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**Subject: State aid n° SA.38968 (2015/N) Greece  
Transitory Electricity flexibility remuneration mechanism (FRM)**

Sir,

## **1 PROCEDURE**

- (1) On 19 January 2015 the Hellenic Republic notified, pursuant to Article 108(3) of the Treaty on the Functioning of the European Union ("TFEU"), the above-mentioned scheme. The Hellenic Republic provided additional information on 6 October, 12 November, 22 December 2015, 13 January and 24 February 2016.
- (2) By letter dated 12 November 2015, the Hellenic Republic waived its right under Article 342 of the Treaty in conjunction with Article 3 of Regulation (EEC) No 1/1958<sup>1</sup> to have this Decision adopted in Greek and agreed that this Decision be adopted in English.

## **2 DETAILED DESCRIPTION OF THE MEASURE**

- (3) The mechanism compensates certain electricity generators in the Greek interconnected electricity system for the provision of 'flexibility services' to ADMIE (the Greek electricity Transmission System Operator, or 'TSO'). In particular, on instruction from the TSO and subject to a specified notice period, beneficiaries increase or decrease the amount of electricity injected into the electricity system at a specified minimum rate on a multi-hour time-scale.

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<sup>1</sup> EEC Council: Regulation No 1 determining the languages to be used by the European Economic Community, OJ 17, 06.10.1958, p. 385 – 386.

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- (4) The notified scheme will operate for a maximum period of 12 months, during which time the level of remuneration will be defined by the Greek energy regulator, RAE (the 'Regulator').

## **2.1 Legal basis**

- (5) Greek Law 4001/2011 ('Energy Law') establishes the general legal framework for the operation of the notified measure. In particular, Article 4 introduces the objective of safeguarding security of supply and Article 12 designates the Regulator as the competent body for monitoring security of supply. Article 96 delegates to the System Operating Code, established and amended by virtue of the Regulator's decisions, the regulation of: the obligation for submitting capacity availability guarantees; the manner, process and terms of settlement of any payments for the availability of generation facilities; and the conditions and the process by which the TSO concludes contracts for capacity availability.
- (6) In accordance with the provisions of the Energy Law, the Hellenic Republic designed in 2005 a decentralised capacity assurance mechanism ('permanent CAM'). The mechanism was supposed to be based on the bilateral trading of capacity certificates. These were to be issued by dispatchable power plants - in proportion to their capacity - and held by Load Representatives (suppliers and self-supplied consumers). The latter were under the obligation of holding a sufficient amount of capacity certificates to cover their load at peak times.
- (7) However, the permanent CAM was never implemented because of the asymmetry between the vertically integrated incumbent and the small independent generators which have not achieved direct load serving business. According to the Greek authorities, the mechanism would have allowed the incumbent to acquire capacity certificates internally, with the consequence that there would be no demand for capacity contracts addressed to the independent generators.
- (8) In this scenario, the Greek authorities applied instead, until December 2014, a transitory capacity assurance mechanism consisting of direct remuneration of capacity availability of plants
- (9) While the capacity payments were abolished as of 1 January 2015, the obligation of Load Representatives to hold sufficient number of capacity certificates is still in place. However, the methodology for the calculation of the amount of capacity certificates to be held was amended as described in recital (51) below.
- (10) The rules concerning the establishment and functioning of the measure at stake in this decision will be laid down in the System Operating Code.
- (11) All stages of the organization and execution of the measure as well as the monitoring of services are assigned to the TSO.

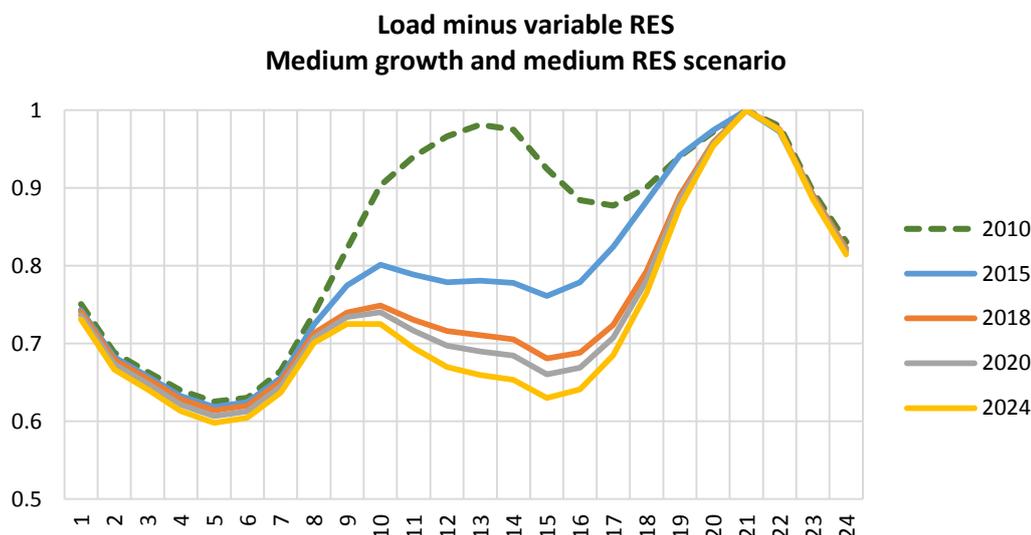
## **2.2 Background**

### *2.2.1 The profile of electricity demand and generation adequacy in the Greek interconnected system*

- (12) The profile of electricity demand (net of variable renewable generation) has become increasingly more variable over the past few years following the

increased deployment of variable renewable (RES) electricity, mainly solar and wind. These changes are expected to intensify going forward as the Hellenic Republic aims to meet its 2020 RES targets under the Renewables Directive<sup>2</sup>. Figure 1 below illustrates the historic and projected future change in the profile of electricity demand net of variable RES.

**Figure 1: Illustration of typical daily electricity demand profiles after deducting solar and wind energy<sup>3</sup>**



- (13) From Figure 1, a rapid increase in net demand in evening hours (due to falling solar generation and increasing demand) – the so-called 'sunset effect' – is visible. Since electricity demand and supply must always be in balance, these fluctuations need to be met by dispatchable generation with the ability to offer flexibility services, i.e. to increase and decrease generation sufficiently quickly and at minimal notice.
- (14) The Greek authorities have submitted a study by the TSO<sup>4</sup> which, besides analysing future requirements for generation adequacy in Greece in general<sup>5</sup>,

<sup>2</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, OJ L 140, 5.6.2009, p. 16–62..

<sup>3</sup> Source: ADMIE report entitled "Electricity Generation Adequacy Study Report for the Greek Interconnected System for years 2015-2024". Note: the y axis shows (net) electricity demand, expressed as a fraction of peak (net) electricity demand

<sup>4</sup> "Electricity Generation Adequacy Study Report for the Greek Interconnected System for years 2015-2024".

<sup>5</sup> The TSO study analyses a large number of scenarios with varying assumptions. The simulations are based on hourly projections of generation by plant in future years, respecting each plant's technical operating constraints. Based on these simulations, the study presents different reliability indicators. Comparing total generating capacity to peak demand plus a required safety margin, the TSO study predicts that capacity margins will fall over time in the Hellenic Republic in a variety of scenarios, due mainly to increases in peak electricity demand (due to the interconnection of Crete and other islands with the mainland interconnected system) and retirements of existing lignite plant. In this regard, the TSO study also presents indicators consistent with analysis by ENTSO-E's annual report 'Scenario Outlook & Adequacy Forecast (SO&AF)'.

specifically examines requirements for flexibility in the electricity system in 2015, 2018, 2020 and 2024. Some scenarios examine the impact on system adequacy of a hypothetical premature decommissioning of two Combined Cycle Gas Turbine ('CCGT') units<sup>6</sup>, which are currently the main providers of the flexibility services. The measure used by the TSO is the 'Insufficient Ramping Resource Expectation' ('IRRE'), a probabilistic measure of the time (in hours) in which net system load is not met due to insufficient available ramping capacity (the ability to increase and decrease generation over a certain period of time). Such periods in general will lead to 'unserved energy'.

- (15) The results show lower levels of system security in scenarios with fewer CCGTs as of 2018. The Greek authorities explain that 2018 conditions are similar to conditions in 2016. Moreover, according to the Greek authorities, the modelling assumes that remaining CCGTs are stretched to meet the ramping requirements and that there is a linear relationship between CCGTs' ramping capabilities and their level of generation. However, this is a simplification. In reality, gas plants have difficulty delivering additional ramping capability as their level of generation approaches its maximum level. Hence, according to the Greek authorities, the modelling understates the negative impact on security of supply of the loss of 2 CCGTs.
- (16) The Greek authorities also note that during some days of the winter 2015/2016 and in January 2016 most or even all of the available CCGTs were asked to operate to meet system needs, in addition to contributions from hydro capacity and positive net imports, as shown in Figure 2 below. Similar figures have been provided also for the winter 2014/2015.

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<sup>6</sup> The TSO study assumes the retirement of two CCGT units with an installed capacity of approximately 400MW each.

**Figure 2: Participation of CCGTs in the market on 22 December 2015<sup>7</sup>**

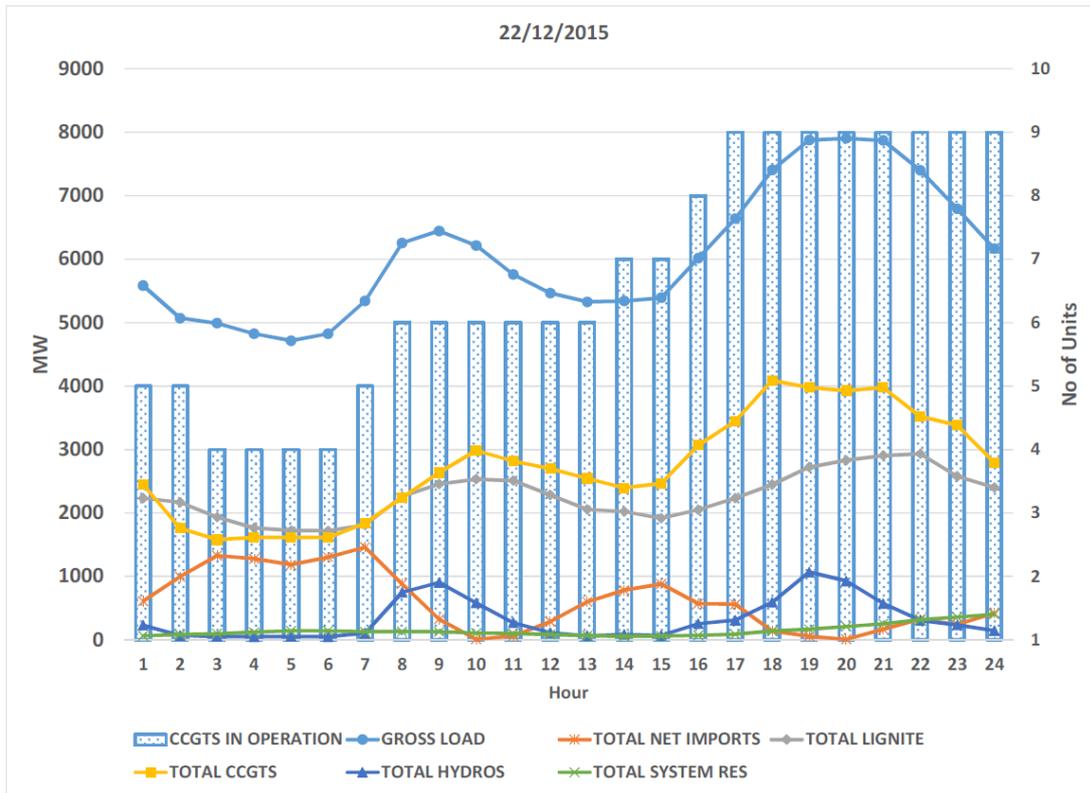
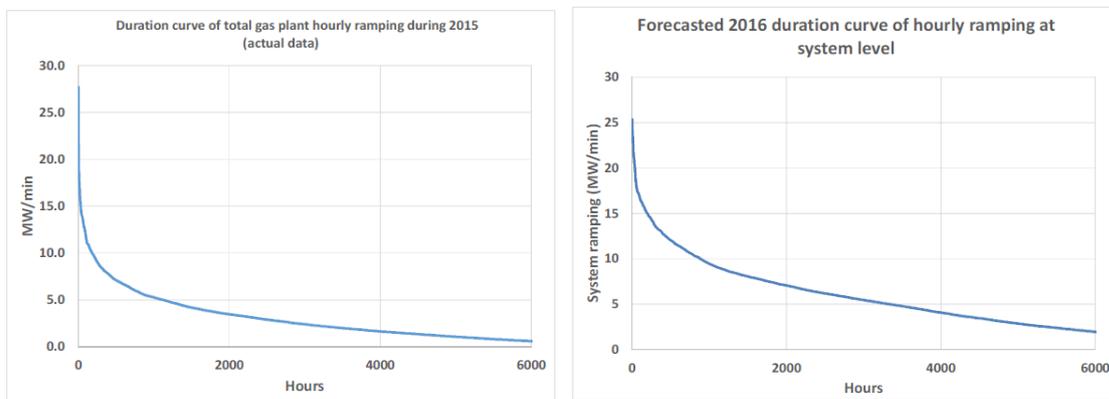


Figure 3 below shows the amount of hours in 2015 during which gas plants were required to provide ramping services and the number of hours forecasted in 2016.

**Figure 3: Duration curve of total gas plant hourly ramping during 2015 and 2016<sup>8</sup>**



### 2.2.2 The Greek electricity markets and market structure

- (17) The Greek wholesale electricity market is based on a mandatory "pool" mechanism. Each day, all sellers of electricity (i.e. generators, auto-producers and importers) must state an offer price for each hour of the following day for their

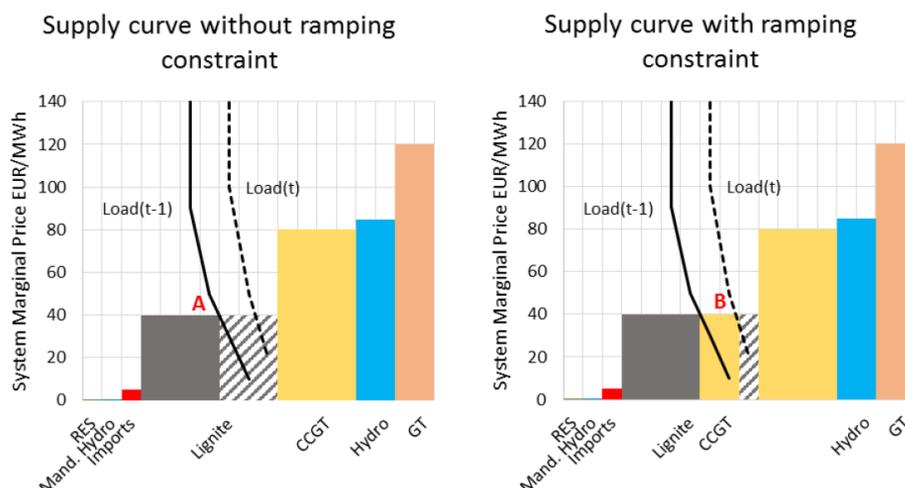
<sup>7</sup> Source: Hellenic Republic reply to the request for information submitted on 24 February 2016.

<sup>8</sup> Source: Hellenic Republic reply to the request for information submitted on 24 February 2016.

available capacity to supply electricity to the system. Currently, a cap of EUR 150/MWh applies to all generators' offers. At the same time, all buyers of electricity (i.e. retailers, exporters, pumped storage hydro and self-supplied consumers) must submit demand declarations for each hour of the following day (i.e. they do not submit price-based offers). The day-ahead market clears on an hourly basis according to a system marginal price ('SMP'), corresponding to the economic offer of the block lastly accepted in the economic merit order to meet demand.

- (18) The TSO runs the system using an algorithm which co-optimises energy provision, ramping and ancillary services and runs at day ahead and in real time. To address the load fluctuations described in recital (13) above, the algorithm suggests calling upon fast ramping generation. These plants are obliged to operate in order to provide flexibility services to the TSO (e.g. remaining on standby at their minimum stable level, rapidly increasing or decreasing generation) and are therefore called to operate as "must-run" plants.
- (19) This can be depicted in Figure 4 below, which shows the supply curve and demand curves as typically occur in the Greek system during ramping-up times (demand curve shifts to the right at time  $t$  and thus the system has to include generation able to ramp-up and meet the dotted line of demand starting from a level where it has met the solid line demand occurred at time  $t-1$ ). As lignite generation has not sufficient ramping-up capability, the system has to be based on ramp-up of gas-fired generation, as shown in the right hand side graphic.
- (20) However, according to the regulations in force, the SMP of the wholesale market continues to be set by the lignite generation bid and not by fast ramping plants, even for the hours during which the service is being provided, as these plants are viewed technically not as purely meeting electricity demand, but rather as discharging a specific service. In other words, the SMP is determined as if the market had no ramping constrained. The equilibrium price at time  $t-1$  is point A (left hand side graphic) whereas at time  $t$  it is at the same level (point B in the right hand side graphic) although fast ramping plants have been called upon to operate.

**Figure 4: Supply and demand curves in the Greek system during ramping-up times<sup>9</sup>**



- (21) The TSO also procures ancillary services, which are of a different nature than flexibility services. Ancillary services have duration of less than one hour, while flexibility services have duration of several hours. Remuneration under such services is subject to a EUR 10 price cap for primary and secondary reserves while tertiary reserves are procured free of charge. Prices for ancillary services are however generally much lower than the price cap, as shown in Table 1 below.

**Table 1: Reserves price data for the period 1 January 2015 – 23 November 2015<sup>10</sup>**

	Average (€/MW)	Min €/MW	Max €/MW	$\sigma$ €/MW	Cap periods* (hours)
Primary reserve price	0.212	0.001	10	1.43	162
Secondary up Reserve price	0.329	0.001	10	1.72	192
Secondary down Reserve price	0.909	0.001	10	2.78	590

\*Number of hours during which the price reached the cap of 10 €/MW

- (22) The Greek electricity market is marked by the persisting quasi-monopolistic position of the majority state-owned incumbent Public Power Corporation (PPC). In 2015, PPC's market share in electricity production from conventional was 88% and in electricity supply 95%<sup>11</sup>.

<sup>9</sup> Source: Annex 1 to the Hellenic Republic's reply to the request for information submitted on 22 December 2015.

<sup>10</sup> Source: Hellenic Republic's reply to the request for information submitted on 13 January 2016.

<sup>11</sup> PPC's market share in the supply segment was 97% in the 1<sup>st</sup> quarter of 2015, but is estimated to have dropped to around 93% in the 4<sup>th</sup> quarter of the same year.

- (23) PPC's status as a net buyer of electricity means it has an interest in ensuring the SMP is as low as possible. Given its overwhelming large market share of generation, the Greek authorities claim it is able to do so, through strategic placing of low offers by its generation capacity in the mandatory pool.

### 2.2.3 *Planned reforms of the electricity market and commitments offered in the framework of the present procedure*

- (24) The Hellenic Republic plans to implement the “EU target model” for electricity within a period of 25-30 months<sup>12</sup>, aiming at establishing market coupling within the EU internal market and flow based allocation of interconnection capacities. In addition, the Hellenic Republic plans to establish a market for procurement of ancillary services, real time balancing and an intra-day market.

- (25) In addition, the Hellenic Republic committed in the framework of the present procedure to:

- Gradually increasing the price cap on the SMP of the Day-Ahead market. On the date of the establishment of the measure) the SMP cap of EUR 150/MWh will be increased by 100%; by July 2016 an impact assessment will be completed with the aim to indicate the potential for any further increase of the SMP while at the same time avoiding abusive price practices; subsequently the Greek authorities will commission a study to estimate the Value of Lost Load ('VOLL') in Greece, which will give an indication of the appropriate level of a price cap for the Greek market;
- Establishing a working group which will explore which types of restrictions other than bidding floors should be applied in order to prevent hydro power plants (which are all owned by PPC) from setting de-facto price caps. The analysis should be completed during the second quarter of 2016 and will be followed by a public consultation ;
- Increasing the price cap (currently at 10 €/MWh) for ancillary services as of the second quarter of 2016, following an impact assessment to be carried out by the TSO;
- Approving in the first quarter of 2016 a new methodology regarding the determination of hydro bidding floors, which is expected to reduce mandatory water volumes and their impact on the market, including secondary reserves; and
- Conducting in the first half of 2016 a feasibility assessment concerning the definition of remuneration for spinning tertiary reserve.

- (26) These measures could in the future increase the returns to providing flexibility through the market without additional intervention and reduce the system needs for flexibility. They may be complemented by a demand-side management system which includes load shifting on top of load curtailment (see Section 2.2.4), the decommissioning of old non-flexible plants and investment in storage. Market

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<sup>12</sup> According to Memorandum of Understanding ('MoU') between the European Commission acting on behalf of the European Stability Mechanisms and the Hellenic Republic and the Bank of Greece, "the Hellenic Republic will start the implementation of the roadmap for the implementation of the EU target model for the electricity market, to be completed by December 2017 [...]; in this context, the balancing market will be completed by June 2017". The MoU is available at: [http://ec.europa.eu/economy\\_finance/assistance\\_eu\\_ms/greek\\_loan\\_facility/pdf/01\\_mou\\_20150811\\_en.pdf](http://ec.europa.eu/economy_finance/assistance_eu_ms/greek_loan_facility/pdf/01_mou_20150811_en.pdf)

coupling could also increase the efficiency of use of interconnection capacity, by making it more likely that interconnector flows respond to short-term price differentials. Developments in the gas market, such as hub-based trading<sup>13</sup>, may reduce some of the additional fixed costs associated with the provision of flexibility services (see recital (48) below). However, such factors are unlikely to play a major role within the lifespan of the notified measure.

- (27) Finally, under the MoU, the Hellenic Republic has undertaken to implement a number of reforms of the electricity markets<sup>14</sup> with the aim to substantially reduce PPC's market shares by 2020. The MoU also provide for the notification to the Commission of a temporary and a permanent capacity mechanism. The temporary electricity flexibility remuneration mechanism makes the subject of the present procedure.

#### 2.2.4 *The interruptibility scheme*

- (28) In October 2014 the Commission adopted a decision<sup>15</sup> approving an interruptibility scheme for the Greek electricity system. This compensates certain undertakings, located in the Greek interconnected system, that enter into contracts with the TSO to agree to reduce their electricity consumption ('load shedding') for a given period of time and given a stated notice time ('Power Reduction Order').
- (29) Eligible are those consumers connected to the Electricity Transmission System (i.e. the High Voltage Network) or the Interconnected Medium Voltage Network. The interruptible power offered in each consumption location must amount to least to 5 MW. Beneficiaries are selected on the basis of uniform price auctions, in which the lowest-price bids will be selected, given the volume of each service requested. Beneficiaries can bid to provide two different services, summarised in Table 2 below.

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<sup>13</sup> In its Decision on the exemption of the Trans Adriatic Pipeline (TAP) from third party access requirements (C(2013)2949 final), the Commission observed that "...in Italy wholesale market trading is more developed..." and that "...TAP therefore opens the prospect of a more liquid gas wholesale market in Greece, in particular once the Greek VGTP gas trading hub is launched".

<sup>14</sup> See Section 4.3 of the MoU.

<sup>15</sup> Commission decision C(2014) 7374 final of 15.10.2014 concerning Case SA.38711 (2014/N) Greece - Interruptibility service for the electric system in Greece.

**Table 2: Different types of Interruptibility services, offered by the TSO, depending on the notice time, duration of each load shedding and maximum duration of the load shedding per year<sup>16</sup>**

Type	Notice time	Duration of each Power Reduction Order	Maximum Duration of Load shedding per year	Minimum period between two consecutive Power Reduction Orders	Maximum number of Power Reduction Orders per month
1	2 hours	48 hours	144 hours	1 day	3
2	5 minutes	1 hour	24 hours	5 days	4

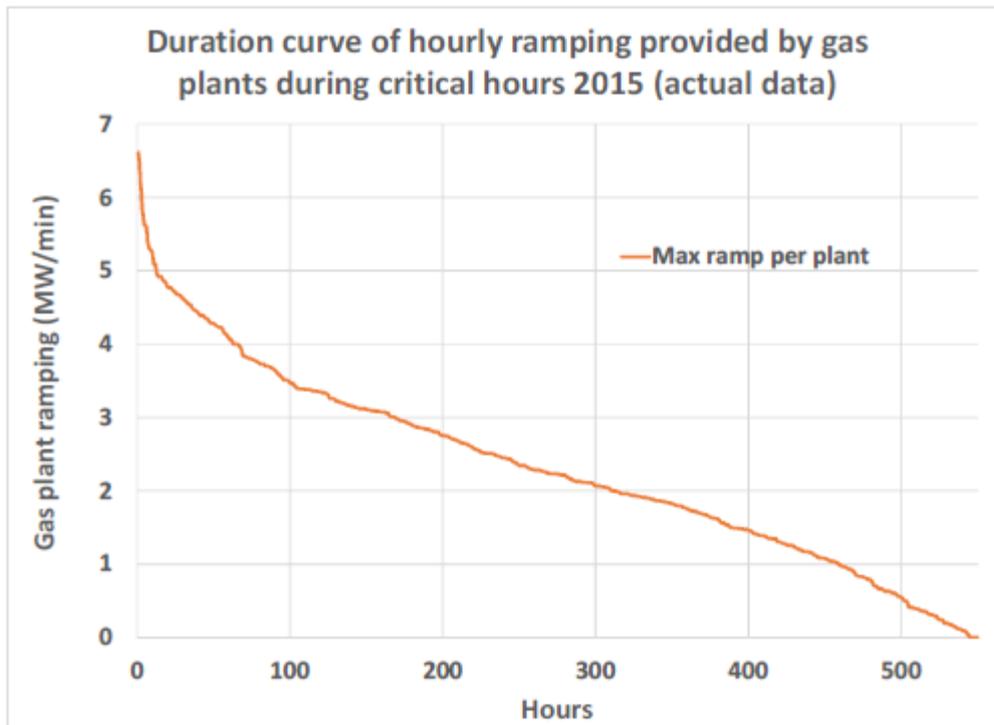
- (30) The implementation of the interruptibility scheme will contribute to reduce peaks during system stressing times and emergency situations. However, participants in the scheme cannot offer the typical flexibility services (in particular ramp-down services) needed to address load fluctuations in Greece, as the load shedding is a one-off measure.

### 2.3 Beneficiaries

- (31) Any individual plant capable of increasing electricity generation (ramping) at a rate greater than 8 MW/min with three hours' notice (starting from hot conditions), while remaining available to follow ramping instructions continuously for a minimum of three hours, is eligible for remuneration under the measure. The natural gas plants that will benefit from the measure during their life-time are 10 CCGT plants, 1 CHP plant and 3 OCGT plants. The CHP plant will benefit only for the capacity remunerated above the feed-in tariff (see Table 3 below). As regards hydro plants, the amount of eligible capacity has been estimated simulating dry weather conditions (see recital (98) below).
- (32) The ramping rate requirement is based on the fact that during critical times for ramping services in 2015, a typical provider of these services (such as gas-fired plants), delivered it at a ramping rate higher than up 7 MW/min.
- (33) Figure 5 below presents the averaged (MW/min) ramping rates within hour periods provided by each synchronised CCGT during critical hours in 2015, based on data provided by the TSO.

<sup>16</sup> See Commission decision C(2014) 7374 final of 15.10.2014 concerning Case SA.38711 (2014/N) Greece - Interruptibility service for the electric system in Greece, p. 4.

**Figure 5: Duration curve of hourly ramping provided by gas-fired power plants in 2015 during critical hours<sup>17</sup>**



- (34) The calculations performed by TSO are based on hourly periods. However, when ramping at a rate of 10MW/minute, a typical CCGT will reach its maximum load in approximately 20 minutes. From that point on the unit's load will remain constant for the remaining 40 minutes. As a result, the average hourly ramping will be 3.3 MW/minute, instead of the 10 MW/minute provided. Therefore, the hourly calculations underestimate the actual per-minute ramping provided by each unit in some periods.
- (35) The requirement to be available for three hours is also justified by the fact that the hourly variability of sunlight during sunset when the highest ramping requirements are observed is around three hours.
- (36) Only power plants located in the Hellenic Republic and connected to the main Greek transmission system can be eligible to participate in the notified measure. The participation of foreign generators would require a fully coordinated unit commitment on a broad area that relies on strong inter-TSO co-ordination, operational market coupling and flow-based allocation of sufficiently sized interconnectors. These conditions are not fulfilled at present in the South East European region.
- (37) Moreover, the Greek authorities submit that, despite having interconnections with several neighbouring countries, these have not to date played a large role in meeting the need for flexibility described above:

<sup>17</sup> Source: Hellenic Republic reply to the request for information submitted on 24 February 2016.

- At present, imports largely exceed exports and net imports represent a rather high share of total demand while interconnectors are systematically close to congestion levels.
  - The interconnector with Italy has been disconnected for extended time-periods because of reliability issues, including that the AC-DC-AC conversion is susceptible to damages and cannot sustain frequent electricity flow changes, especially flow inversions.
  - The large majority of imports are based on longer-term bilateral contracts, as opposed to being driven by cross-border differences in spot market prices. This can be confirmed by the fact that importers submit extremely low economic bids in the pool in order to ensure their inclusion in the resulting schedule of output.
- (38) While the Hellenic Republic views the direct participation of demand-side response in the notified measure as desirable, consumers do not currently have control and communication systems allowing them to follow operation forced by the system operator over a time-scale which corresponds to multi-hour ramping cycles.
- (39) Therefore, the envisaged beneficiaries are generators located in the Hellenic Republic and connected to the main Greek transmission system that can meet the technical requirements described in recital (31). These can be satisfied by the following technologies: Combined Cycle Gas Turbine (CCGT), Open Cycle Gas Turbine (OCGT), Combined Heat and Power (CHP), and Hydro.
- (40) Groupings of plants are not eligible because, according to the Greek authorities, flexibility services require continuous control of the relevant units by the TSO and it would be impossible to monitor the availability and control the performance of groupings of plants. One difficulty is the possibility of failure of one or more plant within a group. Furthermore, Greek market arrangements (including penalties) are based on balancing responsibilities applying to individual generating units, rather than portfolios of plants.
- (41) In principle refurbished lignite plants or new modern coal plants could meet the eligibility criteria but are not active on the Greek market. As for the existing lignite plants, their operational inertia does not allow them to meet the three hours response time requirement. Moreover, Greek lignite plants do not have stable fuel characteristics<sup>18</sup>, a fact that reduces their ability to reliably follow dispatching orders from the TSO.

## 2.4 Compensation

- (42) Remuneration for flexibility under the scheme consists of a 'capacity premium', which is a fixed payment based on available capacity to provide ramping services, set administratively by the Regulator, at a level of EUR 45/kW/year. In addition, the TSO will ensure that capacity premium revenues for the duration of the

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<sup>18</sup> According to the TSO, Greek lignite has a very low calorific power (on average 1.200kcal/kg). The superficial extraction, storage and milling processes seem to not guarantee constant quality. During the most recent years lignite characteristics have varied considerably. Based on past evidence lignite fired units fail to accurately assess their available capacity for the day-ahead due to the fact that this is affected by the fuel characteristics.

measure shall not exceed EUR 15 million per eligible power generation installation. Based on the eligible available capacity (see Table 3 below), the maximum total budget is therefore EUR 225 million.

- (43) Payment is proportional to observed historical power plant availability, measured in MW, over the previous 3 years. The availability factor for hydro has been adjusted to reflect the proportion of hydro capacity technically able to provide the service in water scarcity conditions. As regards the new gas plant in Megalopoli (no. V), only half of total capacity will be eligible due to high voltage grid limitations.

**Table 3: Eligible available capacity for 2016 in MW<sup>19</sup>**

Natural Gas plants (PPC) - all Combined Cycle Gas Turbine (CCGT)	2,081
Natural Gas plants (Independent Power Producers)	2,331
- of which CCGT	1,997
- of which Open Cycle Gas Turbine (OCGT)	141
- of which Combined Heat and Power (CHP) (for capacity above that remunerated under feed-in-tariff)	192
Hydro plants (PPC)	582
<b>Total</b>	<b>4,994</b>

- (44) The Greek authorities state that this level of compensation is necessary since, in addition to fixed operating and maintenance (O&M) costs associated with normal operation, gas generators will incur additional fixed costs, summarised in Table 4 below.

**Table 4: Estimated fixed costs incurred by typical gas generator under the notified measure<sup>20</sup>**

Item	Fixed costs in EUR/kW per year
Default annual fixed O&M costs for smooth-normal cycling operation of a CCGT plant	21.0
Additional annual O&M costs due to stressed cyclical operation of a CCGT plant in the discharging of flexibility services	16.3
Additional annual operation costs due to gas procurement and transportation of a CCGT plant discharging flexibility services	9.1
<b>Total</b>	<b>46.4</b>

<sup>19</sup> Source: Annex 1 to the Hellenic Republic's reply to the request for information submitted on 22 December 2015.

<sup>20</sup> Source: Annex 1 to the Hellenic Republic's reply to the request for information submitted on 22 December 2015.

- (45) The fixed O&M costs associated with normal plant operation of EUR 21/kW are those of an efficient CCGT plant of 400 MW. They exclude insurance and administration costs. The amount is estimated based on financial data for 2011-12 submitted to the Regulator by owners of gas-fired plants. The Greek authorities submit the estimate is also similar to fixed O&M costs for CCGT estimated by Mott MacDonald in 2010 for the UK and to 2006 studies conducted on behalf of the Regulator regarding "best new entrant" costs in the context of a previous auctioning procedure for new capacity.
- (46) The Greek authorities explain the additional fixed O&M costs of EUR 16.3/kW as follows:
- The notified measure targets much higher flexibility performance from CCGTs than the default performance on which the fixed O&M costs associated with normal plant operation are based.
  - This implies significantly higher cyclical operation from CCGTs, resulting in additional fixed O&M costs.
- (47) These additional costs include those associated with increased inspections to check the remaining life of critical components and increased self-consumption of electricity (since, based on best practice, during the shut-down of the plant, several equipment like motors, fan, turning gear, pumps, etc. remain in operation in order to ensure the prompt availability of the unit if requested). These costs are detailed out in Table 5 below:

**Table 5: additional annual costs due to stressed cyclical operation of a CCGT plant**

Summary of additional annual costs due to stressed cyclical operation of a CCGT plant		
Additional annual operation and maintenance costs (EUR/year)		Notes
Gas Turbine	2,772,000	Corresponding to additional maintenance contract due to number of start-ups
	2,356,200	<i>Rotors (generator and compressor) removal for inspection, components refurbishment (unstacking/replacement of components at a specialized shop)</i>
	277,200	<i>Inspections and NDTs of all components (gas, oil, air intake, exhaust diffuser, etc.) for replacement or weld repair</i>
	138,600	<i>Bearing rebabbiting</i>
Steam Turbine	1,600,000	Opening of ST and maintenance on valves and Rotor (Blades etc.)
	960,000	<i>Rotors removal &amp; refurbishment (stationary and rotating parts repair/replacement at a specialized shop)</i>
	480,000	<i>ST valves overhaul and L-0 NDTs inspection</i>
	160,000	<i>Condenser, by-pass, extraction pump, blades, etc.</i>
Boiler	800,000	HRSG maintenance, piping, drums and valves
	400,000	<i>Exchange of parts of thick walled components due to accelerated creep and fatigue</i>
	400,000	<i>NDTs check and valves overhaul</i>
Electrical equipment	300,000	All electrical equipment maintenance (generator, transformers, circuit breakers, excitation system, LCI, etc.)
Self-Consumption of Electricity	740,000	
Additional cost of Insurance	300,000	
<b>TOTAL (EUR/year for 400 MW plant)</b>		<b>6,512,000</b>
<b>ADDITIONAL UNIT FIXED COST (EUR/kW/year)</b>		<b>16.3</b>

(48) The additional fixed costs corresponding to gas purchases of EUR 9.1 are based on current Greek gas market conditions, and can be explained as follows:

- To guarantee they can discharge flexibility services to the system operator, CCGT plants will be required to conclude gas supply and transportation contracts designed appropriately to match the increased fluctuation in their output.
- Gas contracts offered to power producers in the Hellenic Republic have only limited flexibility. In particular, they involve so-called “Take or Pay” obligations: typically, gas generators are required to pre-pay around 80% of the annual contracted amount regardless of how much gas is actually consumed. Since gas that is pre-paid but not actually used in any given year can be used in subsequent contractual years, the cost of pre-pay exposure can

be measured by the interest rate. The requirements on gas generators under the notified measures result in additional pre-pay exposure, since gas supply needs to be sufficient to cover increased fluctuations in output.

- Also because of the fluctuating operation of the plant, gas generators will bear programming penalties, flexibility premium charges and higher gas costs corresponding to increased gas balancing requirements (assuming LNG plays the balancing role in the Hellenic Republic, which is more expensive than pipeline gas).
- Finally, gas generators will likely bear increased gas transport costs. In order to deal with increased variability of gas consumption, they are likely to increase the share of daily gas transportation contracts they have in place. These are more expensive than annual gas transportation contracts.

(49) The Greek authorities also calculate that the capital costs of a typical CCGT plant on an annual basis are equal to EUR 65.6/kW/year. This is based on an investment cost of EUR 700/kW, a Weighted Average Cost of Capital (WACC) of 8% and a project lifetime of 25 years.

## **2.5 Penalties**

(50) If, following ex-post monitoring, providers are unavailable in real-time, penalties are applied as follows:

- The measured historical available capacity is reduced, which reduces revenues for the future (see recital (43) above).
- Through the ex-post Imbalance Settlement mechanism, the power plant is obliged to pay the non-produced energy at the imbalance price, which is higher than the received ex-ante spot price (by 10%-20%).
- Additional administratively defined Non-Compliance Charges apply for failing to follow the instructions set by the TSO for energy production and ancillary service provision, or in case of deviations from declared availability and techno-economic data, based on articles 18, 22, 61, 117, 168 of the Greek Grid Code. System requirements mean that CCGTs will be required to declare shorter minimum start-up times, more frequent starts/stops and higher ramp rates. Except for normal imbalance settlement, no penalties apply to beneficiaries for energy not delivered.

## **2.6 Financing of the measure and payment flows**

(51) The measure will be financed by a special levy, set by the Regulator, imposed on Load Representatives, in proportion to their obligation to hold certificates for flexibility, as required by the System Operating Code (see recital (6) above). This obligation is monitored by the TSO. The obligation imposed on each Load Representative relates to its maximum electricity demand measured during hours with increased loss of load probability.

(52) The TSO will be responsible for (a) calculating the payments awarded under the measure, (b) issuing the settlements and (c) performing the respective invoicing. The TSO shall invoice the Load Representatives to collect the funds for the payments in question in the context of a special Account, and correspondingly will be invoiced by the eligible generators under the notified measure based on the settlements issued to them.

## 2.7 Objective of the measure

- (53) The objective of the measure is to ensure sufficient provision of flexibility services, which would be at risk in case of economic retirement or mothballing of plants that are able to provide those services. The measure aims at minimising that risk by providing economic incentives for the provision of flexibility services.
- (54) For the reasons explained in Section 2.2.1 above, it is extremely difficult or even impossible for CCGTs, which typically provide flexibility services, to recover fixed operating costs and capital costs through market revenues. In 2015, in the absence of the proposed measure, the average margin for CCGTs above variable costs was negative, namely at minus 8,5 EUR/MWh (including revenues both from energy sales and from ancillary services).

## 2.8 Position of the Hellenic Republic on the notified measure

- (55) The Hellenic Republic does not take a position on whether the notified measure would constitute State aid within the meaning of Article 107(1) TFEU. However, it submits that the measure is compatible with the internal market on the basis of Article 107(3)(c) TFEU, in particular since it meets the common principles applicable to the assessment of compatibility under the Guidelines on State aid for environmental protection and energy 2014-2020 ('EEAG').

## 3 ASSESSMENT OF THE MEASURE: EXISTENCE OF AID

- (56) A measure constitutes State aid within the meaning of Article 107(1) TFEU if the following conditions are cumulatively fulfilled: the measure (a) confers an economic advantage to the beneficiary; (b) is granted by the State or through State resources; (c) is selective; (d) has an impact on intra-EU trade and is liable to distort competition within the EU.

### 3.1 Use of State resources and State imputability

- (57) On the basis of standing case law<sup>21</sup>, subsidies financed through parafiscal charges or contributions imposed by the State and managed and apportioned in accordance with the provisions of the legislation imply a transfer of State resources, when administered by entities designated by the State.

*"The Court has held that funds financed through compulsory charges imposed by the legislation of the Member State, managed and apportioned in accordance with the provisions of that legislation, may be regarded as State resources within the meaning of Article 107(1) TFEU even if they are managed by entities separate from the public authorities (see, to that effect, Case 173/73 Italy v Commission [1974] ECR 709, paragraph 35)."*

- (58) In the present case, the State has established, through the System Operating Code, a special levy in order to finance compensation to flexibility providers. The measure is therefore imputable to the State. Furthermore, the State has entrusted the TSO with the tasks of centralising and administering all financial flows

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<sup>21</sup> Judgement of 27 September 2012, *France v Commission*, T-139/09, EU:T:2012:496, paragraphs 61 to 65, Judgement in *Vent De Colère and Others*, C-262/12, EU:C:2013:851, paragraph 25.

related to flexibility service compensation and the special levy and of monitoring the obligation on Load Representatives to hold certificates for flexibility. The level of the levy will be determined by the Regulator, a public body. For these reasons, the measure is financed from State resources.

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

- (59) An advantage, within the meaning of Article 107(1) TFEU, is any economic benefit which an undertaking would not have obtained under normal market conditions, i.e. in the absence of State intervention. The notified measure will allow beneficiaries to receive an additional compensation (described in Section 2.4) beyond that which they would obtain in the Greek electricity market. The notified measure will therefore confer an economic advantage to these undertakings.
- (60) The notified measure will confer an advantage on certain undertakings in one sector of the economy (electricity production). Therefore this advantage is selective.

### **3.3 Impact on competition and trade**

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

### **3.4 Conclusion on the existence of aid**

- (62) In the light of the above assessment, the measure constitutes State aid within the meaning of Article 107(1) TFEU.

## **4 ASSESSMENT OF THE MEASURE: COMPATIBILITY OF THE AID**

- (63) The Commission has assessed the compatibility of the scheme notified by the Hellenic Republic with the internal market on the basis of the conditions established in Section 3.9 of the EEAG which set specific conditions for aid to generation adequacy.

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

- (64) In accordance with Sections 3.9.1 and 3.9.2 of the EEAG, the measure should meet several conditions to be found to contribute to an objective of common interest and to be necessary: i) the generation adequacy concerns must be identified through a quantifiable indicator and the findings must be consistent with the analysis carried out by the European Network of Transmission System Operators for electricity (ENTSO-E); ii) the measure must pursue a well-defined objective; iii) the measure must address the nature and causes of the problem and in particular the market failure that prevents the market from delivering the required level of capacity; iv) the Member State must have considered alternative

options to address the problem to avoid missing the objective of phasing out environmentally harmful subsidies.

- (65) First, the TSO study shows that the loss of 2 CCGTs would result in increased probability of unserved energy, as measured by IRRE. The Greek authorities have also explained that the TSO study may in fact understate the impact of such loss. Moreover, while the increase in IRRE is greatest in the TSO scenario, which assumes no contribution from imports, the Greek authorities have also submitted recent historical data on system operation showing the necessity of most or all gas-fired capacity and a portion of hydro capacity in meeting system needs, even in the presence of contributions from interconnection. Finally, while the quantitative analysis did not consider the contribution from demand-side response, this will in the near term be limited to the interruptibility scheme, which will not provide the same service.
- (66) Hence, generation adequacy concerns are clearly identified through quantifiable indicators. ENTSO-E's analysis does not currently include an analysis specifically of multi-hour ramping requirements (although the authorities have presented other generation adequacy indicators consistent with ENTSO-E's current methodological approach).
- (67) Second, the measure aims at incentivising sufficient capacity to provide flexibility services required by the electricity system mainly because of variable RES generation. Point (219) of the Guidelines states that generation adequacy measures "*...may for example aim at addressing short-term concerns brought about by the lack of flexible generation capacity to meet sudden swings in variable wind and solar production*". In exchange for receiving the capacity premium, beneficiaries commit to delivering the specified flexibility services or otherwise face penalties. The measure therefore has a well-defined objective.
- (68) Third, the Greek authorities have explained that current market arrangements lead to the under-valuation of the provision of multi-hour flexibility services. They state that market power exercised by PPC has resulted in the SMP having been depressed, leading to providers declaring more conservative technical parameters and the insufficient provision of multi-hour flexibility services. Empirical evidence also shows that in 2015 gas-fired plants' revenues (including revenues from the pool and ancillary services) on average were below variable costs. Therefore, ordinary market revenues allowed little or no contribution towards fixed and capital costs.
- (69) Over the medium-term (i.e. 1-3 years), predicted falling capacity margins (see recital (14), and the implementation of the reforms described in Section 2.2.3 should, other things being equal, increase the returns to providing flexibility through the market without additional intervention. Developments in the gas market, such as hub-based trading<sup>22</sup>, may reduce some of the additional fixed costs associated with gas purchases. However, such factors are unlikely to play a major role within the limited lifespan of the notified measure (12 months).

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<sup>22</sup> In its Decision on the exemption of the Trans Adriatic Pipeline (TAP) from third party access requirements (C(2013)2949 final), the Commission observed that "...in Italy wholesale market trading is more developed..." and that "...TAP therefore opens the prospect of a more liquid gas wholesale market in Greece, in particular once the Greek VGTP gas trading hub is launched".

- (70) Therefore, the measure addresses market or regulatory failures that cannot be more appropriately addressed in the near term.
- (71) Finally, alternative ways of achieving generation adequacy which do not have a negative impact on the objective of phasing out environmentally harmful subsidies have been considered by the Hellenic Republic. The Hellenic Republic is facilitating demand side management measures through the introduction of the interruptibility scheme described in Section 2.2.4 above. However, the Greek authorities have taken into account the indirect effects of this measure when calculating the need flexibility services and have identified a residual need for this kind of services even after the implementation of the interruptibility scheme. Secondly, the design of that scheme is not really to provide typical ramp down services, as the load reduction will be one-off, but rather to reduce the peaks during system stress and emergency situations. Moreover, the Hellenic Republic plans to increase interconnection capacity and implement market coupling. However, these measures will not be implemented during the lifespan of the flexibility mechanism.
- (72) For the abovementioned reasons, the Commission considers that the measure contributes to an objective of common interest and is necessary, in accordance with Sections 3.9.1 and 3.9.2 of the EEAG.

#### **4.2 Appropriateness of the aid**

- (73) In order to be found appropriate in accordance with Section 3.9.3 of the EEAG, the measure should meet several conditions: i) the aid must only compensate the service of availability of capacity; ii) the measure should be open and provide adequate incentives to both existing and future generators and to operators using substitutable technologies, and iii) take into account the extent to which interconnected capacity can contribute to remedy the generation adequacy concerns.
- (74) First, the measure only compensates for availability of capacity. Beneficiaries receive a compensation for the units of capacity that they make available (EUR/MW) and not for the energy delivered (EUR/MWh), in line with point (225) of the EEAG.
- (75) Second, the measure is open to generators meeting the eligibility criteria, apart from those which receive other types of support. The eligibility criteria are justified by the needs of the system:
- (76) Analysis (recitals (32) to (34)) shows that in critical hours gas-fired power plants have been required to ramp up at a rate greater than 7 MW/minute in order to meet system needs (taking into account the contributions from interconnection, lignite and hydro).
- (77) The requirement to be available for three hours is also justified by the fact that the hourly variability of sunlight during sunset when the highest ramping requirements are observed is around three hours.
- (78) The measure is open to both new and existing generators. One new gas plant (Megalopoli no. V) and one new hydro plant (Ilarionas) should be also remunerated under the measure.

- (79) In addition, demand-side response cannot be considered a substitutable technology as explained in recital (30) above. Furthermore, demand response is already rewarded separately to some extent. Finally, the Hellenic Republic commits to opening the permanent capacity mechanism it is planning to implement to the participation of demand-response, and aggregated resources (provided that the framework and the control infrastructure for such resources are in place).
- (80) Fourth, interconnected capacity is not currently eligible as it cannot, at this stage, provide the type of services requested, as explained in recitals (36) and (37) above. However, the contribution of interconnected capacity has been considered in the necessity assessment. Further, the Hellenic Republic commits to opening the planned permanent capacity mechanism to the participation of cross-border resources with neighbouring systems. To this end, the Greek competent authorities have committed to immediately initiating discussions with the Italian authorities and other European organizations, such as ENTSO-E.
- (81) For these reasons, the Commission considers that the measure is appropriate as required by Section 3.9.3 of the EEAG.

### **4.3 Incentive effect**

- (82) An incentive effect exists where there is a causal link between the aid and the change of the behaviour of the beneficiary towards the improvement of the functioning of the energy market (in terms of security, affordability and sustainability).
- (83) As explained above (recital (54)), in 2015 ordinary market revenues did not allow CCGTs to cover their fixed operating costs and, in some cases not even variable costs. It is true that those power plants still provided flexibility services to the system in 2015 and the beginning of 2016. However, this can be explained mainly by the fact that flexibility services providers expected the present measure to be implemented in the beginning or mid 2015 based on the information disclosed in the Regulator's public consultation on the measure in January 2015 and in the framework of the negotiations that led to the adoption of the MoU.
- (84) It follows that in the absence of the measure, there is a high risk that some gas-fired plants will exit the market. In addition, the presence of penalties (see Section 2.5) ensures the required service is actually delivered.
- (85) The Hellenic Republic commits to amending the Registration Application form which generators are obliged to file by virtue of article 192 of the System Operating Code, so that the generators submit further information regarding the description of the project, including its location and start and end dates, the amount of aid needed to carry it out and the eligible costs, the counterfactual scenario, or the alternative scenario or project and – possibly – documentary evidence in support of the counterfactual scenario. Furthermore, the Regulator will review the credibility of the counterfactual scenario and confirm that the aid has the required incentive effect, prior to the conclusion of the flexibility contracts.
- (86) Thus, the measure has an incentive effect as required by Section 3.9.4 of the EEAG.

#### 4.4 Proportionality

- (87) According to Section 3.9.5 of the EEAG, a measure is proportional when it meets the following conditions: i) the calculation of the overall amount of aid should result in beneficiaries earning a rate of return, which can be considered reasonable; ii) the measure should have built-in mechanisms to ensure that windfall profits cannot arise; and iii) the measure should be constructed so as to ensure that the price paid for availability automatically tends to zero when the level of capacity supplied is expected to be adequate to meet the level of capacity demanded. The latter provision intends to avoid the remuneration of capacity when it is not needed. In the present case, however, the necessity and proportionality of the measure have been established for the relatively short and predictable time period of only one year so that there is no need to enforce this provision aimed at safeguarding proportionality in the medium to long term.
- (88) The typical source for system flexibility is an open cycle gas turbine (OCGT) plant. Such plants have extremely fast ramping rates and very short cycling operation possibilities. However, their operating costs are substantially higher than those of CCGTs. Table 6 below shows total annual equivalent costs of electricity generation for a standard – i.e. smooth – operation of gas plants (i.e. for CCGT plants without considering extra costs induced by the stressing of equipment caused by the discharging of highly performing flexibility services).

**Table 6: Annual costs for the standard operation of a combined and open cycle gas plant (CCGT)<sup>23</sup>**

	CCGT	Gas Turbine
Investment cost (EUR/kW)	700	400
WACC (%)	8%	8%
Lifetime (years)	25	20
Capital Annuity Payment factor	0.0937	0.1019
Annual Capital Cost (EUR/kW)	65.6	40.7
Operation & Maintenance Costs (EUR/kW)	21.0	15.0
Load Factor (h/year)	2850	1000
Annual Capital Cost (EUR/MWh)	23.0	40.7
Operation & Maintenance Costs (EUR/MWh)	7.4	15.0
Fuel cost (EUR/MWh of fuel)	38.3	41.5
Electrical conversion efficiency (%)	57%	38%
Fuel cost (EUR/MWh )	67.2	109.2
Levelized cost of electricity in EUR per MWh for smooth operation	97.6	165.0

- (89) Since OCGTs do not have other revenues (in Greece they do not sell energy to either the retail or the wholesale market), the system operator would be obliged to remunerate them at full cost to procure the required flexibility service. In case

<sup>23</sup> Source: Annex 1 to the Hellenic Republic's reply to the request for information submitted on 22 December 2015.

flexibility services were procured by OCGTs (which is not feasible at present given that their capacity is not sufficient to cover the total flexibility requirements of the Greek system), the costs for the system would be much higher than those resulting from the implementation of the proposed measure.

- (90) The difference of total average costs between the CCGTs and the OCGTs is the opportunity costs of the former in the supply of flexibility services equal to 67.4 EUR/MWh. The Greek authorities have estimated that for the year 2016 the amount of energy to be produced by gas plants for the delivery of flexibility services is in the range of 4 500 to 6 000 GWh. Therefore, the reasonable maximum total annual budget for fixed cost premium to be awarded to plants for the delivery of the flexibility services is approximately 323 million EUR (= 67.4 EUR/MWh times 4800 GWh). This is higher than the maximum budget allocated under the proposed measure (225 million EUR) and the limit of EUR 45/kW/year and the maximum aid of EUR 15 million per eligible power generation installation.
- (91) CCGTs will receive payments which are lower than their total fixed costs. The total estimated fixed operational and maintenance costs are in line with recent estimates from other Member States<sup>24</sup>. The data show that generators have a very limited opportunity to earn revenues to contribute towards fixed operating and capital costs from the market. Furthermore, as explained above (recital (54)), in 2015 ordinary market revenues did not allow CCGTs to cover their fixed operating costs and, in some cases not even variable costs. Hence, beneficiaries operating CCGT plants are merely compensated for the costs incurred in providing flexibility services.
- (92) The flexible capacity offered is not sufficient at present to cover the flexibility needs of the system. Furthermore, the spare gas turbines of the CHP plant operated by Aluminium of Greece have been built for back up purposes due to high dependence of the aluminium smelter on uninterrupted electricity supply. Therefore, their production of thermal energy is very constraint. Furthermore, the amount of CHP capacity eligible to participate in the measure is only the one not covered by other support measures.
- (93) The cost of procuring flexibility services from hydro power plants cannot be estimated in the same way as for gas-fired plants, given that their ability to provide flexibility services depends on weather conditions.
- (94) Therefore, the total opportunity costs for the system are not estimated by reference the costs of hydro and CHP plants. However, when available, these plants contribute in the same way as natural gas plants to ensure system adequacy.
- (95) The payment of the same price to all capacity providers was found to comply with the EEAG provisions on proportionality in the UK capacity mechanism case

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<sup>24</sup> See, for example, Parson Brinckerhoff's April 2013 report entitled "2013 Update of Non-Renewable Technologies" for the UK's Department of Energy and Climate Change. Excluding insurance and connection and use of system costs, fixed O&M costs are estimated in the range of GBP 18-25.9/kW/year (EUR 23.4-33.67/kW/year, based on an exchange rate of GBP 1=EUR 1.3). Including insurance and connection and use of system costs, fixed costs are estimated in the range of GBP 25.8-36/kW/year (EUR 33.5-46.8/kW/year).

applying a clear-as-bid auction<sup>25</sup>, even though the costs of different capacity providers varied. It is also important to note that the amount of hydro capacity to be remunerated has been estimated by simulating water scarcity conditions.

- (96) The total amount of capacity to be remunerated was estimated on the basis of historical plant availability to provide flexibility services over the previous three years (and applying a corresponding correction coefficient for hydro capacity) (see recitals (42) and (43) and Table 3: Eligible available capacity for 2016 in MW above). The Greek authorities have submitted data showing that in some days of the winter 2015/2016 and in January 2016 approximately 5 000 MW of CCGTs capacity and 1 000 MW of hydro capacity was needed to cover the system flexibility needs (see Figure 2: Participation of CCGTs in the market on 22 December 2015 Figure 2 above). In 2016, flexibility system needs are expected to be similar to those of 2015 (see Figure 3 above). In addition, the TSO will ensure that the revenues from the capacity premium for the duration of the measure will not exceed EUR 15 million per eligible power generation installation (see recital (42) above).
- (97) Finally, the duration of the measure is limited to 12 months. It is highly unlikely that during this short timeframe market circumstances will change to such an extent that the provision of the new flexibility services are incentivised (see also recital (71) above) or that new OCGTs or CHP plants will be built. The Hellenic Republic has committed to preparing a report on the level of compensation received by the beneficiaries at the end of that period and to auctioning capacity products in the future.
- (98) Given (i) the limited duration of administrative payments before a capacity mechanism employing competitive bidding may be introduced, (ii) that the maximum available budget is lower than the system's opportunity costs, (iii) that the remuneration paid to the main providers of flexibility services (CCGTs) is lower than the cost of providing the service, (iv) that the amount of eligible hydro capacity has been estimated simulating dry weather conditions, and (v) that a cap applies on the remuneration to be paid to individual beneficiaries, the measure is deemed proportional as required by Section 3.9.5 of the EEAG.

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

- (99) According to Section 3.9.6 of EEAG, the measure should not result in undue distortion of competition and trade. In particular, the measure must meet the following conditions: i) when technically and physically possible, be open to all capacity providers subject to meeting the proportionality principle; ii) avoid negative effects on the internal market, for example due to export restrictions, wholesale price caps or bidding restrictions; iii) not reduce the incentives to invest in interconnectors and not undermine market coupling; iv) not undermine investment decisions that preceded the introduction of the measure; v) not unduly strengthen market dominance and vi) give preference to low-carbon technologies in case of equivalent technical and economic parameters.

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<sup>25</sup> Commission decision C (2014) 5083 of 23.7.2014, concerning case SA.35980 (2014/N-2) – United Kingdom- Electricity market reform – Capacity market

- (100) First, as already explained (see recital (78)), the measure is open to existing and future capacity providers meeting the technical eligibility criteria. The exclusion of demand response and interconnection are considered justified since they cannot currently technically provide flexibility services as noted in recitals (79) and (80).
- (101) Second, as of 1 January 2016, the Hellenic Republic has also removed the components of uplift charges on electricity exports that are not intrinsic to the production costs of energy and committed to exploring whether the tax-related components can also be eliminated.
- (102) Third, the measure does not undermine investments in existing gas and eligible hydro generation, since these are beneficiaries of the measure. The measure does not affect the return on investments in RES, which are determined by the levels of other support measures. For lignite and the remainder of hydro capacity, the Greek authorities explain that the mechanism will not reduce the SMP, from which these generators derive their revenues. Hence, investment decisions in lignite and hydro will not be undermined.
- (103) Fourth, the measure does not unduly strengthen market dominance. While PPC owns the majority (approximately 55%) of eligible capacity (see Table 3), and therefore will receive the majority of payments under the measure, its share of payments will still be less than its market share in generation (see recital (22)). Finally, the Greek authorities have made commitments to improve market functioning and plan to increase competition in generation (and retail) (see Section 2.2.3).
- (104) Fifth, the service can only currently be provided by gas-fired and eligible hydro capacity, all of which is estimated to be required for the duration of the measure. Lower carbon technologies are not able to provide the required flexibility services. Moreover, hydro-based and gas-fired power generation emit less carbon than lignite-fired generation which represents the predominant energy source in the Greek electricity market.
- (105) For these reasons, the Commission considers that the measure does not result in undue distortion of competition and trade.

#### **4.6 Transparency**

- (106) The Hellenic Republic commits to observing the transparency requirements, set out in points 104-106 of the EEAG. The full text of the European Commission State aid decision and the Regulator's decision implementing the new flexibility scheme will be published on the Regulator's website as soon as the relevant decisions are issued. In addition, within 6 months, further information will be published regarding the identity of the individual beneficiaries, the form and amount of aid granted to each beneficiary, the date of granting, the type of undertaking, the region in which the beneficiary is located (at NUTS level II) and the principal economic sector in which the beneficiary has its activities (at NACE group level). Such information will be kept for 10 years and will be available to the general public without restrictions. The aforementioned documents and data will be published on the national comprehensive State Aid website as soon as possible.

#### **4.7 Conclusion on compatibility with EEAG**

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

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

(108) As explained in Section 2.6 above, the payments will be financed by a levy imposed on electricity suppliers. In the field of energy, any levy that has the aim of financing a State aid measure needs to comply in particular with Articles 30 and 110 TFEU.

(109) In the present case, the Commission considers that the current constraints listed in recital (36) and (37) above imply that flexibility services can only currently be provided by means of domestic capacity. Moreover the Commission notes that the duration of the measure is limited to 12 months and that the Hellenic Republic has committed to opening the planned permanent capacity mechanism to the participation of cross-border resources with neighbouring systems (see recital (80)).

#### **4.9 Duration**

(110) The Commission authorises the aid scheme for 12 months following the date of its adoption.

## 5 CONCLUSION

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

By letter dated 12 November 2015, the Hellenic Republic waived its right under Article 342 of the Treaty in conjunction with Article 3 of Regulation (EEC) No 1/1958 to have this Decision adopted in Greek and agreed that this Decision be adopted in English.

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

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State Aid Greffe  
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Yours faithfully  
For the Commission

Margrethe VESTAGER  
Member of the Commission

