



EUROPEAN COMMISSION

Brussels, 7.4.2017
C(2017) 2224 final

PUBLIC VERSION

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**Subject: State Aid SA.45852 (2017/N) – Germany
Capacity Reserve**

Sir, /Madam

The Commission wishes to inform Germany that, having examined the information supplied by your authorities on the measure referred to above, it has decided to initiate the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union.

1. PROCEDURE

- (1) By electronic submission dated 7 December 2015, Germany notified to the Commission under Article 108(3) of the TFEU draft legislation aimed *inter alia* at the establishment of a new Capacity Reserve and the revision of an existing Network Reserve.
- (2) The Commission asked further questions with regard to the measures by letters dated 19 January 2016 and 4 March 2016, which were answered by Germany on 17 February 2016 and 5 April 2016 respectively.
- (3) On 4 July 2016, Germany withdrew its notification. At the same time, it re-notified revised draft legislation for the revision of the existing Network Reserve. This notification was registered as case SA.42955 and the Commission approved the measure as a temporary measure until 30 June 2020 only by

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Decision of 20 December 2016¹. Germany also pre-notified the Capacity Reserve.

- (4) On 23 January 2017, Germany notified the latest draft legislation related to the Capacity Reserve as well as an assessment of the necessity of the measure. The present decision relates to these documents.

2. DESCRIPTION OF THE MEASURE

2.1. Context and background

- (5) The notified measure is part of a revision of the existing German Energy Act (Energiewirtschaftsgesetz, 'EnWG') of 7 July 2005 adopted on 26 July 2016², which apart from the present measure also contains an array of measures related to the functioning of the German electricity and gas market. It is the central objective of the revision of the EnWG to reform the electricity market in order to make it fit to deal with the energy transition, which in Germany is characterised by significant increases in the generation from variable renewable energy sources ('RES') such as wind and solar, the phase-out of nuclear power, and a high level of connection to many neighbouring markets. The German Ministry of Economic Affairs and Energy has presented its objectives and the associated measures in a Green Paper and a White Paper, which were published in October 2014 and July 2015 respectively.³ The market reforms are mainly aimed at improving the functioning of short term and balancing markets. However, the revision also concerns a number of measures aimed at ensuring continued security of supply throughout the energy transition. The Capacity Reserve is one of those measures. Other measures include the ABLAV interruptibility scheme⁴ and the aforementioned Network Reserve, which the Commission has approved as compatible State aid until 30 June 2020.

¹ Commission Decision of 20 December 2016 available at

http://ec.europa.eu/competition/state_aid/cases/265043/265043_1872192_91_2.pdf

² A consolidated version of the EnWG (Energiewirtschaftsgesetz vom 7. Juli 2005 (BGBl. I S. 1970, 3621), can be found at: https://www.gesetze-im-internet.de/enwg_2005/

³ 'An electricity market for Germany's energy transition', White Paper of July 2015:

http://www.bmwi.de/Redaktion/Migration/DE/Downloads/Publikationen/weissbuch-englisch.pdf?__blob=publicationFile&v=2,

and

'An Electricity Market for Germany's Energy Transition', Discussion Paper of the Federal Ministry for Economic Affairs and Energy, Green Paper of October 2014:

<http://www.bmwi.de/EN/Service/publications.did=673330.html>

⁴ ABLAV stands for Verordnung über Vereinbarungen zu abschaltbaren Lasten or Ordinance on interruptible loads. The Commission has assessed the compatibility of the ABLAV scheme with the internal market in State aid case SA.43735 and decided to raise no objections. The decision can be consulted here: http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=3_SA_43735

Overview of the measures

Component 1 “Stronger market mechanisms”: The measures packaged in component 1 strengthen the existing market mechanisms. The required capacities can thus refinance themselves and the electricity market can continue to ensure security of supply.

Measure 1	Guaranteeing free price formation on the electricity market
Measure 2	Making supervision of abuse of dominant market positions more transparent
Measure 3	Strengthening obligations to uphold balancing group commitments
Measure 4	Billing balancing groups for each quarter hour

Component 2 “Flexible and efficient electricity supply”: The measures of component 2 optimise the electricity supply at both European and national levels. They thus ensure a cost-efficient and environmentally compatible use of capacity.

Measure 5	Anchoring the further development of the electricity market in the European context
Measure 6	Opening up balancing markets for new providers
Measure 7	Developing a target model for state-induced price components and grid charges
Measure 8	Revising special grid charges to allow for greater demand side flexibility
Measure 9	Continuing to develop the grid charge system
Measure 10	Clarifying rules for the aggregation of flexible electricity consumers
Measure 11	Supporting the wider use of electric mobility
Measure 12	Making it possible to market back-up power systems
Measure 13	Gradually introducing smart meters
Measure 14	Reducing the costs of expanding the power grid via peak shaving of renewable energy facilities
Measure 15	Evaluating minimum generation
Measure 16	Integrating combined heat and power generation into the electricity market
Measure 17	Creating more transparency concerning electricity market data

Component 3 “Additional security”: The measures of component 3 provide additional security of supply.

Measure 18	Monitoring security of supply
Measure 19	Introducing a capacity reserve
Measure 20	Continuing to develop the grid reserve

Table 1: Overview of the measures proposed in 'An electricity market for Germany's energy transition', White Paper of July 2015, page 55

- (6) The legal framework governing the Capacity Reserve is laid down in Article 13e of the revised EnWG. More detailed provisions on, *inter alia*, the selection procedure, the remuneration and the utilisation of the reserve are laid down in the Kapazitätsreserveverordnung⁵ (Capacity Reserve Ordinance).
- (7) The Capacity Reserve aims at ensuring continued security of electricity supply also under the changing circumstances in the electricity market. The Reserve aims at contributing to secure supplies even at times when, despite free price formation on the power exchanges, the wholesale market does not manage to realise sufficient supplies to meet all demand. It does so by dispatching existing power plants that are held outside the market. Germany aims to minimise potential market distortions through a string of measures, whereby it seeks to prevent any distortions of the price formation and the investment signals of the electricity market by strictly separating the capacity in the reserve from the market.

2.2. Description of the Capacity Reserve

- (8) The legal provisions of the EnWG and the Capacity Reserve Ordinance determine that the four German TSOs shall gradually build up reserve capacities

⁵ Verordnung zur Regelung des Verfahrens der Beschaffung, des Einsatzes und der Abrechnung einer Kapazitätsreserve (Kapazitätsreserveverordnung – KapResV)

to be used to ensure security of supply in situations where the market has failed to clear and demand for power remains unmet by supply.

- (9) The TSOs procure the capacities together by way of regular, competitive, transparent and non-discriminatory tenders, starting in 2017 for a two-year delivery period starting in winter 2018/2019. Capacity providers bid for the yearly remuneration they wish to receive for maintaining their capacity available, up to a maximum of EUR 100,000/MW per year and are selected on the basis of their bid until the demanded overall volume of 2 GW is met. The capacity providers that are successful in the tender receive remuneration in the amount of the highest successful bid submitted in the tender ('pay-as-cleared'). Separate remuneration will be provided for reimbursing variable costs that arise only in case the Capacity Reserve is dispatched⁶. This separate remuneration is not considered within the tender; in the tender participants compete only based on their offers for the yearly availability payment per MW.
- (10) The tender is open to all types of domestic capacity providers (generating plants, storage facilities and demand response operators) provided they fulfil a number of eligibility criteria in the form of technical requirements. The criteria, laid down in § 9 of the Ordinance are:
- (a) connection to a general energy supply network in Germany with a nominal voltage of 110 kilovolts or more;
 - (b) maximum start-up time of 12 hours; generating plants and storage facilities must be capable of achieving the start-up time from the cold state;
 - (c) meet the information technology and organisational requirements for the provision of the minute reserve power;
 - (d) adjustment of active power in-feed or active power supply by at least 30 per cent of the reserve power within 15 minutes from the time of call; for generating plants and storage facilities, adjustment must be possible from operation at minimum partial load;
 - (e) for controllable loads, provide evidence of a constant and uninterrupted power input at least in the amount of their bid including the capability to demonstrate this power input by means of performance records with minute-by-minute resolution; and
 - (f) for generating plants and storage facilities, a minimum partial load of maximum 50 per cent of the bid quantity.

In addition to these criteria, the bidding rules prescribe that the minimum size of a bid must be 10 MW and must be fulfilled by a single facility. Location of the facility is not a relevant factor in the auction.

⁶ An extensive discussion of the various categories that make up the remuneration of the capacity providers in the Capacity Reserve is included in the appropriate assessment of this Decision (section 3.2.3).

- (11) Capacity providers are not allowed to sell their reserve capacity on the electricity market and are not allowed to return to the market once their reserve contract ends. In this way, the German authorities intend to ensure a strict separation between the market and the reserve, with a view to eliminate any potential distortion of market functioning by the reserve.⁷
- (12) Capacity providers are also not allowed to sell on their rights and obligations arising from their participation in the Capacity Reserve to other capacity providers or market participants: the participation and the accompanying remuneration are strictly tied to the installation that qualified for it via the tender.
- (13) For demand response operators the no return clause as described in recital (11) does not apply. A demand response operator may resume selling the output or work of the controllable load on the electricity markets once the delivery period is finished.⁸ However, demand response operators are obliged to procure the electricity in full for the entire period of supply, before the start of the supply period, by means of forward contracts with physical delivery, i.e. the procurement of electricity in day-ahead or intra-day trading is not permitted.
- (14) Capacity providers must be at the disposal of the TSOs throughout the entire contract. They must also continue to fulfil the eligibility criteria throughout the contract. However, technically necessary maintenance periods may be declared and are to be notified to the TSO before 31 July of the year preceding the delivery year. Such scheduled outages are permitted to the extent to which the capacity reserve plants are unavailable for not more than a total of three months in any one contract year. Unscheduled outages need to be reported to the TSO as soon as they occur and availability must be restored within three months.
- (15) TSOs are obliged to carry out a functional test for each installation before it enters the Capacity Reserve, so as to verify that it meets the technical requirements. This test includes the activation of the plant, for a period of at least 12 hours, at the full reserve power. Where the test demonstrates that a facility does not meet the requirements, a penalty of 20% of the total fixed remuneration is due. If the facility is able to repair the identified failures within six months, the penalty amounts to the pro rata amount of time the plant was not available to the reserve (i.e. one sixth of the amount for each month). If the plant has met the requirements only with a portion of the reserve output, then the penalty relates to the unavailable portion only.
- (16) Furthermore, the TSOs shall, at least once but not more than 10 times per contract year, apply trial calls of the Capacity Reserve installations again with the full reserve output for a period of at least 12 hours but without notifying the operator in advance. A similar penalty regime as described in recital (15) is applicable to installations that fail to meet their requirements in the context of such a trial run.

⁷ The separation between the energy only market and the capacity reserve is described and assessed in Section 3.2.5 of the present decision, regarding the impact on competition and trade.

⁸ However, this excludes markets in which a price per kilowatt is paid, i.e. in practice the ABLAV scheme and the balancing capacity market.

- (17) The initial size of the Capacity Reserve is determined by law. §13e(2) EnWG prescribes that the TSOs shall tender for a procurement of 2 GW of capacity for the winters of 2018/2019 and 2019/2020. For the winter of 2020/2021 in principle again 2 GW will be tendered unless it is determined that an adjustment of that figure is required.⁹
- (18) The Capacity Reserve is dispatched when the market does not clear, i.e. when there is insufficient supply to meet demand. The market is deemed not to have cleared when, at the electricity exchanges, on the day ahead or on the intraday market (at the opening auction - taking place right after closure of the day-ahead market - or during the continuous trading throughout the day) bids at the technical price limit, which in Germany is currently EUR 3,000/MWh for the day-ahead market and EUR 10,000/MWh for the intraday market, are not fully met within one hour by offers to generate.
- (19) TSOs can dispatch the Capacity Reserve as a last resort only. This means that it is qualified as a 'system service', i.e. not interfering with the various wholesale markets and in particular the balancing and intraday markets, and that it can be used only after all other system services have been exhausted.
- (20) The fact that the installations in the Capacity Reserve have an activation time of maximum 12 hours (see recital (10)(b)) means that the TSOs have to call upon these installations well ahead of the outcomes of the markets are known and hence before they are sure that a market clearance may not take place. The Ordinance therefore prescribes that TSOs have to make an assessment of the start-up times and take these into account when activating the reserve.
- (21) During the activation time and before the actual dispatch of the Capacity Reserve, the plants in the reserve inject small quantities of warming energy in the grid. The Ordinance provides, in order to ensure this energy does not distort intraday market functioning, for the TSOs to ramp down existing facilities to an amount equivalent to that supplied by the reserve plants.
- (22) The Ordinance also provides that in principle the TSOs activate all installations, but should the TSOs be able to restore the demand/supply balance by activating a portion of the capacity in the reserve only, then the TSOs can select only those providers that are most suitable to do so.

2.3. Relation of the Capacity Reserve with the Network Reserve and the ABLAV interruptibility scheme

- (23) As set out in recital (5), the Capacity Reserve is one of several security of supply related measures provided for in the EnWG. The Network Reserve¹⁰ and the ABLAV interruptibility scheme have been notified to and assessed by the Commission and found compatible with the internal market. These schemes do interact with the Capacity Reserve but to a limited extent only, because they address different generation adequacy issues that in principle do not arise simultaneously.

⁹ §13e(5) EnWG lays down the procedure to determine and decide whether an adjustment of the quantity of reserve capacity is warranted.

¹⁰ See footnote 3

- (24) With regard to the Network Reserve, the Capacity Reserve Ordinance allows power plants that are currently part of the Network Reserve to participate in the tender. In case they are successful, TSOs can instruct them to dispatch both for the Capacity Reserve and the Network Reserve. The amount of capacity that the TSOs procure for the Network Reserve will be reduced with the volume that the plants moving into the Capacity Reserve represent. Furthermore, plants that move directly from the market into the Capacity Reserve can also be instructed by the TSO to deliver re-dispatch services provided their location in the grid is suitable.¹¹ The German authorities explain that there is little chance that the double role of these installations will affect the effectiveness of either the Network Reserve or the Capacity Reserve, because the typical situation in which the Network Reserve is dispatched (high renewable generation, high demand) is different from the typical situation in which the Capacity Reserve is dispatched (low renewable generation, high demand) and therefore the two will generally not be used simultaneously.
- (25) With regard to the ABLAV interruptibility scheme, it is relevant to note that demand response operators that take part in the Capacity Reserve cannot participate in ABLAV. When their Capacity Reserve contracts end, these operators cannot take part in the ABLAV scheme. This prohibition aims to preserve a level playing field between loads competing for participation in the ABLAV scheme and also addresses the objective of the ABLAV scheme to incentivise inflexible consumers to become responsive (loads coming from the Capacity Reserve are by definition flexible already and can therefore directly participate in the market).

2.4. Budget

- (26) There is no fixed budget for the Capacity Reserve, because its costs depend to a large extent on the results of the initial tender. The maximum bid that capacity providers can submit in the tender is EUR 100,000/MW/year. Therefore, the maximum fixed costs of a 2 GW Capacity Reserve would be EUR 200 million. In case the reserve is dispatched, the reimbursable variable costs are to be added to this amount. The German authorities however expect the auction not to clear at the maximum price, first because there are various factors that may dampen the costs such as the fact that mostly older plants will participate, that demand response can participate and that plants in the Network Reserve can participate. Should the auction clear at an average cost of EUR 30,000/MW/year that would reduce total annual fixed costs to EUR 60 million.
- (27) The Commission notes that no estimate of the reimbursable variable cost categories, as listed in recital (131), has been provided.

2.5. Financing mechanism

- (28) TSOs can recover all their costs caused by the Capacity Reserve through the network tariffs. TSOs are to subtract from their costs the revenues received from

¹¹ Note that this does not apply to demand side response operators which obtain a Capacity Reserve contract. They cannot be called upon to deliver re-dispatch capacity to the TSO in the context of the Network Reserve.

the Capacity Reserve, i.e. through penalty payments or imbalance payments from balancing responsible parties that were out of balance at the time the Reserve was dispatched. The German authorities note that TSOs are not obliged to submit their costs for reimbursement to the regulatory authority, but if they choose to do so the costs will be regarded as non-influenceable costs for the purpose of tariff regulation.

2.6. Duration

- (29) The Capacity Reserve Ordinance does not contain an end date. TSOs will organise tenders for delivery of two years, starting with a tender in 2017 for a delivery period of 2018-2020. It is foreseen that after that, every two years a new tender is organised and a (potentially adjusted) amount of capacity is procured for a delivery period of two years. The German authorities have indicated that the measure will end once it has been established on the basis of the assessment of the size of the Capacity Reserve that there is no longer a need to maintain a reserve.

3. ASSESSMENT OF THE MEASURE

3.1. Qualification of the Capacity Reserve as State aid

- (30) According to Article 107(1) TFEU, the qualification of a measure as State aid requires the following conditions to be met cumulatively: a) the measure must be financed through State resources and be imputable to the State; b) it must grant an advantage liable to favour certain undertakings or the production of certain goods; c) the measure must distort or threaten to distort competition and d) the measure must have the potential to affect trade between Member States.
- (31) The German authorities argue that the Capacity Reserve does not constitute State aid, because the measure is not financed from State resources, because the operators receive no advantage (based on the Altmark jurisprudence) and because the measure does not impact cross-border trade.

3.1.1. Existence of State resources and imputability

- (32) The German authorities put forward that the measure is not financed from State resources because it merely concerns an involvement of the State in a redistribution of resources between private parties. They argue that this involvement does not go so far as to determine that the resources involved are State resources that are constantly under the control of the State. This follows from the fact that the TSOs involved continue to operate the network according to and within their principal objective, i.e. the safe and secure provision of electricity from generators to consumers. The German authorities furthermore argue that according to the measure it is for the TSOs themselves to decide whether and to what extent they wish to be reimbursed for their expenses under the Capacity Reserve via the network tariffs. No separate charge ('Umlage') is provided for.
- (33) The Commission notes that in order for a measure to be imputable to the State and financed from State resources, the Court of Justice has held that it is not

necessary to establish that there has been a transfer of money from the State budget or from a public entity.¹² This has been confirmed in the *Vent de Colère* judgment¹³, where the Court held that a mechanism, developed by the State, for offsetting in full the additional costs imposed on undertakings because of an obligation to purchase wind-generated electricity at a price higher than the market price, by passing on those costs to all final consumers of electricity in the national territory, constitutes an intervention through State resources. In other words, the Court found State resources where funds for a measure were financed through compulsory contributions imposed by domestic legislation and managed or allocated in accordance with the provisions of that legislation.

- (34) Similarly, the General Court confirmed that the German renewables support scheme 'EEG' involves State resources even though the support for renewables did not come from the general budget of the State but from the EEG surcharge paid eventually by the final consumers without passing through the State budget and thus not involving any burden on the general budget.¹⁴ The General Court considered that for State resources to be involved it is sufficient that the TSOs had been designated by the State to manage the system of aid for the production of EEG electricity and that the obligation on the TSOs that additional payments be made to producers of EEG electricity was compensated by means of the funds generated by the EEG surcharge, administered by the TSOs and allocated exclusively to finance the support and compensation schemes set up by the EEG 2012.
- (35) In the present case it is also the State that has developed the mechanism to finance the measure. It has decreed by law (Section §13e(3) EnWG) that the costs of the measure can be passed on to all consumers through an increase of the network tariffs ('Netzentgelte'), as described in recital (28). The measure is therefore imputable to the State.
- (36) The Capacity Reserve Ordinance furthermore prescribes that the TSOs shall deduct from their costs the revenues they receive through the measure. These revenues arise in two forms: first, as imbalance charges from those balancing responsible parties whose position was not in balance at the time the reserve was dispatched and second, in the form of penalties which capacity providers in the Capacity Reserve are ordered to pay in case of non-availability.
- (37) On this basis, the Commission notes that, since the TSOs are mandated to attribute as well as collect the funds by law, the financial flows are constantly under the control of the State even if they take place between private parties, in this case the capacity providers and network users, with the TSOs as intermediaries entrusted by the State to administer the funds. The Capacity Reserve Ordinance clearly confers on the TSOs a series of obligations and rights as regards implementation of the mechanisms resulting from that law, so that the TSOs are the central point in the operation of the system laid down by it, similar

¹² *Doux Elevage*, EU:C:2013:348, paragraph 34, *France v Commission*, EU:T:2012:496, paragraph 36; Judgment in *Bouygues Telecom v Commission*, C-399/10 P et C-401/10 P, EU:C:2013:175, paragraph 100; *Vent de Colère*, C-262/12, EU:C:2013:851, paragraph 19.

¹³ *Vent de Colère*, EU:C:2013:851.

¹⁴ Judgment in *Germany v Commission ("EEG 2012")*, Case T-47/15, ECLI:EU:T:2016:281, paragraphs 81- 128.

to the way in which the EEG, the Network Reserve and the ABLAV interruptibility scheme are organised and governed. The funds involved in the operation of the Capacity Reserve are administered for the general purpose of ensuring security of supply, in accordance with detailed rules defined beforehand by the German legislature in the Capacity Reserve Ordinance.

- (38) The law allows the TSOs to recover the full costs of this activity from network users. Even if no separate 'capacity reserve charge' is foreseen, the fact that the State explicitly allows the TSOs to recover their expenses in full from the network tariffs indicates that whatever is recovered is recovered because the State has explicitly provided for it. The funds do not pass directly from the network users to the capacity providers in the Capacity Reserve, that is to say, between private economic operators, but require the intervention of intermediaries (TSOs), entrusted by the State with their collection and administration. Accordingly, it must be held that the funds generated by the Capacity Reserve Ordinance and administered collectively by the TSOs remain at all times under the dominant influence of the public authorities. On this basis, the funds must be categorised as State resources.
- (39) The Commission therefore finds that the measure is financed through State resources and that it is imputable to the State given that this has been laid down in legislative provisions of Article 13(e) EnWG.¹⁵

3.1.2. *Existence of a selective advantage*

- (40) 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, that is to say in the absence of State intervention.
- (41) The German authorities argue that the payments made under the Capacity Reserve do not constitute an advantage because they are to be regarded as a compensation for services of general economic interest (SGEI) that meets the four conditions set out by the Court of Justice in the *Altmark* judgment¹⁶.
- (42) The Court of Justice, in its *Altmark* judgment, has provided clarification regarding the conditions under which public service compensation does not constitute State aid owing to the absence of an advantage, by providing the following four cumulative criteria the measure needs to meet.
- (43) First, the recipient undertaking must actually have public service obligations ('PSO') to discharge, and the obligations must be clearly defined. Second, the parameters on the basis of which the compensation is calculated must be established in advance in an objective and transparent manner. Third, the compensation cannot exceed what is necessary to cover all or part of the costs incurred in the discharge of public service obligations, taking into account the relevant receipts and a reasonable profit. Fourth, where the undertaking that is to discharge public service obligations is not chosen following a public

¹⁵ See also *Vent de Colère* judgment; point 18.

¹⁶ Judgment in Case C-280/00 *Altmark Trans GmbH and Regierungspräsidium Magdeburg v Nahverkehrsgesellschaft Altmark GmbH* ('*Altmark*') [2003] ECR I-7747

procurement procedure to select a tenderer capable of providing these services at the least cost to the community, the level of compensation needed must be determined on the basis of an analysis of the costs which a typical undertaking, well-run and adequately provided with means to meet the public service requirements, would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations.

- (44) The Commission at this stage has doubts that the first and the fourth criterion are fulfilled.
- (45) With regard to the first Altmark condition, the Commission recalls that in the absence of specific Union rules defining the scope for the existence of an SGEI, Member States have a wide discretion in defining a given service as an SGEI. In such cases, the Commission's competence is limited to checking whether the Member State has made a manifest error when defining the service as an SGEI.¹⁷
- (46) The Commission notes that Article 3(2) of the Electricity Directive¹⁸ confines the possibility for Member States to apply PSOs in the liberalised electricity sector. In particular, it limits the scope of PSOs to specific objectives: security, including security of supply, regularity, quality and price of supplies and environmental protection, including energy efficiency, energy from renewable sources and climate protection. It furthermore prescribes that the obligations must be clearly defined, transparent, non-discriminatory, verifiable and shall guarantee equality of access for electricity undertakings of the Community to national consumers.
- (47) The Commission doubts that these conditions are met in the case at hand.
- (48) First, the reserve may be discriminatory as it seems to de facto exclude demand response operators and to de iure exclude foreign capacity providers (see recital (10)) from effectively participating in the reserve.
- (49) With regard to the participation of demand response operators, the Commission notes that whilst de iure they are not prevented from taking part in the Capacity Reserve, a number of eligibility requirements apply to both generators and demand response operators alike that may de facto exclude the latter from entering the reserve successfully. For instance, the minimum bid size of 10 MW combined with the requirement that one bid should represent one installation, means that aggregation of smaller generation units or consumer loads is not allowed. This makes it impossible for smaller responsive consumers to participate even though they might be able to, in an aggregated form, make a sizable and useful contribution. A second example is the requirement that the installation is connected to a grid of a voltage level of 110 kV or more. Also this requirement excludes potentially important and useful capacity providers. Other rules that discourage the participation of demand response operators include the

¹⁷ Case T-289/03 BUPA and Others v Commission [2008] ECR II-81, paragraphs 166-169 and 172; Case T-17/02 Fred Olsen [2005] ECR II-2031, paragraph 216.

¹⁸ Directive 2009/72/EC of the European parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC

possibility of being subjected to as many as ten test runs per year, the obligation that consumers should constantly consume throughout the two years, to buy their power forward for the entire delivery period (i.e. two years), the absence of a maximum delivery period and the impossibility for the loads that participate in the Capacity Reserve to become active on the balancing capacity market¹⁹ after their Capacity Reserve contract expires. The Commission considers that taken together these provisions may have the discriminatory effect of a de facto exclusion of demand side response operators.

- (50) With regard to the participation of foreign capacity, the Commission notes that the Capacity Reserve does not allow for their participation. Given that it is not excluded that foreign capacity can effectively contribute to security of supply in Germany in extreme situations, the Commission is not convinced that explicitly excluding foreign generators is in line with the requirement of non-discrimination.
- (51) Second, the measure may not be necessary for security of electricity supply in Germany and can therefore not be justified in the light of that objective. The Commission observed in its SGEI Communication²⁰ that, in line with the case law of the Court of Justice referred to in the Communication:

47. It transpires from Article 106(2) of the Treaty that undertakings entrusted with the operation of SGEIs are undertakings entrusted with ‘a particular task’. Generally speaking, the entrustment of a ‘particular public service task’ implies the supply of services which, if it were considering its own commercial interest, an undertaking would not assume or would not assume to the same extent or under the same conditions. (...)

48. The Commission thus considers that it would not be appropriate to attach specific public service obligations to an activity which is already provided or can be provided satisfactorily and under conditions, such as price, objective quality characteristics, continuity and access to the service, consistent with the public interest, as defined by the State, by undertakings operating under normal market conditions. As for the question of whether a service can be provided by the market, the Commission's assessment is limited to checking whether the Member State has made a manifest error.

- (52) The Commission notes that the objective the measure seeks to achieve may be to ensure security of energy supply, but that the information provided by Germany raises doubts whether it is necessary for security of supply. The Commission notes that in order to assess the need for aid for generation adequacy purposes, such as granted by the Capacity Reserve, an adequacy assessment must be carried out that demonstrates that absent the measure a suboptimal degree of security of supply would be achieved. The necessity calculations submitted by Germany to the Commission demonstrate that only in a worst case scenario

¹⁹ Germany does not have a distinct balancing energy market at the moment. However, the future Guideline on Electricity Balancing makes it mandatory that a balancing energy market is set up in all member states. In this future balancing energy market demand response operators will be able to take part even if they have previously been part of the capacity reserve.

²⁰ Communication from the Commission on the application of the European Union State aid rules to compensation granted for the provision of services of general economic interest, 2012/C 8/02

there may be instances of lost load that go beyond the security standards applied in neighbouring countries and that the assumptions²¹ related to the availability of dispatchable generation that are used to develop this worst case scenario need to all happen at the same time and be combined with extreme weather conditions in order for actual loss of load events to occur. This factor, combined with the absence of an economic justification that demonstrates the benefits of the measure outweigh its costs and the absence of an end date and phase out plan, make the Commission doubt that the measure will ensure security of supply as required by the Electricity Directive. Given the necessity calculation submitted by Germany, the Commission has doubts that the public service obligation can qualify as a genuine SGEI.

- (53) Third, the Commission recalls that SGEIs are justified where the market is unable to deliver. As the Commission has explained in the abovementioned Point 48 of the SGEI Communication, it would not be appropriate to define as an SGEI an activity that either is or can be provided satisfactorily by undertakings operating under normal market conditions. In order to assess whether a service can be provided by the market, also possible changes to the design of the market that improve market functioning and that the Member State can implement have to be taken into account. If such changes are possible, it would not be appropriate to define a public service obligation. Germany argues that thanks to important market reforms, the German market is expected to provide optimum security levels but that the Capacity Reserve will provide extra insurance beyond what the market will deliver. The Commission agrees that planned market reforms in Germany can be expected to contribute to security of supply, but notes that these reforms are lacking in two crucial respects: i) the absence of balancing market rules that ensure prices reach the average value of lost load for German consumers at times when electricity is so scarce that consumers are involuntarily disconnected; and ii) the absence of efficient locational investment signals and increasing reliance on out of market re-dispatching, which fails to ensure capacity (and transmission) is built and maintained in the right places. In the absence of these reforms, the Commission finds that an SGEI for security of supply cannot be justified because the market has not been enabled to deliver.
- (54) On this basis, the Commission doubts that the first Altmark criterion is met.
- (55) The Commission also has doubts whether the fourth Altmark criterion is met.
- (56) According to the fourth Altmark criterion, the service provider either has to be chosen following a procurement procedure to select a tenderer capable of providing the services at the least cost to the community or the amount of compensation needed must be determined on the basis of an analysis of the costs which an efficient provider would have incurred.

²¹ The worst case scenario is discussed in more detail in Section 3.2.2.2 and the assumptions that make up this scenario are list in recital (90)

- (57) A procurement procedure only ensures that the service is provided "at the least cost to the community" if it ensures sufficiently open and genuine competition.²²
- (58) The Commission notes that in the present case, although a tender mechanism is provided for, it is not designed to ensure sufficiently open and genuine competition. The Commission notes in particular that, as explained above, the eligibility requirements appear unnecessarily restrictive, not allowing demand response operators to participate on an equal footing with generators. The Commission notes that this not only has a potentially discriminatory effect, but also that where participation is unduly restricted, the tender might clear at a higher price than when all potential capacity is allowed to participate. The Commission furthermore notes that there is no evidence that the second leg of the fourth Altmark criterion would be met.
- (59) The Commission therefore doubts that the first and fourth Altmark criteria are met and therefore cannot exclude that the measure constitutes an advantage.
- (60) The measure is also selective because it only applies to certain economic operators, i.e. the selected participants to the Capacity Reserve.
- (61) The Commission therefore at this stage finds that the measure confers a selective advantage on its beneficiaries.

3.1.3. Distortion of competition and effect on trade

- (62) The liberalised German electricity market is open and well-connected to those of its neighbours. Electricity is traded within the internal energy market and market functioning ensures that electricity is generated where it costs least and transmitted via interconnectors to be consumed where demand is highest. The Capacity Reserve foresees payments to some operators in the German bidding zone under the condition that they are no longer active on the market. Where plants leave the market, this has an effect on the merit curve of the bidding zone in which they operate and hence also on the way in which this bidding zone interacts with neighbouring zones. The Capacity Reserve therefore is liable to affect competition and trade on electricity market.

3.1.4. Conclusion on the existence of State aid

- (63) In the light of the assessment above, the Commission reaches the preliminary conclusion that the Capacity Reserve constitutes State aid within the meaning of Article 107(1) TFEU.

3.1.5. Legality of the aid

- (64) Germany has notified the measure to the Commission and has not yet implemented the measure. Germany has thus fulfilled its obligations under Article 108(3) TFEU

²² Communication from the Commission on the application of the European Union State aid rules to compensation granted for the provision of services of general economic interest, 2012/C 8/02, paras. 65 - 68

3.2. Compatibility of the aid with the internal market

- (65) Where public service compensation does not comply with the conditions of the Altmark case-law, and to the extent that the general conditions for the applicability of Article 107 (1) of the Treaty are fulfilled, such compensation constitutes aid subject to the provisions of Articles 106, 107 and 108 TFEU. For the reasons set out in Section 3.1.2 above, the Commission doubts whether the measure in question can be classified as an SGEI or public service obligation. Consequently, it does not appear to fall within the scope of Article 106 TFEU and must therefore be assessed in the light of Article 107 TFEU.
- (66) The Commission takes the view that the Capacity Reserve is an aid scheme to ensure generation adequacy and security of electricity supply and therefore falls within the scope of Section 3.9 EEAG, setting out the conditions under which aid for generation adequacy may be considered compatible with the internal market on the basis of Article 107 (3) (c) of the Treaty. The Capacity Reserve aims to create a pool of capacity to be dispatched in case of extreme and unexpected circumstances i.e. when insufficient generation is available in the market to cover demand.
- (67) To assess whether the payments that will be made to the operators in the Capacity Reserve can be considered compatible with the internal market, the Commission assesses whether the design of the measure meets the following criteria listed in Point (27) EEAG (with more specific details for measures ensuring generation adequacy in Sections 3.9.1 to 3.9.6 EEAG):
- (a) contribution to a clearly defined objective of common interest (see section 3.2.1 below);
 - (b) need for State intervention (section 3.2.2 below);
 - (c) appropriateness (section 3.2.3 below);
 - (d) incentive effect (section 3.2.4 below);
 - (e) proportionality (section 3.2.5 below);
 - (f) avoidance of undue negative effects on competition and trade (section 3.2.6 below);
 - (g) transparency of the aid (section 3.2.7 below).

3.2.1. Objective of common interest

- (68) As stated in Point (30) EEAG, the primary objective of aid in the energy sector is to ensure a competitive, sustainable and secure energy system in a well-functioning Union energy market.
- (69) Points (219) to (221) EEAG define more specific criteria of how Member States should define the common interest objective.
- (70) In accordance with Point (219) EEAG measures for generation adequacy can be designed in a variety of ways and can be aimed to address both short term

flexibility concerns and long term concerns about the ability to meet a generation adequacy target.

- (71) The Commission notes that the objective of the Capacity Reserve is defined in §13e (1) EnWG, which explains that the reserve is created to enable network operators to address situations in which a failure of the market to contract a sufficient amount of supply to meet demand risks jeopardizing security of supply.
- (72) The Commission notes that the Capacity Reserve is an aid scheme that rewards generators for being available to the TSOs to ensure sufficient power is generated to meet demand when a situation arises that the market does not clear. The objective of the measure is therefore in principle to address concerns about security of electricity supply.
- (73) Point (220) EEAG explains that aid for generation adequacy may contradict the objective of phasing out environmentally harmful subsidies and that alternative ways for achieving generation adequacy without these negative environmental impacts should be considered.
- (74) The Commission takes the preliminary view that the Capacity Reserve is unlikely to undermine this objective. The Capacity Reserve has to be regarded in the context of a set of measures to manage the energy transition towards a decarbonised electricity system in Germany without compromising security of supply and at the least possible cost. The German authorities argue that in order to complete this transition in an efficient and effective way, not only are market reforms (i.a. geared towards enabling the participation of renewables) necessary, but also safeguards allowing the TSOs to ensure the security of supply. Thus, the Capacity Reserve is intended to provide only the back-up should the instrument of first choice, the market, fail to deliver. Furthermore, plants that succeed in securing a capacity contract will run fewer hours than they would have in the market which, depending on the technology, may have emission reducing effects. The Commission nevertheless welcomes the views of interested parties on these preliminary observations.
- (75) Point (221) EEAG underlines amongst others the need to clearly define the objective at which the measure is aimed, including when and where the adequacy problems are expected to arise.
- (76) On this basis, the Commission concludes that while security of supply, also in the form of the provision of a sufficient amount of excess generation capacity to deal with unexpected scarcity situations resulting from an unforeseen development of the adequacy situation, constitutes an objective of common interest, it invites further evidence that Point (220) EEAG is fully complied with.

3.2.2. *Need for State intervention*

- (77) As a general principle, in order to demonstrate the need for State intervention it needs to be established that a market failure exists that prevents market forces from achieving generation adequacy and thus risks undermining the objective of security of supply.

3.2.2.1. Framework for assessing necessity

- (78) Points (222) to (224) EEAG define more specific criteria of how Member States should demonstrate the need for State intervention. Point (222) EEAG requires a proper analysis and quantification of the generation adequacy problem. Point (223) EEAG requires a demonstration of the reasons why the market cannot be expected to deliver adequate capacity. Point (224) requires the Commission, on the basis of information submitted by the Member State, to take account of assessments on the ability of the existing generation fleet and the grid to address situations of high demand.
- (79) With regard to Point (222) EEAG, the Commission takes the view that irrespective of the type of capacity mechanism a Member State intends to implement a thorough adequacy assessment needs to be carried out before implementing a capacity mechanism. An adequacy assessment based on probabilistic modelling can provide reliable projections as to the likelihood of supply being sufficient to meet demand in the medium to long term. Where the assessment demonstrates that the probability of loss of load events is high, market reforms are likely to be necessary and it may be appropriate to accompany them by a capacity mechanism to ensure an appropriate level of security of supply is maintained. An adequacy assessment is moreover essential to identify the amount of capacity that needs to be maintained in the system in order to ensure secure supplies. Moreover, it can identify the market failures as required by Point (223) EEAG.
- (80) The Commission takes the view that depending on the market failures and security of supply situation the adequacy assessment identifies, different types of capacity mechanisms may constitute an appropriate response. For instance, where structural, long term adequacy concerns are identified, it is likely that the best way to address these is by way of a market-wide capacity mechanism. Where on the other hand, *there are good reasons to assume that the market does not (yet) deliver appropriate exit signals*, or where *market exit* needs to be managed in an orderly and *gradual* way to *prevent too many closures leading to temporary shortages*, a temporary strategic reserve, such as the German Capacity Reserve may be a more appropriate response. For instance, *In market areas where market reforms are still in the early stages of their implementation and market participants are hesitant to invest on the basis of price signals alone, a strategic reserve can provide an effective transitional measure on the road to market-based new investment inspired by market reforms.*²³
- (81) With regard to strategic reserves such as the notified Capacity Reserve, the Commission takes the view that they do *not address underlying market failures*. *As with other targeted capacity mechanisms, the strategic reserves correct a missing money problem only for plants selected to participate in them*. Hence, where an adequacy assessment identifies a long term capacity shortage caused by structural revenue shortfall for generators in the market, the strategic reserve is unlikely to be an appropriate response.

²³ See for a more in-depth discussion on the relative merits of different types of capacity mechanisms, including strategic reserve: Report from the European Commission, Final Report of the Sector Inquiry on Capacity Mechanisms, 30 November 2016, COM(2016) 752 final and the Staff Working Document accompanying the Final Report to the Sector Inquiry, SWD(2016) 385 final, Recital (501).

- (82) In order for an adequacy assessment to demonstrate that there is potential for a strategic reserve, it should therefore be demonstrated that all market reforms necessary to ensure sufficient investment in capacity are being implemented and that in the long run no capacity shortfalls are to be expected. Where market prices can reach the value of lost load (i.e. the value that consumers are willing to pay to avoid being disconnected or 'VOLL') and wholesale market participants face full balancing responsibility, there should be sufficient incentives for investors to provide capacity up to an economically efficient level. Once this state is reached, any protection beyond what the market provides – if it functions perfectly – is by definition economically inefficient because it forces consumers to pay more for security of supply than they are willing to. A strategic reserve which provides protection beyond what the market provides should at that point be phased out.
- (83) With regard to the German Capacity Reserve, this means that in order to justify its implementation the necessity assessment should demonstrate, in line with Points (222) to (224) EEAG that in the long run the reformed market will ensure an appropriate degree of security of supply, but that in the short run there are valid reasons to assume that situations may arise in which the market may fail to deliver the economically efficient level of security of supply. The Capacity Reserve should be phased out once the market is reformed and fully delivering a degree of protection that matches consumers' willingness to pay, because it will no longer be necessary.

3.2.2.2. *Germany's assessment of the necessity of the Capacity Reserve*

- (84) As part of its notification of the Capacity Reserve the German authorities have submitted a necessity assessment that seeks to demonstrate that in the future it is unlikely that scarcity events will take place thanks to the substantive market reforms that are being implemented, but that it cannot be excluded that in the meantime the market might exceptionally and in extreme circumstances suffer scarcity events given that the market may initially not develop as economic theory suggests.
- (85) The submitted necessity assessment builds upon a study commissioned by the German Federal Ministry of Economic Affairs and Energy ('BMWi') and published on 6 March 2015.²⁴ That study took as a point of departure ENTSO-E's best estimate scenario for Germany from its 2014 Scenario Outlook and Adequacy Forecast (scenario B)²⁵. Applying a stochastic simulation approach, the impact of a number of generation and demand/load scenarios was modelled, whereby it was assessed whether residual demand (i.e. the demand that remains after all available variable renewable energy is used) can be met by the non-renewable generation and other sources of capacity, such as demand-response, storage or imports via interconnectors, remaining in the system. The stochastic simulation approach allows to determine the probability to completely cover the

²⁴ Consentec and R2B, System Adequacy for Germany and its Neighbouring Countries: Transnational Monitoring and Assessment, Study commission by the Federal Ministry of Economic Affairs and Energy: https://www.bmwi.de/Redaktion/DE/Downloads/V/versorgungssicherheit-in-deutschland-und-seinen-nachbarlaendern-en.pdf?__blob=publicationFile&v=3

²⁵ Scenario B <https://www.entsoe.eu/publications/system-development-reports/adequacy-forecasts/soaf-2014-2030/Pages/default.aspx>

load because it takes into account the fact that the values of each of the input parameters change, for instance because of the weather or because of outages of generation facilities or transmission constraints. Finally, the study calculates these values not only for Germany, but also for its neighbouring countries, so as to be able to draw a conclusion that takes into account the extent to which imports can be relied upon.

- (86) The study concludes that *"in the region covering Germany and the neighbouring countries connected electrically and/or geographically, load and generation are balanced at any time with an extremely high probability of almost 100% up to the year 2025."*²⁶
- (87) The necessity assessment, as submitted as part of the notification of the Capacity Reserve uses the same model as the March 2015 study, but is based on a 'reasonable worst case scenario' instead of on a 'best-estimates scenario'. The assessment confirms that it is unlikely that the market will structurally deliver an insufficient amount of capacity. Rather, the expectation is that with the market reforms that are being carried out in Germany, revenues in the electricity-only market will be sufficiently high to attract sufficient capacity and ensure normally security of supply. There will be no 'missing money' problem and in the long run no structural capacity shortages.
- (88) However, the assessment goes on to argue that these expectations can be wrong and the market may not develop in the way economic theory suggests. Especially in the current situation, in which an important physical and regulatory transformation of the German electricity sector is evolving, investors may be hesitant to come forward and invest in new capacity in the short term. Moreover, many more operators of existing facilities may unexpectedly decide to close down if wholesale market revenues continue to be insufficient to cover their costs. It may moreover take time for market participants to get acquainted with the new market reality. The necessity assessment assesses in detail to what extent these scenarios are realistic and what their impacts would be. The German authorities therefore define the role for the Capacity Reserve as an 'insurance against extreme developments'.
- (89) The necessity assessment hence proceeds to develop a reasonable worst case scenario. It does so by taking ENTSO-E's best estimates from 2014 for the year 2020 and applying to these figures certain deviations that could arise in the worst case. The value of this worst case scenario have subsequently been fed into the model as input parameters. The model was then run, based on the residual load approach as explained in recital (85). The result is a number of hours in which residual load cannot be met by non-renewable generation that is higher than it would have been in a best-estimates scenario.
- (90) The key assumptions that make up the reasonable worst case scenario (whereby the values indicate the deviation from the scenario B of ENTSO-E's assessment) are:

²⁶ Consentec and R2B, page iii.

- (a) Premature²⁷ decommissioning of conventional power plants (excluding nuclear) in the amount of 10 GW;
 - (b) Premature²⁸ decommissioning of nuclear power plants in the amount of 5.4 GW;
 - (c) Unavailability of currently mothballed lignite power plants, given that they cannot timely address extreme situations on the electricity market: no additional consideration of 2.7 GW lignite power plants;
 - (d) Consideration of the risk regarding earlier than estimated decommissioning of foreign conventional power plants in the amount of 20 GW;
 - (e) Delay of cross-border grid expansion beyond 2020, neglecting the cross-border expansion between Germany and its neighbours in the amount of approximately 5 GW additional cross-border transmission capacity;
 - (f) Consideration of unpredictable abnormal behaviour of balancing responsible parties in Germany, in the amount of a reduction of 2.5 GW of generation capacity.
- (91) Having run the model with these values, resulting from the worst case scenario assumptions, whereby moreover calculations were based on the year 2012 with a particularly cold winter, the results demonstrate an increase in the number of hours in which the residual load cannot be met. Applying the loss-of-load-expectation ('LOLE') metrics, the reasonable worst case scenario would result in five LOLE hours in the year 2020.
- (92) Germany does not apply a reliability standard expressed in LOLE hours, but the necessity assessment recalls that in most of Germany's neighbouring countries (France, the Netherlands and the United Kingdom), a LOLE standard of 3 hours is applied. If the worst case scenario unfolds, this standard would not be met.
- (93) The necessity assessment concludes with the calculation that the establishment of a 2 GW strategic reserve would reduce the amount of LOLE hours from 5 to 3, thus putting Germany's security of supply level in a worst case scenario at a par with that of its neighbouring countries.

3.2.2.3. *Commission assessment of the necessity of the measure*

- (94) The Commission doubts whether the Capacity Reserve is necessary for three main reasons:
- (a) First, the Reserve as notified by Germany does not contain an end date and appears to be intended as a permanent feature of the electricity market rather than a transitional measure accompanying market reforms, which implies that it may continue to be applied also after it is no longer necessary.

²⁷ I.e. in addition to what has presently been announced for closure to Bundesnetzagentur before 2020.

²⁸ I.e. ahead of the determined closure dates as shown in recital (116)

- (b) Second, the Commission notes that the absence of an economic reliability standard and a value of lost load ('VOLL') limits the abilities of the market to provide sufficient capacity and does not allow proper sizing of the reserve.
- (c) Third, the Commission welcomes the notification of a worst case scenario, but wishes to invite interested parties to submit their views as to whether the assumptions used are reasonable.

The remainder of this section discusses these points.

(a) *The absence of an end date or phase-out plan*

- (95) The Commission notes that the Capacity Reserve as notified by Germany does not contain an end date and appears to be intended as a more or less permanent feature of the electricity market reviewed and evaluated at regular intervals.
- (96) Point (222) EEAG requires the Member State to properly analyse and quantify the need for State aid and Point (223) requires the Member State to clearly demonstrate why the market cannot be expected to deliver adequate capacity in the absence of intervention. In this context, the Commission takes note of Germany's expectation that its market reforms should in the future provide investment signals that result in sufficient capacity also in times of scarcity. Germany therefore has identified no market failure to be addressed by the Capacity Reserve. The Commission notes that in a situation in which there is no missing money problem, where market reforms are implemented and applied and no long term market failures are identified that would prevent the market from providing sufficient capacity in the future, there can be no permanent need for a strategic reserve, because its necessity ceases to exist once the market reforms take effect and the risks for generation adequacy have been addressed. At such point, the reserve will by definition provide protection beyond the maximum consumers are willing to pay.
- (97) With regard to the market reforms, the Commission notes that important measures are being implemented in Germany, in particular the possibility for prices to rise to the technical price cap of EUR 10,000/MWh on the intraday market and the potential for imbalance charges at the time the Capacity Reserve will be dispatched at double the final intraday price for the balancing periods in which the Capacity Reserve was dispatched.
- (98) The Commission furthermore takes note of ENTSO-E's adequacy forecasts which estimate that the security of supply situation in Germany shows such a comfortable capacity margin that it is highly unlikely that scarcity events resulting in loss of load hours will arise as a result of insufficient generation.²⁹ The aforementioned March 2015 Study confirms this conclusion by applying probabilistic modelling.

²⁹ The capacity margin is the difference between installed capacity and peak demand. Obviously, blackouts can still happen as a result of an outage of the distribution or transmission grid, but such lost load is unrelated to generation adequacy.

(99) The Commission therefore takes the preliminary view that with the full implementation of the correct market reforms it may be expected that in the future a situation will arise in which there is no longer an economic justification for maintaining a strategic reserve outside the market, given that the market itself has ensured an optimum amount of capacity and any protection beyond that is economically unnecessary. The Commission thus questions Germany's view that even in a perfectly functioning market a strategic reserve can provide additional security of supply by coming to the rescue in extreme events or circumstances, because even if such a situation may exceptionally occur, it does not economically justify the holding of a strategic reserve.

(b) The absence of an estimate of the average value of lost load

(100) Point (222) EEAG requires the proper quantification of the generation adequacy problem, that the unit of measure for quantification should be described and that its method of calculation should be provided. The Commission notes that Germany's reasoning that the market will ensure security of supply can only be verified when prices in the reformed energy-only market are able to rise to the aforementioned VOLL, because investors will only provide capacity to the extent they expect to receive sufficient revenues.

(101) The Commission notes that Germany has not set a price cap, but that it allows prices to rise to the technical limit set by the power exchange EPEX Spot on the intraday market and that in the case of imbalance, penalties are applied that are higher than that limit (currently 10,000 EUR/MWh). Moreover, Germany explains that in the event the price cap on the intraday market is hit, EPEX Spot starts a process with the aim of increasing the limit.

(102) Germany has not calculated its average VOLL and argues that VOLL calculations are in general difficult to carry out and do not take into account external costs of blackouts that consumers may not factor in when expressing their individual VOLLs.

(103) The Commission agrees that determining a VOLL is not straightforward and that a determined VOLL is by definition an average of the widely varying values that different consumers attach to enjoying uninterrupted supplies at different times. Nevertheless, a robust estimate of VOLL is essential to objectivise the need and the size of interventions in the energy market to the benefit of security of supply, because VOLL represents the value to consumers of secure electricity supplies. The Commission therefore insists that an estimate of average VOLL is required, because without it the necessity of the Capacity Reserve cannot be demonstrated.³⁰ The reserve can only be considered necessary when its benefits to security of supply (i.e. by preventing blackouts at a cost of VOLL) outweigh its costs (in casu, by contracting capacity for the Capacity Reserve).

(104) The Commission concluded in its sector inquiry on capacity mechanisms³¹ that Member States should calculate an economically optimum long term average

³⁰ It is also needed to ensure the aid awarded through such interventions is proportional, and to minimise any adverse impacts on trade and competition.

³¹ European Commission, Final Report of the Sector Inquiry on Capacity Mechanisms, 30 November 2016, SWD(2016)385, page 8.

level of reliability, and hence apply it as a so-called 'reliability standard'. Such a standard should reflect a trade-off between the costs of providing security of supply (ie. investing in capacity) and the benefits of secure supplies for consumers. The reliability standard should work as a benchmark or a limit until which additional protection (including by way of a capacity mechanism) is useful.

- (105) The Commission notes that Germany has not established a reliability standard. Instead, the adequacy studies it has carried out use the standards laid down in some of the surrounding countries (France, the Netherlands and Great Britain) and compare the adequacy situation with the 3 hour LOLE standard they apply. The Commission notes that without calculating a VOLL Germany does not know what its optimum LOLE standard is. Sizing the Capacity Reserve on the basis of the standards of neighbouring countries is therefore not a satisfactory approach. The Commission also notes that Germany makes the comparison to other countries' reliability standards – which represent a long term average reliability target – in the context of a generation adequacy study concerning the worst case scenario in only one year – 2020. Germany has not made a longer term adequacy assessment so the reasonable worst case scenario is not sufficient to determine whether the level or reliability that would be achieved in Germany in a worst case 2020 would mean that, on average over the longer term, the level of reliability in Germany would be less than consumers would choose to pay for.
- (106) The Commission furthermore notes that the current approach to sizing the Capacity Reserve does not appear to include a cost-benefit analysis. The initial size of 2 GW is laid down by law, and for the second delivery period an adjustment of that figure can be decided upon by the German authorities (Ministry or regulatory authority) on the basis of the TSO's annual monitoring reports. A role for an economic adequacy assessment appears not to be foreseen.
- (107) The Commission recalls that strategic reserves can only be a necessary form of intervention in the electricity market if they are aimed at and designed to provide insurance in the transition to a new market design. Strategic reserves can play this role well in the current European context where there is currently excess capacity and the challenge is as much about managing an orderly exit of overcapacity as it is about ensuring longer term investments are made. Also against this background, the question whether insurance in the form of a strategic reserve can be justified still requires a comparison of the cost of putting that insurance in place, against the protection that the insurance is expected to offer. For this, an estimate of VOLL is crucial.
- (108) The data provided by Germany suggests that the Capacity Reserve cannot be expected to provide value for money for consumers. The price cap for procuring the Capacity Reserve is EUR 100,000/MW/year and the reserve is intended to comprise 2 GW of capacity. If 2 GW of capacity is procured at the price cap the cost would be EUR 200 million per year. In the adequacy assessment provided by Germany, in the worst case scenario the availability of the Capacity Reserve reduces the loss of load expectation in Germany by 2 hours in 2020. Assuming that the full reserve capacity is deployed for a full 2 hours, the Capacity Reserve will avoid 4 GWh of energy unserved. The cost of each MWh of energy unserved would be 50,000 EUR/MWh. Given that VOLL in surrounding countries is between 11,000 (in Ireland) and 26,000 EUR/MW (in France), the

reserve does not appear to represent value for money for German consumers. This rough³² calculation suggests that if German consumers have a similar average VOLL to French consumers, then the price cap in the tender should be almost halved.

- (109) This point is also important in the context of the proper separation between the market and the Capacity Reserve, which is discussed in detail in Section 3.2.6 on the impact of the reserve on competition and trade.
- (110) To enable a fuller comparison of the expected costs of the reserve against the benefits, the Commission requests clarification from Germany on whether its modelling that all 2 GW of capacity is required to deliver in all LOLE-events to reduce the LOLE from 5 to 3 hours in 2020, or if only a limited quantity of the reserve is required. The Commission also requests clarification on the actual expected costs of each MWh of electricity dispatched from the Capacity Reserve (also taking into account the variable running costs and fuel costs – including secure fuel contracting).
- (111) The Commission invites views from interested parties on the proposed method for comparing the costs and benefits of the insurance provided by the Capacity Reserve.

(c) *The assumptions in the worst case scenario*

- (112) The Commission takes the view that strategic reserves in general and the Capacity Reserve in particular, can be appropriate measures to accompany bold market reforms (see Table 1), especially when an important energy transition is ongoing. In such situations a strategic reserve can provide the additional insurance that allows system operators to react timely in case the market does not develop as expected.
- (113) In that context, the Commission welcomes the reasonable worst case scenario assessment carried out by Germany, because it gives insight into the likelihood of the extreme circumstances arising and what their impact would be. It also provides a picture of what the LOLE in Germany would be in the year 2020, in case the generation adequacy situation develops in the worst possible way.
- (114) The Commission notes however that in order for the worst case scenario exercise to produce a realistic LOLE-value, it is of central importance that the input variables that make up the scenario are reasonable expectations about a worst case future. Germany's necessity assessment provides useful justifications for all of the key assumptions of its worst case scenario as described in recital (90). They are summarised in the following recitals.
- (115) With regard to recital (90)(a), concerning the non-availability of an additional 10 GW of domestic conventional power plants compared to the ENTSO-E scenario by 2020, the German authorities have sought to demonstrate the

³² Note that the assumptions are in some ways pessimistic (eg. the auction may clear below the cap), but in other ways optimistic (eg. not all of the capacity may be required to reduce the energy unserved; if in practice only 1 GW of the 2 GW is needed to meet demand, the cost per MWh would be doubled). Note also that the calculation does not include variable costs, which must be taken into account to get a complete picture of the overall costs of the measure.

reasonability of this worst case assumption by pointing to the development of wholesale electricity prices and future prices for the years 2017, 2018 and 2019 and by comparing those with the variable generation costs of the various generation technologies (lignite, coal and gas). The cost assessment demonstrates that especially for plants with a lower efficiency rate, expected revenues will not cover costs. The authorities put forward that after the publication of ENTSO-E's 2015 Scenario Outlook & Adequacy Forecast an additional 3.7 GW of coal-fired power plants and an additional 2.3 GW of gas-fired power plants have officially notified their closure to Bundesnetzagentur. In addition, the assessment demonstrates that in comparison to ENTSO-E's scenario, a number of expected new-build projects representing 3.2 GW have been put on hold or are expected not to be available yet by 2020. Finally, whilst underlining that it is for the operators of the power plants to decide whether or not to leave the market, in developing a worst case scenario the assessment divides the existing facilities in categories according to their age and efficiency and on that basis determines the amount of capacity that is at risk of leaving the market. On that basis, it is estimated that an additional 800 MW could leave the market in a pessimistic scenario. In total, this amounts to 10 GW of potential additional non-availability of conventional generation by 2020 in a reasonable worst case scenario.

- (116) With regard to recital (90)(b), concerning the assumption of a premature decommissioning of nuclear power plants ('NPPs') in the amount of 5.4 GW by 2020, the assessment indicates that six NPPs representing a combined capacity of 8.14 GW are scheduled for decommissioning end 2021 and end 2022. The assessment goes on to argue that in view of various significant risk factors, it cannot be excluded that the operators will decide to retire their plants before the legal deadline. These risks include price risks, regulatory risks (in view of the expiry of the nuclear tax and the upcoming election in 2017) and technical risks (i.e. security failures leading to long term maintenance and outages). The German authorities underline that it is not inconceivable that any of these risks occur and cause the immediate shutdown of the entire fleet. This makes the assumption of the early shutdown of 4 of the 6 remaining NPPs a reasonable worst case scenario.

Plant	Entry in operation	Capacity (GW)	Latest possible decommissioning date
Grohnde	1985	1.36	31/12/2021
Gundremmingen C	1985	1.29	31/12/2021
Brokdorf	1986	1.41	31/12/2021
Isar 2	1988	1.41	31/12/2022
Emsland	1988	1.36	31/12/2022
Neckarwestheim 2	1989	1.31	31/12/2022
		8.14	

- (117) With regard to recital (90)(c), Germany clarifies it does not consider the 2.7 GW of lignite power plants that are currently (being) mothballed for decommissioning between 2020 and 2023 to be available in the system, given

that their activation period is 10 days. These plants can also not participate in the Capacity Reserve. The dispatch of the mothballed lignite plants would take place only after the Capacity Reserve is fully utilised and there is still a shortage.

- (118) With regard to recital (90)(d), regarding the assumption that an additional amount of 20 GW of foreign conventional power plants – as compared to ENTSO-E's scenario – would not be available in 2020, the German authorities explain that they do not have access to as much information on foreign capacities as they have on the German generation fleet and therefore assume a similar portion of shutdowns in these countries as in Germany (i.e. 11% in every neighbouring country). It is also aware of various existing facilities in the neighbouring countries that are in economic difficulties (representing some 5.2 GW) and additional decommissioning and planned projects that may not be finalised by 2020 (representing 14.8 GW).
- (119) Recital (90)(e) relates to the assumption that a delay in new interconnection projects – representing a combined capacity of some 5 GW – assumed to be completed by 2020 in the ENTSO-E scenario will in fact not be ready by that time. Germany asserts this is a reasonable expectation in view of the current status of some of the lines and the numerous potential delaying factors that can arise during the development of interconnectors.

	From	To	Planned Commissioning		Status
			Estimate 2016	Estimate 2012	
1	Audorf (DE)	Kassö (DK)	2020	2017	Planning permission procedure in progress
2	Vierraden (DE)	Krajnik (PL)	2020	2013	Planning permission procedure in progress
3	Niederrhein (DE)	Doetinchem (NL)	2018	2013	Planning permission procedure in progress
4	Brunsbüttel (DE)	Endrup (DK)	2021	2018	Planning permission procedure in progress
5	Oberzier (DE)	Lixhe (BE)	2020	2017	Planning permission procedure in preparation
6	Wilster (DE)	Tonstad (NO)	2020	2018	Planning permission procedure finalised

- (120) With regard to the assumption mentioned in recital (90)(f) that unpredictable abnormal behaviour of balancing responsible parties in Germany could lead to a reduction in the amount of 2.5 GW of generation capacity, Germany explains that the figure and the assumption are based on a case of balancing fraud that happened in 2013, whereby a foreign balancing group manager sold 2.5 GW of electricity for several days, without procuring this electricity himself. Although several measures have been put in place by both regulator and TSO to prevent such a case from happening again, not all forms of balancing fraud can be ruled out in the future. Germany also explains that the reason they assume a permanent reduction is because there is no logical way of distributing the fraud

risk over the different parts of a year, and the risk is bigger when scarcity is higher and prices are higher.

- (121) The Commission invites interested parties to submit their views on these key assumptions as put forward in the worst case scenario as described in recitals (89) and (90) and explained in more detail in recitals (115) to (120), including as regards the likelihood of having all assumptions satisfied jointly.
- (122) With regard to the assumptions related to unexpected or premature closure of existing power plants (described in recitals (115), (116) and (118)), the Commission notes that there should be an important correlation between the implementation of market reforms and the continued availability of sufficient capacity. Where reforms are successfully implemented and applied, there is no reason to assume that too much capacity should close. The Commission notes that the assessment provided appears not to take into account the gradual implementation of the new market rules and their beneficial impacts on security of supply.
- (123) With regard to the assumption mentioned in recital (88)(f) that unpredictable and abnormal behaviour of balancing responsible parties in Germany could lead to a reduction in the amount of 2.5 GW of generation capacity, the Commission is interested to understand how the fraud affects the physical balance of supply and demand in Germany and how it could lead to unmet demand. The Commission also questions the reasons for which Germany assumes a permanent reduction in its modelling.
- (124) The Commission also invites views on whether the reasonable worst case scenario for a Capacity Reserve should necessarily be based on uneconomic or unexpected assumptions – since there is no identified market failure and the reserve is designed to provide insurance against the unexpected.
- (125) The Commission finally requests clarification from Germany with regard to the modelling and calculation of the hours of lost load that result from these input parameters. It should also be clarified how the addition of 2 GW of strategic reserve capacity can lower the number of LOLE-hours by 2 hours.

3.2.2.4. Conclusion on necessity

- (126) The Commission concludes that in view of the fact that the Capacity Reserve is not intended to be a temporary measure, in view of the absence of fundamental parameters necessary to demonstrate that the intervention represents value for consumers (in particular an estimate of VOLL), and in view of the doubts with regard to the reasonability of some of the core assumptions of the worst case scenario, it has doubts about the necessity of the Capacity Reserve.

3.2.3. *Appropriateness*

- (127) As a general principle, a State aid measure is appropriate if it is the most suitable among alternative measures to achieve the objective and if it is designed in a way as to properly address the market failures identified. The EEAG further specify in Points (225) and (226) that in the context of aid for generation adequacy this implies that the aid should remunerate solely the service of pure availability provided by the generator and that the measure should be open and

provide adequate incentives to both existing and future generators and to operators using substitutable technologies, such as demand response or storage solutions.

3.2.3.1. Alternative measures

- (128) The Commission notes that generation adequacy concerns should first and foremost be addressed by reforming the market so as to provide the incentives for capacity providers to become or remain active on the energy-only market and deliver security of supply at lowest possible costs.
- (129) The Commission agrees that the market reforms Germany has set out in the aforementioned Green and White Papers and has already laid down to a large extent in the EnWG and secondary legislation are in theory appropriate to ensure the market will deliver a maximum degree of security of supply. The Commission furthermore notes that important investments in grid infrastructure are ongoing to improve the free flow of power according to price signals within the bidding zone and between Germany and the neighbouring countries. Finally, the Commission recalls the introduction of the ABLAV interruptibility scheme which is geared toward the flexibilisation of the demand side.
- (130) The Commission furthermore notes that in case additional security of supply is sought beyond what the aforementioned reforms and initiatives are expected to provide, a well-designed capacity mechanism can be an appropriate form of intervention provided necessity is demonstrated. Among the various types of capacity mechanism, a temporary strategic reserve appears to be the most appropriate form of intervention to ensure secure supplies in a context of ongoing market reforms. The Commission notes however that the Capacity Reserve as currently designed, is not a temporary measure.

3.2.3.2. Point (225) EEAG – Remuneration of availability only

- (131) With regard to Point (225) EEAG, the Commission notes that the Capacity Reserve remuneration is primarily based on the availability of the capacity, because it consists of a fixed payment for maintaining part or all of their capacity exclusively available for the Capacity Reserve. The Commission however notes that in addition to the fixed payment that results from the initial auction, further variable payments are foreseen to cover certain costs, such as:
 - (a) costs of the fuels, emissions allowances and other raw materials and consumables required for in-feeds of active power or reactive power produced by the plant or for reducing the active power supply of the plant, if and to the extent to which such measures have been caused by an in-feed of active power or reactive power or a reduction of the active power supply requested by the TSOs;
 - (b) variable maintenance costs of the plant, if and to the extent to which such costs have been caused by an in-feed of active power or reactive power or a reduction of the active power supply requested by the transmission system operators, and the total number of trial calls and deployments reimbursed at the flat rate under paragraph 5 [of the Capacity Reserve Ordinance] is exceeded;

- (c) costs for the secure fuel supply pursuant to § 13e(3)(3)(3) of the EnWG, particularly the costs for fuel conversion of the plant or an increase in its storage capacity for fuels;
 - (d) costs resulting from the black start capability of a plant being established or maintained at the request of the TSO; these costs will be reimbursed in the amount in which they were remunerated by the relevant transmission system operator before the plant was incorporated into the Capacity Reserve;
 - (e) costs resulting from the delivery of reactive power without active power in-feed being established or maintained at the request of the transmission system operator; and
 - (f) costs for the balancing energy as part of the management of the balancing group pursuant to the first sentence of § 24(5), unless such costs are expressly to be borne by the plant operator; revenues from this management are to be deducted from the costs and where there is a surplus, reimbursed to the TSOs.
- (132) The Commission recalls that the main reason for the need for capacity mechanisms to remunerate availability only and not the actual electricity produced, is to limit distortions of the electricity wholesale price on the market. Such distortions could arise when granting payments to capacity providers in the scheme and not to those without a capacity contract. In the case of the notified Capacity Reserve however, the variable payments should not directly affect the market price because the capacities are held outside the market. The Commission is therefore in principle open to remunerating variable costs separately to the extent the remuneration does not exceed the costs and insofar as this ensures fair competition in the auction for all fixed unavoidable costs of maintaining capacity available and reliable.
- (133) However, it follows from this reasoning that only running costs, that are completely avoided if the plants are not actually called to deliver energy or ancillary services, should be remunerated separately. In that regard, the Commission doubts whether it is appropriate to exempt the costs of maintaining a reliable fuel supply contract, as described in recital (131)(c), from the competitive process in the tender. Securing a secure fuel contract or making provision for local fuel storage is essential as part of ensuring that capacity will be reliably able to deliver if needed. This is required regardless of how frequently the plant actually ends up delivering energy or ancillary services. If this element is excluded from competition, then there is a risk that the tender fails to choose plants for the Capacity Reserve that can most cost effectively make their capacity reliably available. There should also be an advantage in leaving participants in the tender – who are best able to manage the risk of access to secure fuel supplies – an incentive to secure cost effective access to fuel.
- (134) The Commission furthermore notes that competition on variable costs is absent in the current set-up, given that they are reimbursed separately and do not play a role in the procurement auction. The Commission takes the view that the more often a reserve mechanism is used, the more it becomes relevant to take into account how the different capacity providers compare in terms of variable costs,

in order to ensure the service is delivered in the most efficient way possible. In particular, not considering variable costs in the bids to form the Capacity Reserve appears to be advantageous to technologies with low capital cost (CAPEX). The Commission notes that Germany has not demonstrated that the majority of costs are associated with making capacity available rather than with the actual delivery of energy or ancillary services at times the Reserve is dispatched and that an assessment of the number of hours the Reserve is expected to be dispatched has not been carried out in this context.

3.2.3.3. Point (226) EEAG – Openness and the eligibility rules

- (135) Point (226) EEAG determines that capacity mechanisms should be (1) open to different technologies, (2) provide adequate incentives for both new and existing capacity and (3) take into account to what extent interconnectors can help remedy the generation adequacy problem identified.
- (a) Openness to all potential capacity providers
- (136) In terms of openness to different capacity providers, the Capacity Reserve Ordinance does not contain any explicit exclusions. The Commission is however concerned that the conditions for participation appear to be drafted mainly with the characteristics of generation installations in mind. For the participation of demand response, the application of the same rules may *de facto* put a disproportionate burden on these operators, placing them at a disadvantage compared to generation facilities. The Commission recalls that demand response is a substitutable technology, as evidenced by the experience in Belgium, Finland and Sweden, where demand response operators participate in the respective strategic reserve mechanisms.
- (137) For instance, the minimum bid size of 10 MW combined with the requirement that one bid should represent one installation, means that aggregation of smaller generation units or consumer loads is not allowed. The German authorities explain that allowing fewer and larger units facilitates the management of the reserve for the TSO, which is important seeing that it is dispatched only in extreme crisis situations. The Commission notes however that also with aggregated loads there is a single contact point for the TSO. The Commission moreover notes that also for generators the minimum 10 MW bid size may be unnecessarily restrictive and that as a principle the same criteria as applied for participation in the balancing market should be applied.
- (138) A second example of an eligibility criterion that has a potentially discriminatory effect on demand response operators is the requirement that the installation is connected to a grid of a voltage level of 110 kV or more. Germany argues that the TSO should be directly in control over the capacities in the reserve. The Commission however notes that both in the balancing market and in the ABLAV interruptibility scheme, which are both used by the TSO for extremely short term and immediate dispatch to ensure secure system operation, more flexible connection criteria apply. It is unclear why these cannot be applied to demand response participants in the Capacity Reserve.

- (139) Other rules that discourage the participation of demand response operators include the possibility of being subjected to as many as ten test runs per year³³, the obligation that consumers should constantly consume throughout the two years, to buy their power forward for the entire delivery period (i.e. two years), the absence of a maximum delivery period and the impossibility for the loads that participate in the Capacity Reserve to become active on the balancing capacity market after their Capacity Reserve contract expires.
- (140) The Commission takes the view that these rules may prevent fair competition between generators and demand response operators and discourage the latter from participating altogether. The Commission therefore doubts whether the current eligibility rules and product requirements on participants in the Capacity Reserve provide equal opportunities for demand response as provided for by Point (226) EEAG.
- (b) Adequate incentives for new and existing capacity
- (141) With regard to the need for capacity mechanisms to provide adequate incentives to both new and existing capacity, as required by Point (226) EEAG, the Commission notes that the Capacity Reserve does not have separate rules for new capacity providers. The rules do not specify whether an installation should be operational or not, but there are also no special contracts or separate rights and obligations for potential new entrants.
- (142) The Commission notes that, as explained above and contrary to a market-wide capacity mechanism, a strategic reserve is in principle only appropriate as a temporary measure and not to remedy a structural missing money problem. As a temporary measure, there is in principle no need to incentivise new investments.
- (143) Even though the purpose of the strategic reserve is not to trigger new investment new capacity can under the proposed framework compete with existing capacity where new capacity is able to deliver the same product at a lower price. The condition of Point (226) EEAG with regard to future capacity providers is therefore complied with.
- (c) Cross-border participation
- (144) With regard to the need to take into account to what extent interconnectors can help remedy the generation adequacy problem identified, it must be noted that the necessity assessment as submitted by the German authorities and discussed in Section 3.2.2.2 of this Decision, takes due account of possible imports and exports on the supply/demand balance in Germany. It models the extent to which the residual load in Germany can be met but also what the situation would be in each of Germany's neighbouring market areas, so as to determine whether Germany would be able to import from its neighbouring countries in a shortage situation (within the limitations of the available NTC interconnection capacity).

³³ As a general rule, fixed costs for DSR are relatively lower compared to generation, but variable costs are relatively high, due to the impacts a sudden supply interruption may have, especially if it is a long interruption. Test runs, which raise variable costs, are therefore relatively more expensive for DSR-operators. Moreover, the Ordinance does not foresee a reimbursement when the test is applied (whereas generators have their variable costs reimbursed).

- (145) The Commission notes that the Capacity Reserve does not allow for the participation of foreign capacity. The German authorities explain that there are two main reasons for this: first, allowing foreign capacity providers to participate would require the reservation of interconnection capacity for such a situation. In situations in which the reserve would be dispatched, prices in Germany would be at their maximum and that generally means that interconnectors are fully used by the market. Secondly, reserving foreign capacity for the German Capacity Reserve would require prohibiting them from generating and selling power in their home market and be put exclusively to the disposal of the German TSO across the border.
- (146) The Commission has doubts about the first argument. There is not necessarily a stronger need for the reservation of transmission capacity for cross border capacity participation than there is a need for reserving internal capacity between an isolated Capacity Reserve plant and the rest of the domestic network. There may however be a need to assess the likelihood of transmission being available to transport energy from foreign plants to the capacity mechanism zone. This should be possible to achieve through a de-rating assessment that takes into account the likelihood of concurrent scarcity in Germany and neighbouring zones (as is already required as part of the thorough adequacy assessment required to identify the need for a capacity mechanism, and size it appropriately). In principle, foreign capacity could be eligible subject to an appropriate de-rating since this would increase competitive pressure and reduce the costs of the Capacity Reserve.³⁴
- (147) The second argument raised by Germany does potentially have merit since foreign capacity participating in the Capacity Reserve would need to be withheld from its local market, and would need to be under the control of the German TSOs. It is not clear that this would be readily compatible with legislation or licensing arrangements in the neighbouring country and it seems likely that active cooperation with neighbouring TSOs would be required. However, Germany has not provided any information to suggest that public authorities, TSOs or regulators in neighbouring Member States have objected to the potential for their capacity to be withheld from the local market and put into the Capacity Reserve. The Commission is therefore interested in views from interested parties as to whether foreign capacity should be eligible to compete for inclusion in the German Capacity Reserve.
- (148) The Commission takes the view that although generally it is essential for cross border capacity to explicitly participate in a capacity mechanism³⁵ a distortion might be avoided by appropriately designed strategic reserves that are held truly outside the market. This can for example be the case where a strategic reserve is only dispatched after the intraday market, in which prices are able to rise to VOLL, fails to clear. As currently proposed, despite the potential for relatively

³⁴ For a more detailed discussion on the participation of foreign capacity in capacity mechanisms in general and strategic reserves in particular, see: Staff Working Document accompanying the Final Report to the Sector Inquiry, SWD(2016) 385 final, Annex 2.

³⁵ Since otherwise a distortion will be created in favour of investments in the capacity mechanism zone rather than investments in interconnection or in capacity in neighbouring zones.

high prices in the German market, VOLL has not been defined³⁶. It is therefore not possible to conclude that the Capacity Reserve will not affect market functioning, because it has not been completely separated from the market.

- (149) The evidence available at this stage suggests that the measure is not designed appropriately with respect to cross border capacity.

3.2.3.4. Conclusion on the appropriateness of the aid

- (150) The Commission agrees with the general principle of remunerating variable costs separately, but questions whether the cost categories for which such separate reimbursement is foreseen all constitute variable costs. The Commission moreover doubts whether the possibilities for demand response enable genuine competition with generation capacity for participation in the Capacity Reserve. Finally, the Commission invites views on the exclusion of foreign capacity. The Commission therefore doubts whether the measure is appropriate.

3.2.4. Incentive effect

- (151) A State aid measure has an incentive effect if it changes the behaviour of the undertakings concerned in such a way that they engage in activity which they would not carry out without the aid or which they would carry out in a restricted or different manner. The EEAG has laid down more specific guidance as to the interpretation of this criterion in Section 3.2.4, namely that the measure should induce the beneficiary of the aid 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.
- (152) The measure creates spare capacity which the TSO can use in case the market does not clear i.e. too little supply is available to meet demand. Absent the reserve the capacity would not have been at the TSOs' disposal at times the market did not clear.
- (153) The Capacity Reserve moreover contains penalties to ensure that capacity providers have an incentive to be available and deliver when called upon by the TSO. The penalty regime, as described in recital (15), includes penalty payments in case of non-delivery and in case the technical requirements are not met. Moreover, no stop-loss is foreseen, which means that total penalty payments can outweigh the remuneration received.
- (154) The Commission concludes that the Capacity Reserve has an incentive effect that changes the behaviour of its beneficiaries.

3.2.5. Proportionality of the aid

- (155) The aid amount is proportionate if it is limited to the minimum needed to achieve the objective pursued. The EEAG specify this requirement for generation adequacy measures in Points (228) to (231), which aim to ensure that

³⁶ See Section 3.2.6 on the effects on competition and trade for a discussion on why, when prices cannot reach VOLL, capacity mechanisms cannot be considered as fully outside the market.

beneficiaries do not earn more than a reasonable rate of return and that windfall profits are excluded.

- (156) The notified measure provides for a competitive tender procedure with a maximum auction price with regard to the selection of the entire capacity. As set out in Point 229 EEAG, it can be assumed that if sufficient competition exists for participation this procedure will ensure the minimum necessary will be paid for availability. Broad eligibility criteria and objective delivery requirements are necessary to ensure maximum participation and therefore competitive pressure on the price.
- (157) The Commission, having expressed its concerns with regard to the eligibility requirements of the measure relating to demand response operators and to foreign capacity (both described in Section 3.2.3.3), notes that it cannot at this stage be assumed that the tender will result in a total aid amount that is limited to the minimum needed to achieve the objective pursued. The Commission moreover reiterates the point made in recital (133) related to the way in which variable costs are reimbursed. By excluding variable cost elements, and also by excluding the costs for ensuring secure fuel supplies, from the tender, no competition on these elements takes place and, despite regulatory oversight over the cost-based remuneration of these elements, it cannot be ensured that the lowest possible is paid.
- (158) The Commission is therefore not confident that the rate of return will be reasonable and that windfall profits will not arise.
- (159) With regard to the requirement of Point (231) EEAG the Commission notes that for the selection of capacities in strategic reserves it cannot be expected that the price actually reaches zero because to become part of the reserve the plants have to leave the market and remain without any revenues from selling electricity or services to the TSO. At the same time, the operators continue to incur costs for staying available in case of need. Reserve participants will therefore always require some remuneration.
- (160) The Commission however also notes that Point (231) EEAG is there not merely to enforce a technical design feature, but rather to ensure that no aid is granted beyond what is necessary. Where a well-designed market-wide capacity is implemented, the fact that the price can reach zero ensures that when the measure becomes less necessary, its cost also declines, potentially until zero. A strategic reserve however can continue to cost money even when its added value to security of supply declines. For example, if Germany's market reforms are sufficient to enable investors to ensure a level of capacity that reflects consumers' willingness to pay for capacity, then any additional capacity in the form a strategic reserve would be economically inefficient. Hence, whilst the Commission can accept the added value of strategic reserves at times during which market reforms are still being implemented and in particular where the ongoing energy transition will cause a considerable amount of overcapacity still to leave the market, it needs to be ensured that the reserve is phased out once that phase is over. The Commission notes that the absence of an end date in the Capacity Reserve Ordinance does not reflect this assessment and that therefore the State aid that is involved should in any event not be approved beyond a reasonable date at which the ongoing energy transition is expected to be

completed. The Commission invites Germany to estimate and establish such date.

- (161) In view of the restrictive eligibility requirements the Commission is at this stage unable to conclude that the amount of aid to be granted will be proportionate.

3.2.6. Avoidance of undue negative effects on competition and trade between Member States

- (162) The negative effects of the Capacity Reserve on competition and trade in the internal electricity market must be sufficiently limited, so that the overall balance of the measure is positive. The EEAG specify this requirement in Points (232) and (233), which underline the need for broad participation in the scheme and the avoidance of market undermining effects of the measure, for instance by strengthening dominance or affecting investment decisions.
- (163) As a general rule, capacity mechanisms can have a distortive effect on the market when they i) increase capacity in the wholesale market, reducing wholesale prices; ii) exchange high electricity scarcity prices for capacity remuneration, further reducing electricity wholesale prices; and iii) remunerate some market participants but not all. This not only distorts the playing field on the wholesale market, but also the long term investment signals. Strategic reserves such as the Capacity Reserve, however, should not have these distortive impacts if they are truly separate from the market. As a result, the wholesale market prices should not be affected nor the investment signals they provide. Market coupling should therefore not be affected, nor should incentives to invest in interconnectors or capacity in neighbouring markets.
- (164) As set out in recital (11) of this Decision, the Capacity Reserve Ordinance contains a number of rules specifically designed to ensure a strict separation between the electricity market and the strategic reserve, so as to preserve the signals the commodity price needs to emit.
- (165) First, power plants participating in the reserve will not be allowed to re-enter the electricity market once their reserve contract expires. The Commission notes that this rule removes the uncertainty that potential investors in the electricity market may experience as to whether or not the plants in the Capacity Reserve will move back into the market affecting their profitability margins.
- (166) Second, power plants are not allowed to sell electricity on the electricity market or to the TSO in the form of balancing or ancillary services. The Commission notes that this measure is effective in isolating the electricity price signal from interference of operators receiving remuneration from their capacity reserve contract.
- (167) Third, the reserve is only dispatched in case the market does not clear. The market is deemed not to have cleared when on the day ahead or intraday market (at the last auction of the day-ahead-market, at the opening auction of the intraday market or during the continuous trading throughout the day) bids to buy electricity at the technical price limit, which in Germany is currently set at 3,000

EUR/MWh for the day-ahead market and 10,000 EUR/MWh for the intraday market, remain unmet by offers to provide electricity.³⁷

- (168) Fourth, balance responsible parties are liable to pay double the price of the intraday price cap to the extent there were not in balance in any quarter of an hour for which the Capacity Reserve was dispatched, incentivising them to undertake all efforts to contribute to system balance at times of scarcity.
- (169) The Commission considers at this stage that these provisions may ensure the effective separation between the capacities in the reserve and capacities in the market.
- (170) The Commission is however mindful of the fact that the imbalance charges are set at the double of the technical price limit in the intraday market, which means there is a gap between the maximum price at which balancing responsible parties can buy protection against the imbalance charge (the intraday market) and the penalty they are exposed to. This creates the potential for situations where suppliers are charged 20,000 EUR/MWh for balancing energy, whereas if they had had access to demand response or imports in the intraday market they might have sourced energy for a price between 10,000 and 20,000 EUR/MWh and avoided the need for the dispatch of the Capacity Reserve.
- (171) The Commission reiterates that a definition of VOLL is required for the purpose of setting the maximum imbalance charge because otherwise – in the absence of a fully functioning demand side – the measure potentially forces consumers to pay more than VOLL for balancing energy, which would be excessive and distortive.
- (172) If the intraday price cap had been set at the same level as the maximum possible imbalance charge, and if this price were to reflect VOLL, then the market would be incentivised and enabled to deliver protection up to the economically efficient level, and it would be evident that the Capacity Reserve would serve as a truly out of market and last resort measure. In view of this concern, the Commission is at this stage unconvinced that the impacts on trade and competition are sufficiently limited to justify the implementation of the Capacity Reserve.

3.2.7. *Transparency of the aid*

- (173) The final common assessment principle under Section 3.2.7 EEAG is transparency. For individual aid awards of EUR 500,000 or more, Member States must publish on a comprehensive State aid website the full text of the aid scheme and its implementing provisions (or a link to it), the identity of the granting authority, the identity of the individual beneficiaries, the form and amount of aid granted to each beneficiary, the date of the granting, the type of undertaking, the region in which the beneficiary is located and the principal economic sector in which the beneficiary has its activities.

³⁷ The technical price limit should be increased by the power exchange once it is hit, but this process is not immediate.

- (174) The German authorities will apply the transparency conditions laid down in Section 3.2.7 EEAG insofar as applicable to the aid granted under the Capacity Reserve.

4. CONCLUSION

- (175) At this stage, the Commission doubts that the Capacity Reserve is a measure that can be qualified as an SGEI. The Commission moreover doubts whether the measure is compatible with the internal market. More specifically, it doubts whether the measure:

- (a) is necessary, in view of the absence of fundamental parameters necessary to objectivise the intervention (in particular VOLL and the reliability standard), and in view of the doubts with regard to the reasonability of some of the core assumptions of the worst case scenario;
- (b) is appropriate, in view of its restrictive eligibility requirements and in view of the limited competition on variable costs;
- (c) is proportionate, in view of its restrictive eligibility requirements;
- (d) sufficiently avoids impact on competition and trade, in view of the imperfect separation between the reserve and the market.

- (176) In the light of the foregoing considerations, the Commission, acting under the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union, requests Germany to submit its comments and to provide all such information as may help to assess the measure, within one month of the date of receipt of this letter. It requests your authorities to forward a copy of this letter to potential recipients of the aid immediately.

- (177) The Commission wishes to remind Germany that Article 108(3) of the Treaty on the Functioning of the European Union has suspensory effect, and would draw your attention to Article 14 of Council Regulation (EC) No 659/1999, which provides that all unlawful aid may be recovered from the recipient.

- (178) The Commission warns Germany that it will inform interested parties by publishing this letter and a meaningful summary of it in the Official Journal of the European Union. It will also inform interested parties in the EFTA countries which are signatories to the EEA Agreement, by publication of a notice in the EEA Supplement to the Official Journal of the European Union and will inform the EFTA Surveillance Authority by sending a copy of this letter. All such interested parties will be invited to submit their comments within one month of the date of such publication.

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.

Your request specifying the relevant information should be sent by registered letter or fax to:

European Commission,
Directorate-General Competition
State Aid Greffe
B-1049 Brussels
Stateaidgreffe@ec.europa.eu

Yours faithfully
For the Commission

Margrethe VESTAGER
Member of the Commission