, or face penalties. This mimics the action of a perfectly functioning electricity market. However, the Commission reiterates that the implementation of a capacity market cannot come at the expense of well-functioning short run markets. The Commission notes in particular the potential for a robust reference market for options trading developing under the cash out reform reported in recitals (89) to (91).

- (128) Fourth, the notified measure may result in support to fossil fuel generation. However as reported in recitals (88) to (94), the UK is considering or is implementing additional measures to address the identified market failures. These measures aim at improving DSR, reforming the cash-out arrangements and promoting increased levels of interconnection. The Commission considers that these alternative measures should therefore lead to a reduction of the amounts of capacity to procure under the notified measure. In addition the Commission notes that the UK is bringing forward ad-hoc measures to support low-carbon generation (e.g. Contracts for Differences) and has passed stringent emission performance standards to prevent commissioning high carbon intensive generation. As a result the Commission considers that the UK has explored sufficiently means of mitigating the negative impacts that the notified measure may have on the objective of phasing out environmentally harmful subsidies. Furthermore the Commission notes that the generation adequacy assessment –conducted on an annual basis- takes into account the amount of generation, the contribution of interconnectors while being open to all types of capacity providers, including demand side management operators.
- (129) With regards to the submission by the DSR operators, the Commission shares the UK's view that 15-year capacity agreements may be justified for new plants while existing plants and DSR, in view of their lower capital cost requirements (indicating a reduced importance of securing financing) may not benefit significantly from longer contracts (see paragraph (106) above). As such, the Commission does not consider that shorter contracts clearly put existing plants and DSR at a disadvantage to new generation. The measure is technology neutral and therefore does not strengthen the position of fossil fuel generation operators. The Commission also notes that the cost charging methodology retains an incentive to reduce demand at peak times, while being predictable for suppliers.

### 3.3.2 *Appropriateness of the aid*

- (130) The Commission finds that the measure is appropriate as required by Section 3.9.3 of EEAG. The measure should meet several conditions: i) the choice of the instrument must be coherent with other measures aimed at the same market failure; ii) aid must only compensate the service of availability of capacity; iii) the measure should be open to all relevant capacity providers, allow sufficient lead times for new investments and iv) take into account the extent to which interconnected capacity can contribute to remedy the generation adequacy concerns.
- (131) First, the measure addresses the identified market failures as shown in Table 1. Furthermore, the measure has been designed to support and complement ongoing developments in the market and to be consistent with the internal energy market and EU energy policies: i.e. the development of an active demand response, increased competition and investment in interconnected capacity.
- The Capacity Market will support the development of an active demand side. Demand side resources will be able to receive capacity payments, and there will be specific measures to help build the capability of this industry which is still in its infancy. The

Capacity Market will support increased liquidity and competition (in both the capacity and electricity markets).

- By centrally contracting capacity from capacity providers on behalf of electricity suppliers, the Capacity Market will ensure small generators, demand side participants and suppliers have a clear route to market, and receive a fair value for the capacity they provide.
- The Capacity Market will not place any restrictions on cross-border trade, and EU rules regarding the internal energy market will govern the import and export of electricity between neighbouring markets so that electricity will continue to flow from areas with lower prices to areas with higher prices.
- The Capacity Market has been designed to be consistent with the reform of the electricity cash-out arrangements. This will provide additional stronger incentives for investment in interconnection and is the focus of further work across the EU to increase the efficiency of the price signals that determine imports and exports between countries. Ensuring that cash-out prices accurately signal scarcity will help the energy market reward capacity providers who are available at times of scarcity. More cost-reflective imbalance prices will also provide stronger incentives for demand side response, interconnection and investment in storage. In particular, cash-out reform will increase the likelihood that GB will be importing electricity at times of system scarcity, reducing the need to build additional national capacity. The UK has estimated that removing the implicit price cap in the GB market caused by current cash-out arrangements could significantly increase the contribution of current interconnection to security of supply because GB could rely more on imports at key periods.

(132) Second, the measure remunerates solely the service of pure availability of capacity. Beneficiaries receive a compensation for the units of capacity that they make available (GBP/MW) and not for the energy delivered (GBP/MWh), in line with point (225) of the EEAG. That said, the Commission notes that the notified measure follows a ‘delivered energy’ model (see Section 2.6 above), whereby capacity providers may face penalties in case they fail to actually physically deliver energy during system stress events regardless of the signals provided by the wholesale market. The Commission considers it is primarily the role of market coupling (both day-ahead and intraday) and balancing markets to ensure the efficient use of the resources available to the system, including across interconnectors. A delivered energy model has the potential to undermine this, since it may lead to capacity providers dispatching even if it was not profitable based on market prices alone, in order to avoid penalties. Sufficient conditions for a delivered energy model to have no impact on the efficient allocation of resources are that system stress events relate only to a general shortage of capacity across the system (as opposed to local circumstances) and that they apply only when the market has reached its limits in directing the efficient allocation of resources. In that regard, the Commission notes that:

- involuntary demand disconnections by the System Operator to resolve locational issues would not be classed as system stress events;

- the need for the System Operator to initiate voltage reduction or involuntary demand reduction (i.e. system stress events) by definition occur when available supply is inadequate to meet demand. In an impending shortage, prices will rise, motivating owners of supply to deliver energy in response. In this manner, the UK foresees all available supply delivering its energy until exhausted by its physical capacity or, in the case of imports over interconnectors, reaching the maximum import limit. Only when all available supply sources are exhausted could an actual shortage occur, requiring the System operator to initiate rationing. As such, declaring a system stress event and requiring capacity providers to actually deliver energy merely complements the incentives in the energy market. In addition, the UK notes that in GB, the current level of interconnection is 4% of total installed capacity with the potential to rise to 6% in 2020;
- In certain, mainly exceptional, circumstances the System Operator may need to take actions that will involve the involuntary reduction of generation or demand before all valid offers of balancing energy have been accepted, in accordance with the Balancing Principles Statement (BPS). The circumstances are set out in the BPS and limited to unexpected emergency scenarios. However, the UK states that the System Operator would ordinarily instruct commercially negotiated balancing power prior to instigating involuntary voltage reduction.

(133) The Commission notes that as a result, distortions to dispatch are highly unlikely to occur in practice, given that system stress events are defined with reference to actions that would usually be taken as a last resort by the System Operator, once the market has failed to deliver security of supply. The UK has also undertaken to review the definition of a scarcity event, with a view to basing it on a reference price in cash out markets, when the reform of cash out markets has been completed. Therefore, the Commission considers that the UK measure remunerates the service of pure availability of capacity.

(134) Third, the measure is open to existing and new generators, to storage operators and to DSR operators. The auctioning process has been designed to consider different lead times to make capacity available. Capacity providers can bid for lead-times of one or four years ahead, which should cater for the needs of new generation plants and for the refurbishment of existing plants.

(135) Forth, the UK has submitted evidence that at this stage, it is not possible to include foreign capacity without implementing additional cross-border arrangements. The amount of interconnected capacity is however considered in the calculation of the amount of capacity to procure. The UK has in addition committed to enable interconnected capacity to directly participate in the Capacity Market ahead of the second auction in 2015, in particular by allowing new interconnectors to bid and compete for Capacity Payments against other capacity providers.

(136) The Commission recognises the complexities of effectively allowing cross border participation in a capacity mechanism. The Commission welcomes the commitment of the UK to facilitate the participation of interconnectors from 2015. However, the

Commission also notes that interconnector operators are also by definition transmission system operators, and that capacity on interconnectors is allocated in accordance with internal electricity market legislation, and in particular market coupling. The Commission reiterates the importance of not undermining the operation of market coupling, including intra-day and balancing markets. Furthermore, the Commission recalls that the EEAG require schemes to be adjusted in the event that common arrangements are adopted to facilitate cross-border participation in such schemes.<sup>17</sup>

- (137) The UK explained that due to the specificities of interconnectors and the differences between them and generators, it is necessary to develop new features in the design to allow new interconnectors to bid directly, as if they were generators. In particular, an adequate duration for the capacity payment needs to be defined, as well as the operational rules for monitoring, delivery and the penalty regime. However the UK commitment means that they will modify the design of the measure so as to enable new interconnectors to directly participate starting from the second auction, scheduled to take place in 2015.
- (138) Regarding the submission by the long-term STOR provider, the Commission does not consider the exclusion of long-term STOR providers as discriminatory. The Commission notes that such plants may in fact participate in the Capacity Mechanism provided that, if successful in the auction, they relinquish their long-term contract with the System Operator. While this may require a renegotiation of financing terms, the Commission considers, based on the UK's explanation that no penalties would apply, that this is a feasible option for long-term STOR providers.
- (139) Regarding the submission by the existing operator that the measure would unduly discriminate against existing generators, the Commission:
- Agrees with the UK that differentiation between new and existing plants may be justified since, in contrast to existing plants, new plants are likely to need to secure financing for capital expenditure and since one-year capacity agreements have other benefits;
  - Finds the UK's analysis that existing plants (apart from uncompetitive plants) should generally tend to bid lower than new plants in auctions plausible, and therefore would expect the vast majority of successful bids to come from existing, and not new, plants; and
  - Notes that the requirement for existing plants to justify price maker status is intended to mitigate market power, and as such considers that the restriction on bidding behaviour can be justified with reference to the policy objective. The Commission further notes that the requirement to price-maker status entails little additional administrative burden in practice and that, even in the event existing plant sets the clearing price in an auction, existing plant are not prevented from earning a rate of

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<sup>17</sup> See footnote 97 in EEAG. Also note that as described in SWD 2013 (438) Generation Adequacy in the internal electricity market - guidance on public interventions of 5 November 2013, while it may be necessary as an interim measure to allocate the contribution of interconnectors towards security of supply to interconnector operators, the aim should be to facilitate full cross border participation by capacity providers

return deemed necessary, since this may be included in their justification of price-taker status.

- (140) Regarding the submission by DSR providers, the Commission notes that the exclusion of DSR providers holding a capacity agreement for the enduring regime from participating in the transitional auctions for DSR is in fact intended to promote the development of the DSR sector. In addition, in light of the objective pursued by the scheme, the Commission finds the lack of additional remuneration for the savings in transmission and distribution losses from DSR justifiable.

### *3.3.3 Incentive effect*

- (141) The Commission finds that the measure has an incentive effect as required by Section 3.2.4 of the EEAG and by cross-reference, to points (49) to (52) of the EEAG. An incentive effect occurs when the aid induces the beneficiary to change its behaviour to improve the functioning of a secure, affordable and sustainable energy market, a change in behaviour which it would not undertake without the aid.

- (142) In a counterfactual scenario without the measure, generation adequacy would reach critical levels as of 2018/2019 as shown in recital (81) and Figure 3. The measure ensures that capacity providers make available the necessary amount of capacity to meet the reliability standard set by the UK, to deliver energy at times of stress.

- (143) As the aid is granted on the basis of a competitive bidding process, the measure is also assumed to meet the conditions set out in points (50) and (51) of the EEAG.

### *3.3.4 Proportionality*

- (144) The Commission finds that the measure is proportional as required by Section 3.9.5 of the EEAG. A measure is proportional when it meets the following conditions: i) the compensation allows beneficiaries to earn a reasonable rate of return. When the measure is designed as a competitive bidding process on the basis of clear, transparent and non-discriminatory criteria, it will be considered as leading to reasonable rates of return under normal circumstances; ii) The measure should also have built-in mechanisms to ensure that windfall profits cannot arise.

- (145) First, the notified measure is a market-wide, technology-neutral capacity mechanism where all eligible capacity providers compete in a single capacity auction to discover the lowest sustainable price at which the necessary capacity can be brought forward. The competitive nature of the auction should drive prices to zero if there is sufficient supply to meet demand. The process is subject to transparent non-discriminatory criteria including the eligibility criteria and the duration of the contract agreements. The main reason for ineligibility is when capacity providers benefit from long-term support measures that would lead to cumulation and eventual overcompensation. As for the duration of the contracts, most capacity providers are only eligible to one-year capacity agreements. New and refurbished capacity -which involves intensive investment capital

costs- are eligible to longer capacity agreements to allow these investors secure the necessary financing.

- (146) Second, a market-wide capacity market design mirrors the likely outcome produced by a perfectly efficient energy market. The auction follows a pay-as-clear descending clock design where successful bidders are paid the clearing price. Paying the clearing price is one of the designs specifically mentioned in the definition of 'competitive bidding process' in point (43) of the EEAG and hence presumed to have built-in features to minimise the risks of windfall profits. Furthermore, the following features are deemed to contribute to minimising the risk of windfall profits: an overall price cap of GBP 75/kW, a bidding limit on price-takers of GBP 25/ kW, and a short-term duration of the contract agreement for most categories of capacity providers.
- (147) With regards to the existing operator's submission that the lower contract duration for existing generators could result in more aid being paid than necessary by increasing the requirement for new plants, the Commission finds it likely that (as noted in recital (139) above) competitive existing plants are likely to bid lower prices than new plants in the majority of cases and as such, the number of new plants should be limited to the minimum necessary, in turn limiting the aid to the minimum necessary.

### *3.3.5 Avoidance of negative effects on competition and trade*

- (148) The measure does not result in undue distortion of competition and trade as it meets the conditions in section 3.9.6 of EEAG. The measure must meet the following conditions: i) when technically and physically possible, be open to all capacity providers subject to meeting the proportionality principle; i) not reduce the incentives to invest in interconnectors and not undermine market coupling; ii) not undermine investment decisions that preceded the introduction of the measure; iii) not unduly strengthen market dominance and iv) give preference to low-carbon technologies in case of equivalent technical and economic parameters.
- (149) First, the measure is open to all existing and new generators, DSR and storage operators subject to the eligibility requirements listed in recitals (15) to (18). The UK is supporting market integration in particular through participating in the development of the EU network codes. The UK has also committed to enable the participation of interconnected capacity as of 2015. In the meantime, a report commissioned by the UK<sup>18</sup> concluded that whilst the introduction of the Capacity Market may have the effect of reducing interconnector revenues through a dampened wholesale electricity price this will not undermine the business case for interconnectors. The conclusions were confirmed in a more recent report<sup>19</sup> that stated that the business case for future interconnectors is still robust, with the shorter links to continental Europe expected to be particularly profitable. Furthermore, the UK submits that the cash-out reform in GB<sup>20</sup> will help market coupling work more effectively and lead to less generating

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<sup>18</sup> Pöyry Management Consulting, Impact of EMR on Interconnection, December 2012

<sup>19</sup> Baringa, New electricity interconnection to GB – operation and revenues, February 2014

<sup>20</sup> See recitals (87) to (89)

capacity being required within GB for the same level of security of supply. Interconnection at current capacity of 4GW appears well utilised and new interconnection investment to a capacity of 10GW appears viable and would reduce further the required generating capacity within GB.

- (150) Second, according to the modelling submitted by the UK, the introduction of the capacity market will over time tend to depress electricity prices in the energy market. The fact that existing generators – which took the investment decisions based on projected wholesale energy prices – will have access to the Capacity Market therefore implies that their investment decisions will not be undermined on average. Furthermore, plants that began construction between May 2012 and the first auction will be considered as new plants to acknowledge the intensive capital investment undertaken.
- (151) As in any change in market design, it can be expected that some of the existing plants may be impacted more substantially than others. In particular those plants which have been built more recently but before May 2012, hence not in a position to qualify as new under the Capacity Market, can be expected to be impacted more from the introduction of the measure. However any potential negative impact should be limited by the fact that any plant can access the Capacity Market, and will be offset by the substantial benefits which the measure will bring to the electricity system, also in light of the clear price signal which the Capacity Market will provide in relation to capacity – a price signal which today does not exist and needs to be gauged indirectly, through the price of electricity.
- (152) Third, the sufficiently long term duration of capacity contracts for new investments will allow new entrants secure the necessary financing hence countering the risk of market dominance. Furthermore, the strong price-discovery feature in a pay-as-clear, descending clock design reduces the risk of exercising market power in the auction.
- (153) Fourth, the Commission considers that the measure gives preference to low-carbon generators in case of equivalent technical and economic parameters, consistent with point 233(e) of the EEAG:
- The measure is open to low-carbon generators. However, to prevent the cumulation of aid and the resulting overcompensation, generators must not be recipients of other support measures as described in recital (18).
  - The competitive bidding nature of the mechanism leaves participants exposed to carbon prices when selling their electricity on the market. Given equivalent technical characteristics, and higher carbon costs will therefore lower expected energy market revenues and increase the capacity price that high-carbon bidders will ask for in the auction (see recital (50) above), reducing their probability of success in an auction<sup>21</sup>.

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<sup>21</sup> Alternatively, the UK argues that if two projects, differing in their carbon intensity, submit equal bids, this can only be explained by different technical and other economic characteristics

- While the Commission considers that carbon costs associated with the EU ETS represent economic parameters for the purposes of point 233(e) of the EEAG and are therefore insufficient to demonstrate that a measure gives preference to low-carbon generators, the Commission notes that the UK introduced a Carbon Price Floor (CPF) in 2013, which results in a higher carbon price faced by electricity generators than the EU ETS alone. In the Commission's view, therefore, the interaction of the CPF with the auction mechanism described above has an equivalent effect to secondary selection criteria (for example, in a tender process using other criteria than price) that would give preference to low-carbon generators in case of equivalent technical and economic parameters.

(154) With regard to the STOR operator's submission that the exclusion of long-term STOR providers is not based on objective technical criteria, inconsistent with point (232)(a) of the EEAG, the Commission notes that this point is without prejudice to point (228) of the EEAG, which states that the "...calculation of the overall amount of aid should result in beneficiaries earning a rate of return, which can be considered reasonable". The UK has provided evidence to show that participation of long-term STOR providers in the Capacity Market would result in windfall profits, i.e. a rate of return in excess of what might be considered reasonable, while exclusion would not undermine the original business case. Further, should they be able to persuade their lenders of an additional commercial opportunity of doing so, these operators could participate in the Capacity Market and in the annual auctions for short term STOR contracts, and subsequently (if successful in the Capacity Market auctions) exit their long-term STOR contracts with no penalty.

(155) With regard to the existing operator's submission that the imposition of price taker status on existing plants unduly restricts competition, the Commission notes that the restriction may be justified to ensure proportionality and that, in any case, existing plant are given the opportunity to justify being a price maker. With regard to the operator's argument that limiting existing plants to one-year capacity agreements would restrict consumer choice, the Commission's view is that such a restriction can be justified by the UK's argument that longer capacity agreements for existing plant would increase the risk of overcompensation and would decrease liquidity in the auctions.

### 3.3.6 *Conclusion on compatibility*

(156) The Commission therefore finds that the aid scheme is compatible with the criteria set out in the EEAG.

### 3.3.7 *Compliance with Article 30 and 110 TFEU*

- (157) As indicated in point 29 of the EEAG, if a State aid measure or the conditions attached to it (including its financing method when it forms an integral part of it) entail a non-severable violation of Union law, the aid cannot be declared compatible with the internal market. In the field of energy, any levy that has the aim of financing a State aid measure needs to comply in particular with Articles 30 and 110 TFEU. The Commission has therefore verified if the financing mechanism of the notified aid measures complies with Articles 30 and 110 TFEU.
- (158) As explained in recital (69) above, the payments will be financed by a levy imposed on electricity suppliers (the “supplier obligation”). It is envisaged that, once the secondary legislation necessary to introduce the supplier obligation is in force, the settlement service provider will calculate and collect the payments under the supplier obligation. The UK explained that the supplier obligation will be imposed on all licensed suppliers in relation to their market share based on electricity volumes sold. The Commission considers however that the tax, as planned by the UK, will be very similar to a tax on the electricity consumed.
- (159) With regard to Article 30 and 110 TFEU, it is settled case-law that in its present state of development, Union law does not restrict the freedom of each Member State to establish a tax system which differentiates between certain products, even products which are similar within the meaning of the first paragraph of Article 110 TFEU, on the basis of objective criteria, such as the nature of the raw materials used or the production processes employed. Such differentiation is compatible with Union law, however, only if it pursues objectives which are themselves compatible with the requirements of Union law, and if the detailed rules are such as to avoid any form of discrimination, direct or indirect, against imports from other Member States or any form of protection of competing domestic products.<sup>22</sup>
- (160) A discriminatory treatment against imports from other Member States presupposes that similar situations are treated differently, so that one needs to determine if imports are in a similar situation to the national production. The Commission considers that the current constraints listed in recital (20) above imply that ensuring generation adequacy at national levels can only be provided by means of domestic capacity. Moreover the Commission notes that the UK has committed to including forms of interconnected capacity as of 2015 once legally and technically feasible.
- (161) In the light of the above, the Commission considers that the financing mechanism of the notified aid measures does not introduce any restrictions that would infringe Article 30 or Article 110 TFEU.

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<sup>22</sup> Case C-213/96 *Outokumpu* [1998] I-1777, paragraph 30.

### 3.3.8 *Duration*

(162) The Commission authorises the aid scheme for a maximum period of 10 years.

## 4 CONCLUSION

The Commission has accordingly decided not to raise objections to the aid on the grounds that it is compatible with the internal market pursuant to Article 107 (3) c) of the Treaty on the Functioning of the European Union.

If this letter contains confidential information which should not be disclosed to third parties, please inform the Commission within fifteen working days of the date of receipt. If the Commission does not receive a reasoned request by that deadline, you will be deemed to agree to the disclosure to third parties and to the publication of the full text of the letter in the authentic language on the Internet site: <http://ec.europa.eu/competition/elojade/isef/index.cfm>.

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Directorate-General for Competition  
State Aid Registry  
B-1049 Brussels  
Fax (32-2) 296 12 42  
Stateaidgreffe@ec.europa.eu

Yours faithfully,

For the Commission

Joaquín ALMUNIA  
Vice-President