Report on the system balancing actions and related procurement activities in the GASPOOL market area in the gas year 2015/2016

Current as at: 5 December 2016

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1. Introduction

The administrative ruling on gas balancing handed down by the German national regulatory authority Bundesnetzagentur (below referred to as the “Federal Network Agency”) on 19 December 2014 (the so-called “GaBi Gas 2.0” ruling) imposes an obligation on the German market area managers (MAMs) to report on their system balancing activities, with the first reports to be produced one year after the GaBi Gas 2.0 ruling has come into force. In their reports the MAMs are to provide an account of their balancing experiences in the context of their internal and external balancing actions and related procurement activities carried out in the gas year (GY) 2015/2016. This report describes our system balancing activities and related balancing quantities for each rank of the applicable merit order for balancing actions (usually shortened to “MOL” for “merit order list”) along with the associated costs and revenues. In addition, this report describes our use of balancing services, our balancing-related procurement activities at the Title Transfer Facility (TTF) as well as our use of our balancing platform. We also provide a summary of our first experiences in connection with the implementation of a 2015 policy paper on measures to improve natural gas supply security published by the German Federal Ministry for Economic Affairs and Energy (throughout this report referred to as the “BMWi policy paper”).

2. Internal balancing actions

In this first chapter of the GASPOOL System Balancing Report we describe the so-called "internal" balancing actions carried out in the market area GASPOOL (i.e. balancing actions effected by network operators by way of linepack and network storage measures). Use of the internal balancing tools available in our market area reduces our need for balancing products offered in the market – in return for a fee – by third-party balancing providers (those would be what we refer to as "external" balancing actions).

I. Graphical presentation of internal balancing actions and related positive and negative balancing quantities (by month)

The chart below shows the internal balancing actions carried out in both directions (positive/negative) in aggregate for both gas qualities (high-cal gas – below referred to as "high CV gas" – and low-cal gas – below referred to as "low CV gas") for each calendar month in GY 2015/2016.

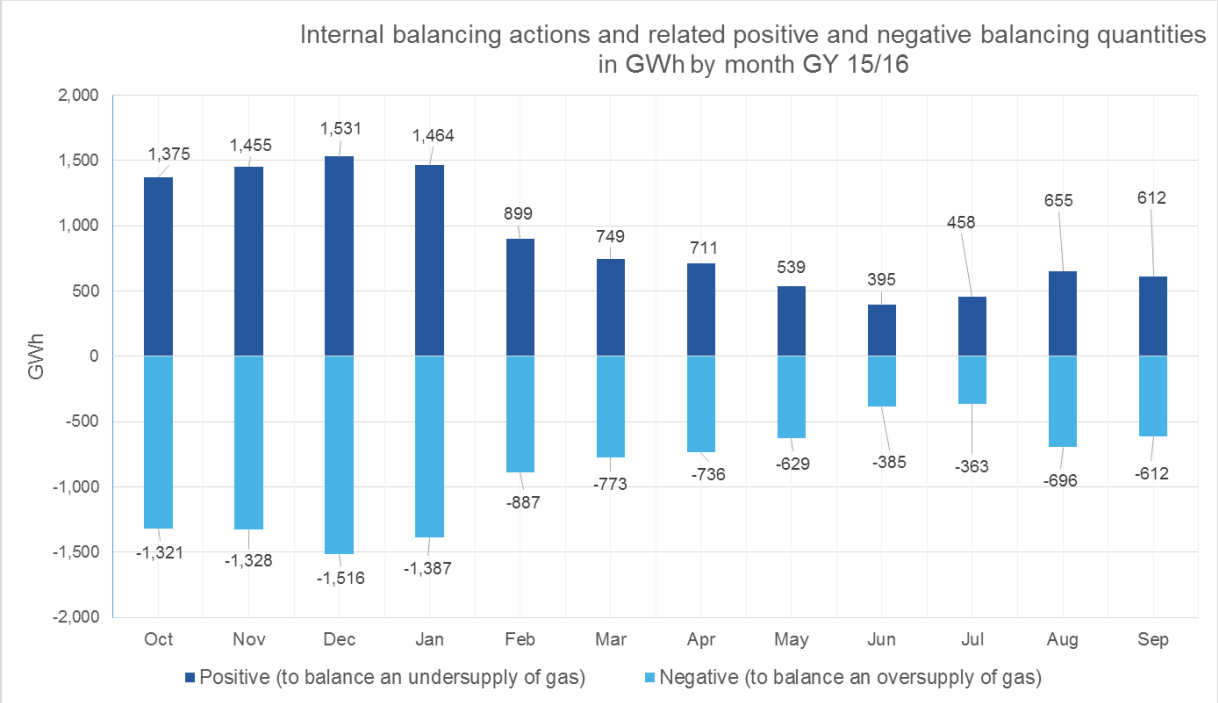

Chart 1: Graphical presentation of internal balancing actions and related positive and negative balancing quantities by month

As can be seen in the chart, increased internal balancing actions were necessary during the heating season, especially in the months from October to January.

3. External balancing actions and related procurement activities

In this third chapter of the GASPOOL System Balancing Report we describe the market-based ("external") balancing actions carried out in the market area GASPOOL. Separate analyses are provided for the different ways in which we can take external balancing actions (purchases and sales of gas) as well as for the individual ranks of the merit order.

Our total external balancing expenditure for the entire gas year amounted to EUR 104.376m. In relation to our sales of gas we generated external balancing revenues of EUR 39.457m.

I. Activity analysis for our balancing activities

In this chapter we provide an analysis of our balancing actions. Each balancing action means that we buy or sell a specified physical quantity of gas for the purpose of balancing a gas imbalance that has arisen on any of the transportation networks in our market area. Our balancing actions per gas day are shown in the chart below.

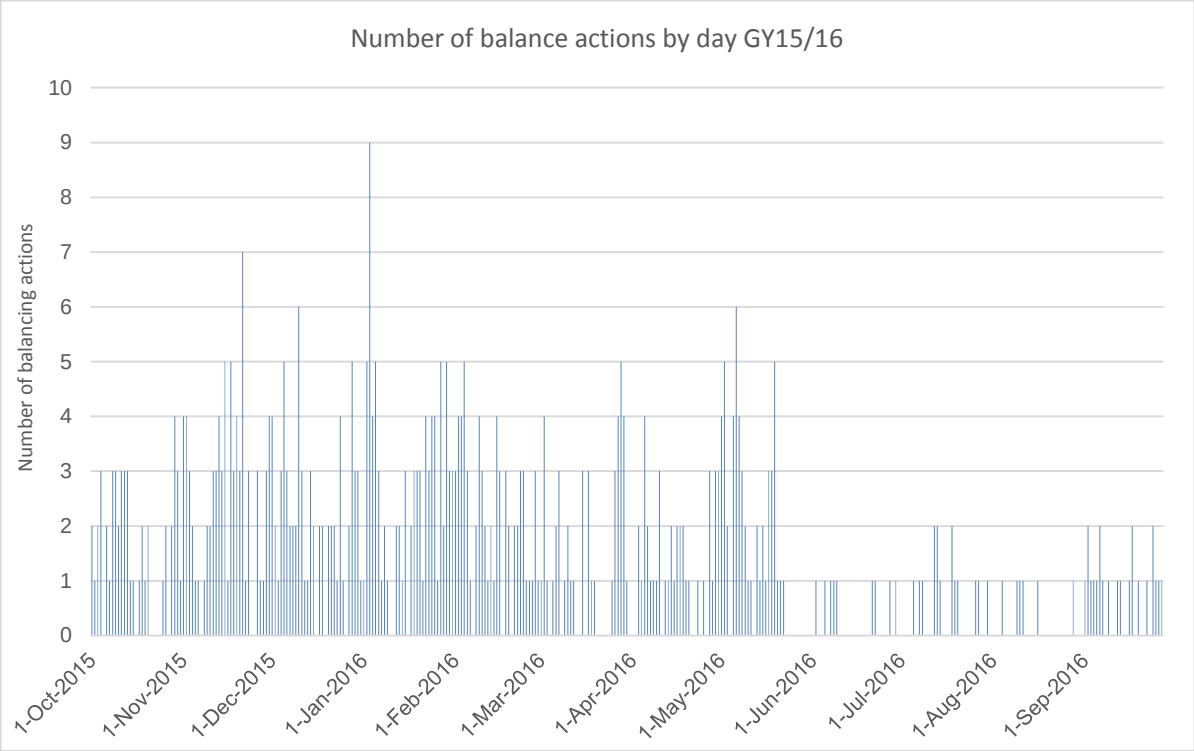

Chart 2: Number of MOL1 to MOL3 balancing actions across the high CV and low CV network areas

Chart 2 shows the number of balancing actions per gas day. Balancing actions were carried out by GASPOOL on 241 days. No balancing actions were necessary on 125 days. Overall,

we took a total of 532 balancing actions in GY 15/16, averaging 1.45 balancing actions per gas day. The day with the highest number of balancing actions was 3 January 2016, a day on which we had to take nine balancing actions. As can be seen in the chart, the number of required balancing actions tended to be lower during the summer months. Accordingly, these are also the months with the lowest balancing quantities, as can be seen in Chart 4 and Chart 5.

In Chart 3 our balancing actions are plotted against the time of day when they were executed.

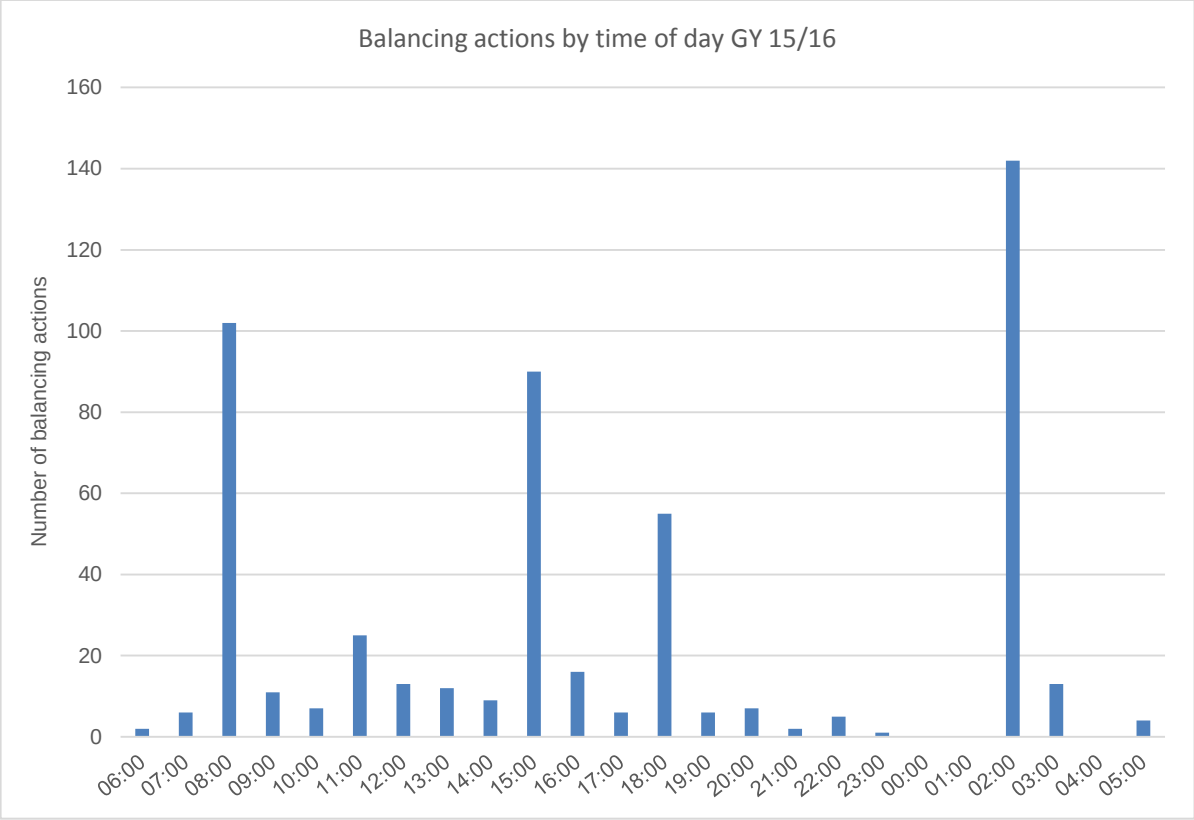

Chart 3: MOL1 to MOL3 balancing actions across the high CV and low CV network areas by time of day

The largest number of balancing actions per hour was executed between 02:00 and 03:00 hours at night, with 142 of the total balancing actions taken during the entire GY being carried out in this hour. These were balancing actions taken via the exchange on a day-ahead basis for which we used either the day-ahead or within-day order books to meet the corresponding balancing requirements. Overall, the share of day-ahead balancing actions fell to 197, which corresponds to approximately 37%. The focal point of our within-day balancing actions was the hour from 08:00 to 09:00, with 102 balancing actions being taken in this hour. 55 balancing actions were executed between 18:00 and 19:00 hours.

II. Overview of monthly balancing buy and sell transactions

1. High CV gas

The chart below provides an overview of the quantities of high CV gas we bought and sold (SystemBuy and SystemSell) for balancing purposes in each month. These include all commodity transactions across all merit order ranks. The chart shows the cumulative daily quantities in GWh along with the cumulative costs and revenues in millions of EUR by month.

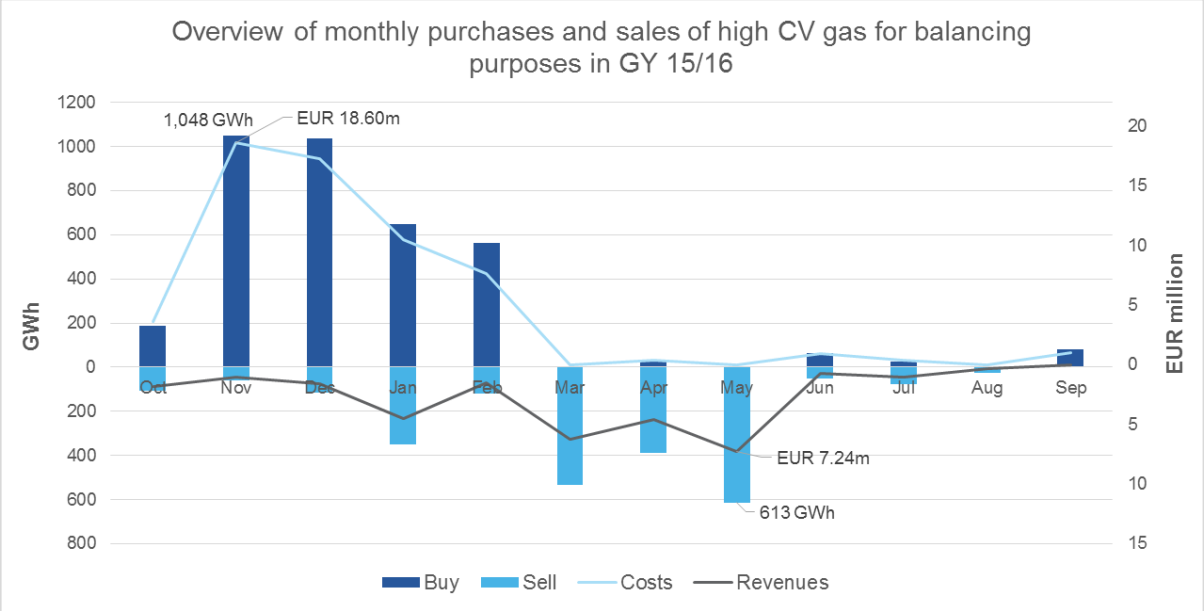

Chart 4: Overview of monthly purchases and sales of high CV gas for balancing purposes

As is shown in the chart, most of our buy transactions for the high CV sectors of the market area were carried out in the winter months of the GY, with the highest monthly sum totalling 1,048 GWh being purchased for a total price of EUR 18.6m in November. External sell transactions for the sale of surplus gas were mostly executed in the months from January to May, with the largest monthly sale totalling 613 GWh being carried out in May and generating cumulative revenues of EUR 7.24m.

Overall, some 3.682 TWh of high CV gas were bought for balancing purposes at MOL1 and MOL2 at a total cost of EUR 60.37m, compared with sales of 2.436 TWh and revenues of EUR 30.577m.

In the months from October to February we observed a strong buy trend in the high CV sector. In the period from March to May our balancing activities tended to be in the sell direction. Hardly any buy or sell transactions had to be executed during the summer months from June to September.

2. Low CV gas

Chart 5 provides an overview of the quantities of low CV gas we bought and sold for balancing purposes in each month. The chart shows the cumulative daily quantities in gigawatt-hours (GWh) along with the cumulative costs and revenues in millions of EUR by month.

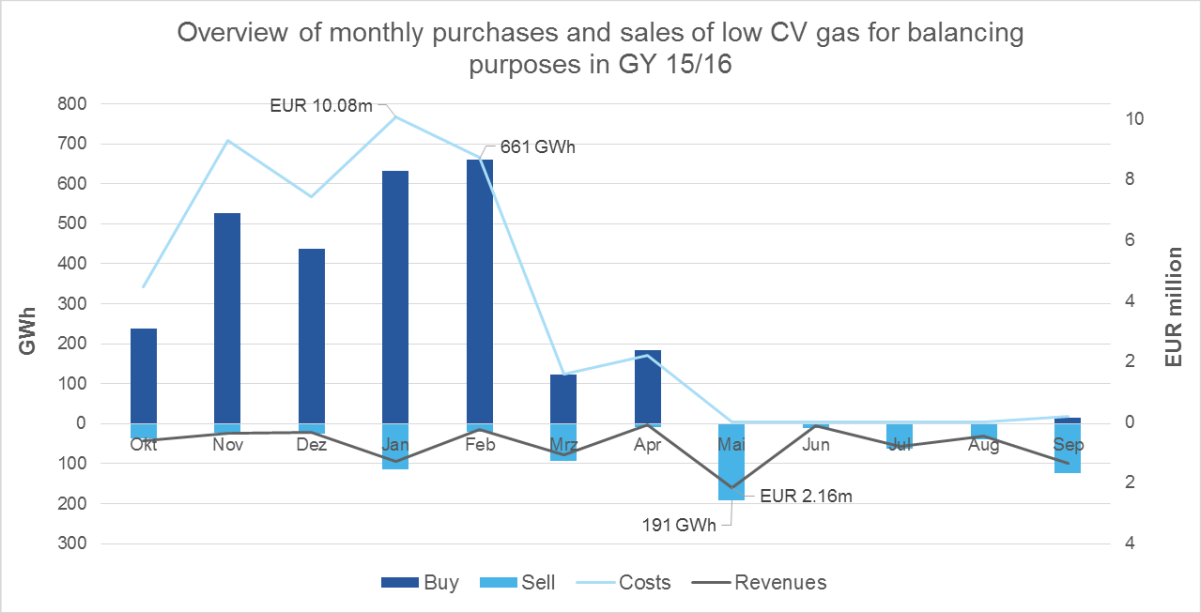

Chart 5: Overview of monthly purchases and sales of low CV gas for balancing purposes

As can be seen in the chart, the major part of our gas purchases for the low CV sector – similar to the situation in the high CV network areas – were made during the winter months of the GY, but significant quantities were purchased up to April. The largest monthly quantity, 661 GWh, was purchased in February at a cost of EUR 8.72m. Yet the highest costs were incurred in January, when our purchases amounted to EUR 10.08m. This is an indication of higher spot prices but also due to our use of zone-specific order books (i.e. order books for the delivery of gas in a specified area). Relevant quantities were sold between January and September, with May seeing the largest monthly sell quantity of 191 GWh and revenues of EUR 2.16m.

In the low CV sector, a total of 2.813 TWh of low CV gas were bought for balancing purposes at a total cost of EUR 43.975m while some 0.739 TWh were sold, generating revenues of EUR 8.711m.

As can be seen in the chart, the primary balancing trend in the months from October to April was in the buy direction. In the months from May to September we observed a sell trend. Hardly any buy or sell transactions had to be executed in the months from June to August.

3. Distribution of balancing actions by merit order rank

The following two charts show the merit order ranks we used for our balancing actions along with their share in per cent. The figures provided include all trades we entered into as part of our external balancing activities.

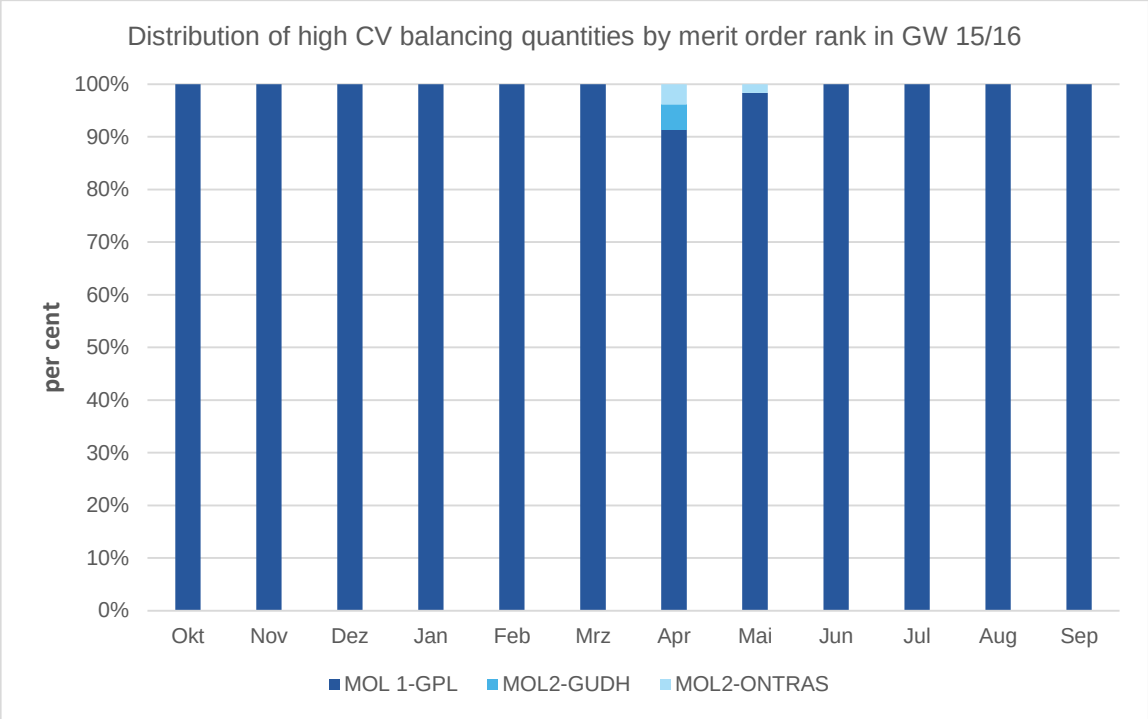

Chart 6: Distribution of high CV balancing quantities by merit order rank

Chart 6 shows that nearly all balancing actions carried out in the high CV network areas were effected via MOL1 transactions. Specifically, 99.14 per cent of all high CV gas quantities procured for balancing purposes were traded using MOL1 products. The remaining 0.86 per cent were procured through MOL2 contracts in April and May. In these cases we had a locational balancing requirement which we met via the exchange by trading gas through the zone-specific order books.

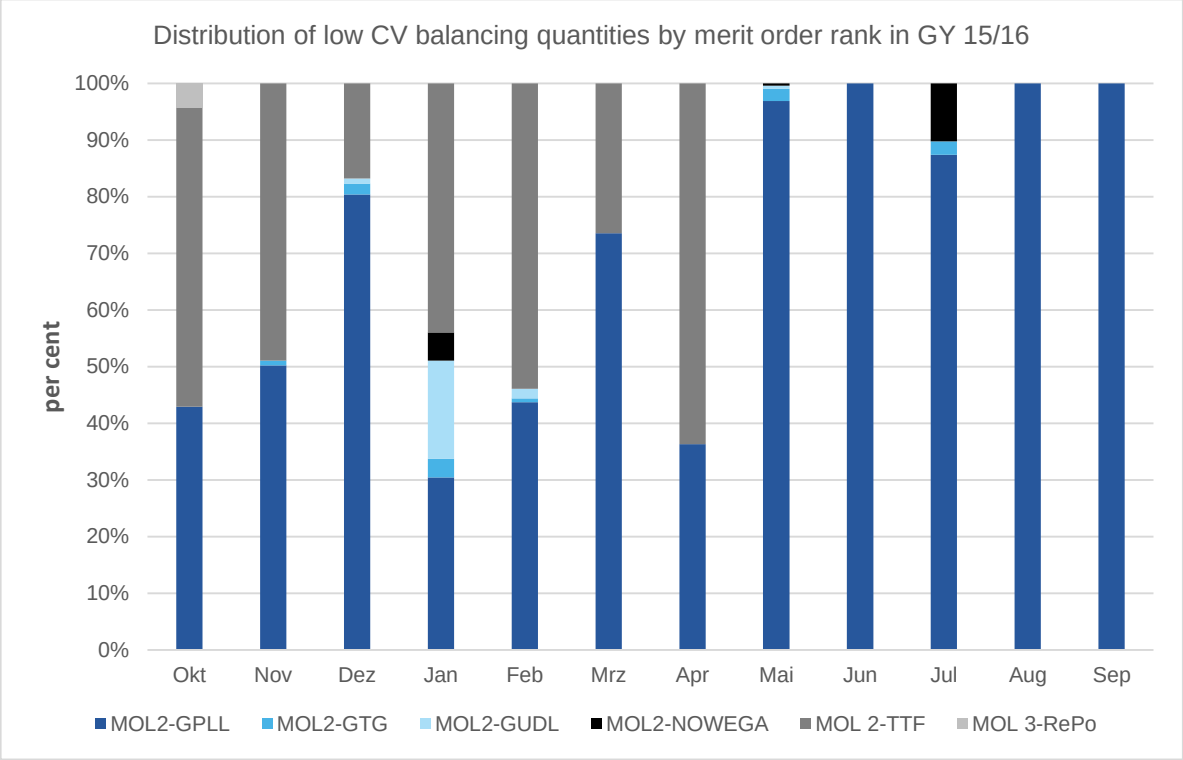

Chart 7: Distribution of low CV balancing quantities by merit order rank

99.64 per cent of the balancing actions carried out in the low CV network areas of the GASPOOL market area in GY 15/16 were effected by way of MOL2 transactions. The remaining 0.35 per cent were procured through our system balancing portal (REPo) in October 2015. 54.6 per cent of the low CV balancing quantities, a total of 1.94 TWh, were procured by way of trades in the quality-specific order book on PEGAS[1] (i.e. order books for delivery of gas of a specified gas quality). 6.7 per cent of the low CV balancing quantities were procured in order to respond to locational balancing requirements and were therefore traded using the zone-specific order books. A total of 1,366 GWh was traded for delivery at the TTF, which corresponds to a share of 38.3 per cent.

[1] PEGAS – a central gas trading platform operated by POWERNEXT; for further information please visit: http://www.pegas-trading.com/en/

4. MOL1

The chart below shows the aggregate balancing quantities procured via merit order rank MOL1 for each month together with the associated costs and revenues. MOL1 means that gas is traded using the global order book on PEGAS (this is the order book where trades are not subject to any specific physical delivery restrictions as to gas quality or location).

In the period covered by this report, all non-locational balancing requirements in the high CV network areas were met by way of trades in the global order book. We did not effect any MOL1 balancing transactions to meet low CV balancing requirements.

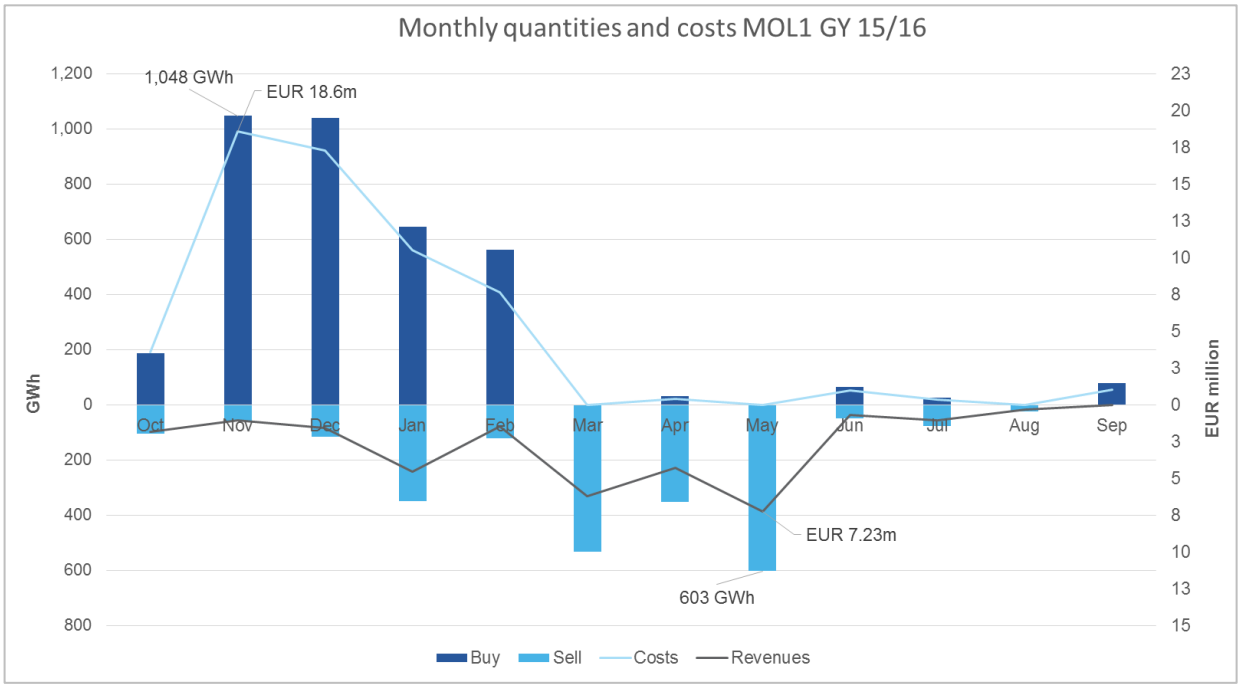

Chart 8: Monthly quantities and costs MOL1

As is shown in the chart, most of our MOL1 buy transactions for the high CV sector of the market area were carried out in the winter months of the GY, with the highest monthly quantity totalling 1,048 GWh being purchased for a total price of EUR 18.6m in November. External MOL1 sell transactions were mostly executed in the months from January to May, with the largest monthly sale being carried out in May, when we sold a total of 603 GWh generating revenues of EUR 7.23m.

5. MOL2

Merit order rank MOL2 comprises all other standardised products traded on the exchange that are used by the MAMs for their external balancing actions. GASPOOL effected MOL2

transactions to trade both high CV and low CV gas for delivery at the GASPOOL VTP using the quality-specific order books, to trade gas through the zone-specific order books on PEGAS and also to trade spot contracts for delivery of gas at the virtual trading point TTF in the adjacent market area operated by the Dutch gas transmission system operator (TSO) GTS. Gas contracts traded via the order books for delivery at the GASPOOL VTP are subject to specific physical delivery restrictions. Trading participants effecting trades via these order books have an obligation to cause a physical effect in a magnitude corresponding to the quantities traded, which is a necessary requirement for us to be able to manage system imbalances. In addition, the locational products available on PEGAS provide us with an option to also meet balancing requirements in specific zones by trading gas on the exchange. The relevant zones in the market area GASPOOL are GUD-H, ONTRAS, GASCADE, GUD-L, NOWEGA and GTG Nord.

Chart 9 shows the daily balancing quantities procured via MOL2 as well as the associated costs and revenues by month.

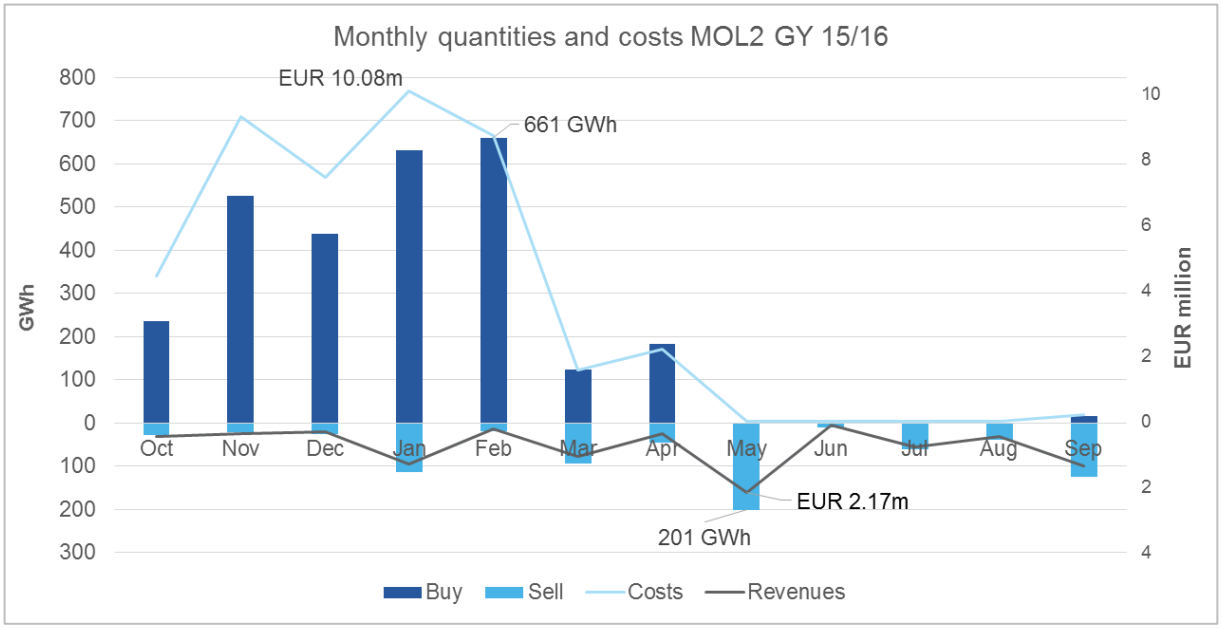

Chart 9: Monthly quantities and costs MOL2

As can be seen in the chart, most of our MOL2 buy transactions were carried out in the winter months right into the spring of the GY. The largest monthly quantity, 661 GWh, was purchased in February at a cost of EUR 8.72m. On the sell side, relevant quantities were sold between January and September, with May seeing the largest monthly sell quantity of 201 GWh and revenues of EUR 2.17m.

6. Locational balancing products

Locational balancing products are balancing products which require delivery of gas, and of the required physical effect, in a specified location. Products of this type can be traded at MOL2 via the locational order books for the GASPOOL market area launched on PEGAS on 17 November 2015 and at MOL3 via the REPo balancing portal. Neither of these MOL2 nor MOL3 products are currently taken into account in the determination of daily imbalance charges.

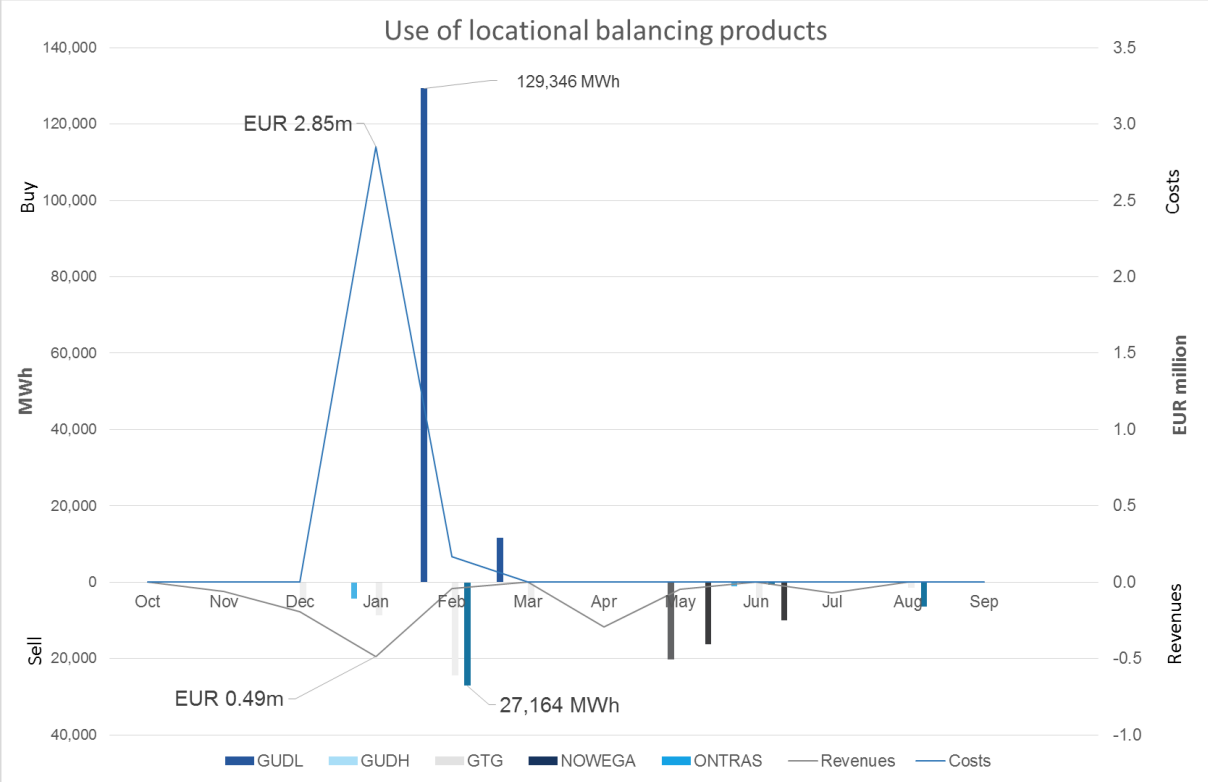

Chart 10: Use of locational balancing products

In the period covered by this report, GASPOOL met all of its locational balancing requirements by trading gas on the exchange. The highest buy requirement was registered in January 2016, when we had to purchase 129 GWh for the network area GUDL. The corresponding total cost was EUR 2.851m. Our largest sale, 24 GWh, was also registered in January 2016 and was executed for the network area GTG Nord, generating revenues of EUR 0.487m. Overall, we purchased 151 GWh in locational trades at a total cost of EUR 3.019m and sold a total of 134 GWh in locational trades for an amount of EUR 1.194m. The highest buy price, 99 EUR/MWh, was paid on 6 January 2016; the lowest buy price was 13.875 EUR/MWh and was paid on 12 February 2016. The highest sell price, 16.725 EUR/MWh, was obtained on 23 November 2015; on 6 May 2016 we sold gas at the lowest sell price of 0 EUR/MWh.

7. MOL3

The following chart shows our use of balancing contracts procured via MOL3 transactions. This includes contracts offered to GASPOOL by balancing providers on the REPo platform.

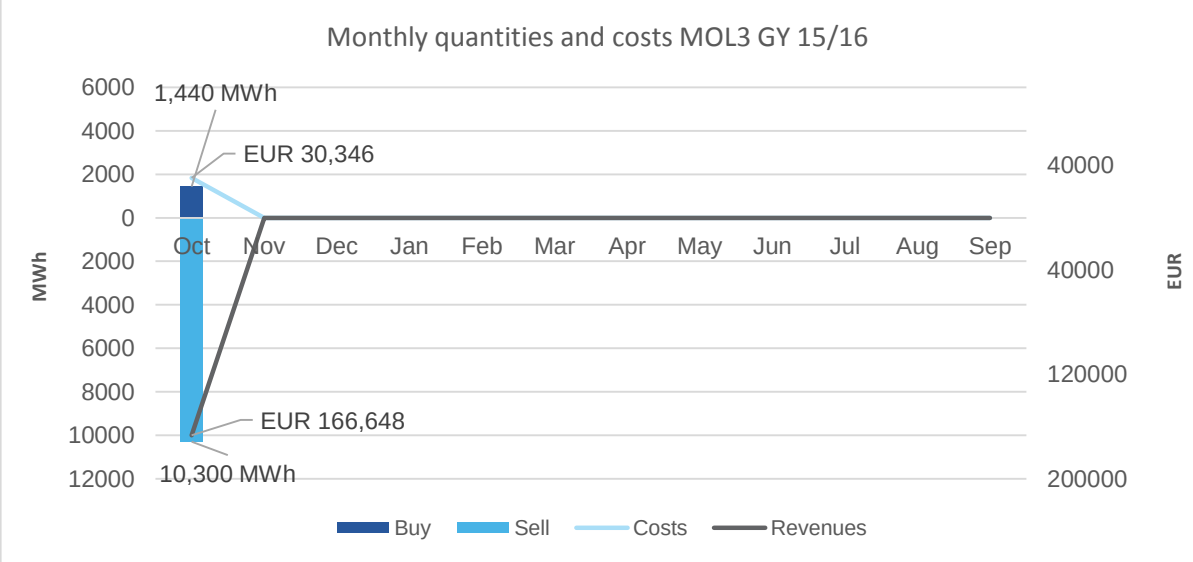

Chart 11: Monthly quantities and costs MOL3

As is clear from the chart, we only had to make use of REPo contracts on two days in the past GY, both in October 2015. In this case we bought a total of 1,440 MWh for a price of EUR 30,346 and sold a total of 10,300 MWh, which generated revenues of EUR 166,648. This is in compliance with the provisions of the Network Code on Gas Balancing of Transmission Networks (below referred to as the “BAL Code”) and the German gas balancing rules (GaBi Gas 2.0), which require the MAMs to trade standardised contracts on the exchange to the extent possible when taking external balancing actions. In the market area GASPOOL the overall share of exchange-based balancing actions over the course of the GY was 99.88%.

8. MOL4 (without the Flexibility product)

GASPOOL did not enter into any option contracts for the GY 2015/2016, so neither capacity nor commodity charges were incurred during this period.

Our procurement of option contracts for the purpose of implementing the BMWi policy paper is addressed separately in chapter 0.

9. Min-max prices for our MOL1 balancing actions

The chart below shows the lowest and highest prices in EUR per MWh that we paid and received in connection with our balancing buy and sell transactions in MOL1 for each gas day.

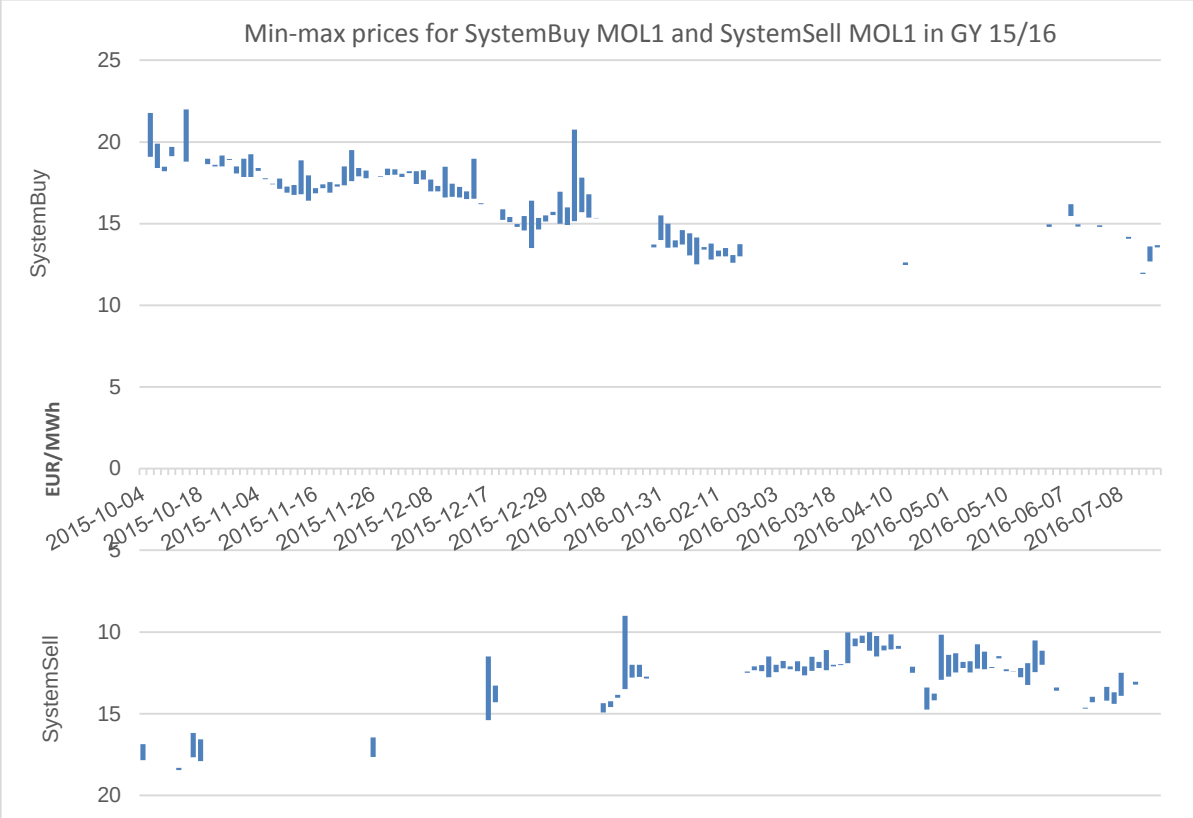

Chart 12: Min-max prices for SystemBuy MOL1 and SystemSell MOL1

The highest MOL1 buy price, 22 EUR/MWh, was paid on 13 October 2015, the lowest buy price, 11.925 EUR/MWh, on 16 September 2016. The largest price spread between the highest and lowest buy prices was observed on 3 January 2016, when we saw a price spread of EUR 5.60, and the smallest price spread on 6 January 2016, when the price spread between the highest and lowest buy prices was EUR 0.025. The highest sell price,

18.45 EUR/MWh, was obtained on 13 October 2015 and the lowest sell price of 9.00 EUR/MWh was received on 24 January 2016. The largest price spread between the highest and lowest sell prices was EUR 4.50, which was observed on 24 January 2016, and the smallest price spread was EUR 0.025 on 17 May 2016.

10. Min-max prices for our MOL2 balancing actions

Chart 13 presents the lowest and highest prices in EUR per MWh that we paid and received in connection with our balancing buy and sell transactions in MOL2 for each gas day.

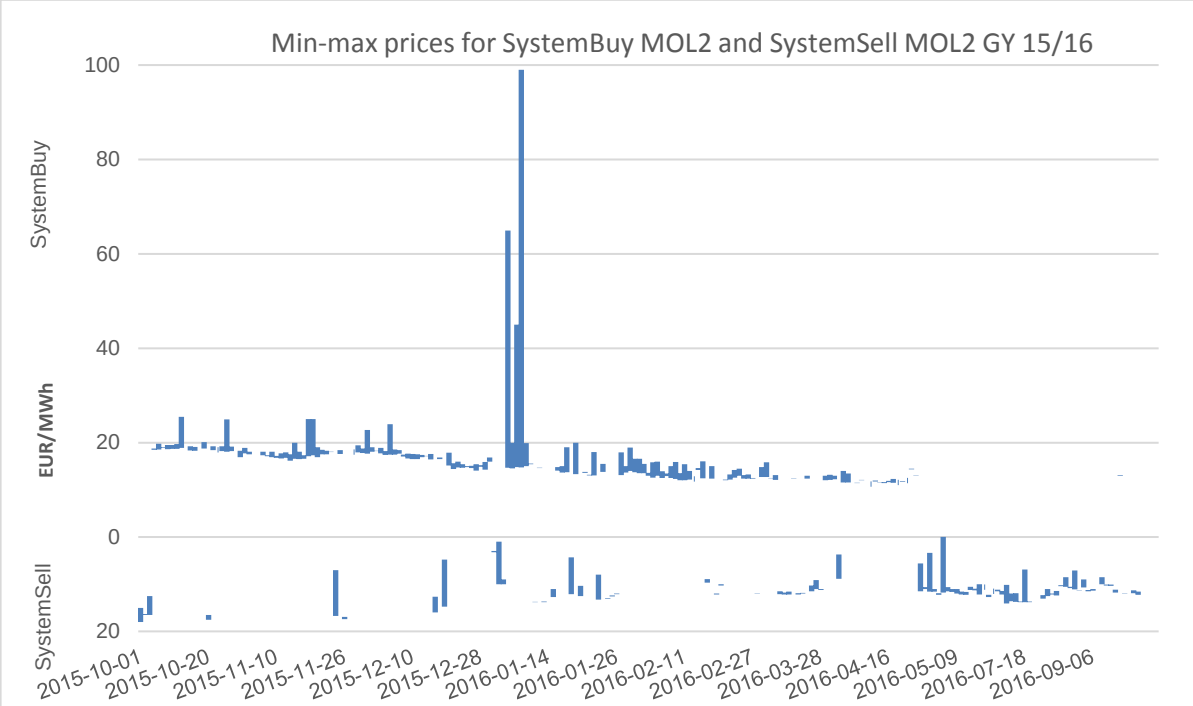

Chart 13: Min-max prices for SystemBuy MOL2 and SystemSell MOL2

The highest MOL2 buy price, 99 EUR/MWh, was paid on 6 January 2016, the lowest buy price, 11.2 EUR/MWh, on 10 April 2016 and 12 April 2016. The largest price spread between the highest and lowest buy prices was observed on 6 January 2016, when we saw a price spread of EUR 84.225. The smallest price spread between the highest and lowest buy prices was EUR 0.025 and was observed on a total of five gas days. The highest sell price, 18.325 EUR/MWh, was obtained on 14 October 2015 and the lowest sell price of 0 EUR/MWh was received on 6 May 2016. The largest price spread between the highest and lowest sell

prices was EUR 11.75, which was observed on 6 May 2016, and the smallest price spread was EUR 0.025, which was seen on a total of four gas days.

Both the highest buy price and the lowest sell price related to trades executed through the locational order books. They did not therefore have any relevance for the determination of the applicable daily imbalance prices.

11. Deviations from the merit order

Table 1 lists all deviations from the prescribed merit order.

Table 1: Deviations from the merit order

Date	MOL affected	MOL used	Reason
7 June 2016	MOL1	MOL1	2

A deviation from the prescribed merit order occurred on 7 June 2016. An IT measure carried out on GASPOOL's system required us to test connectivity between GASPOOL and the exchange, for which purpose we executed a 1 MW test purchase to be delivered over the course of a 13-hour period for which we incurred a cost of 14.75 EUR/MWh. No other deviations from the merit order occurred in GY 15/16.

III. Procurement of gas for balancing purposes in adjacent market areas

1. Gas traded for delivery at the TTF

The following Chart 14 shows the quantities we procured in the adjacent Dutch market area by trading gas for delivery at the TTF. In the GY covered by this report we used the TTF almost entirely to buy gas in order to respond to external balancing requirements in the low CV networks of our market area.

The gas purchased at the TTF is made available on the gas network of the Dutch TSO GTS and therefore needs to be transported to the GASPOOL market area via cross-border interconnection points (IP). In order to do so we have to book transportation capacity, for which we incur additional costs.

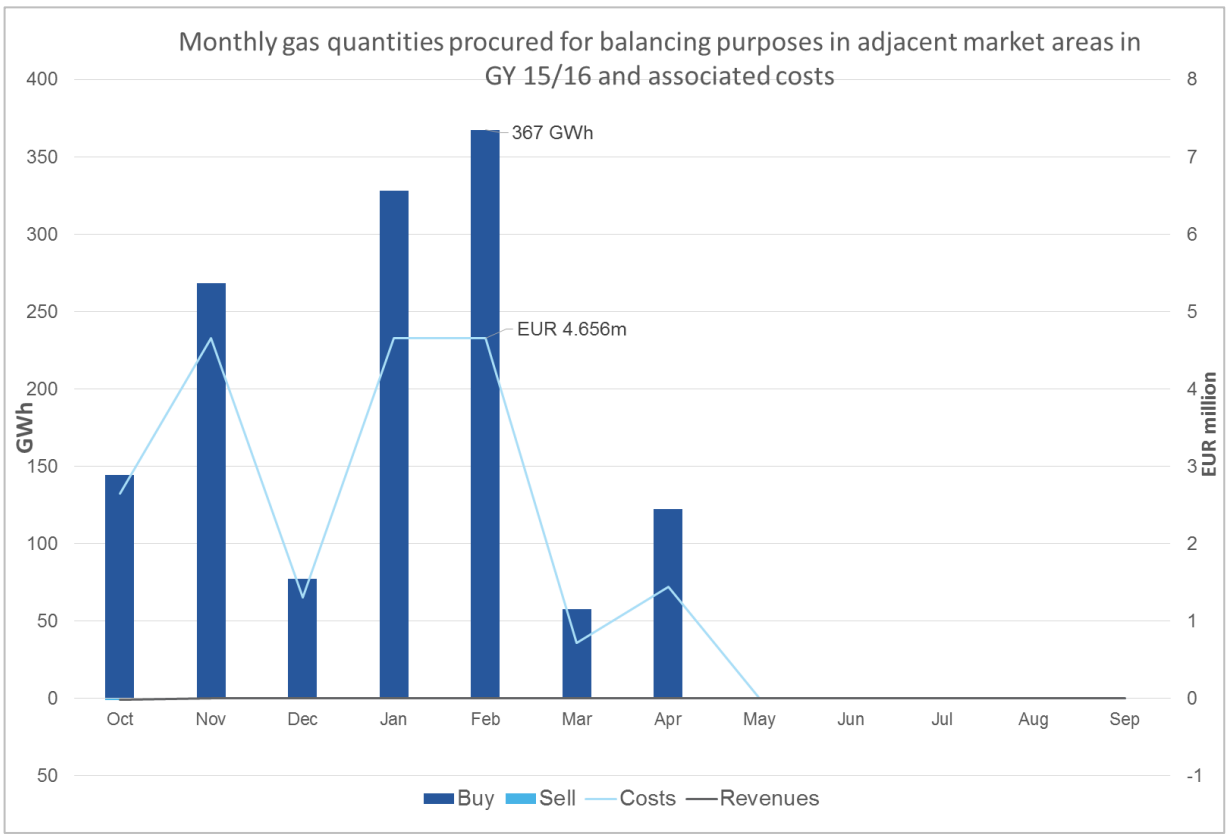

Chart 14: Procurement of gas for balancing purposes in adjacent market areas: monthly quantities and costs

GASPOOL used the TTF in conjunction with transportation capacity contracts as an external balancing tool on 117 days in total. We primarily used the TTF as a procurement tool for low CV gas in the months from October to April only, buying a total of 1.365 TWh of gas at a cost of EUR 20.084m. We only carried out a single sale in order to adjust our portfolio[2], in which context we sold 960 MWh for a price of EUR 17,952. The month with the highest buy quantities was February, when we bought a total of 367 GWh at a total cost of EUR 4.656m.

2. Capacity contracts

Chart 15 shows the capacity rights we purchased via the primary capacity platform PRISMA along with our actual utilisation of the capacity contracted.

[2] This is the equivalent to the German balancing group regime

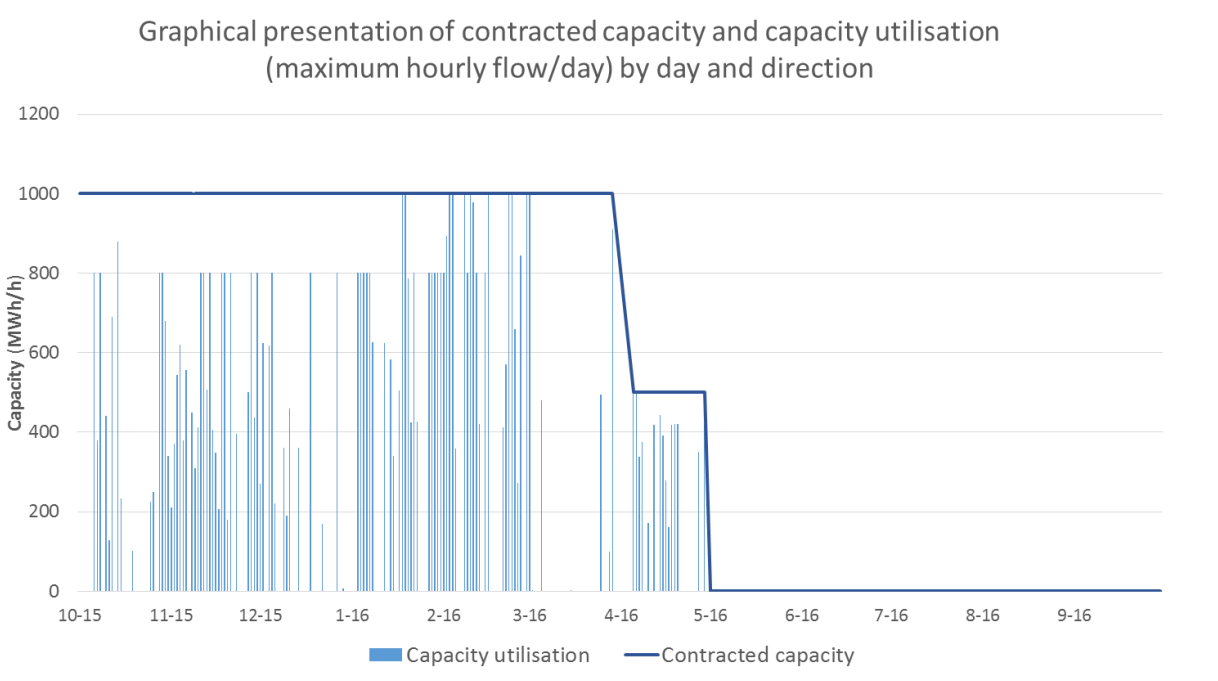

Chart 15: Graphical presentation of contracted capacity and capacity utilisation by day and direction

Our average capacity utilisation rate as determined based on the nominations submitted for the last hour of each relevant gas day was 72.4%. Overall, we used the contracted capacity on 117 days out of the 213 days for which we had booked capacity.

The option to procure gas in adjacent market areas has proven to be not only a practical but also a very effective external balancing tool. By taking advantage of price differences between neighbouring markets and contracts in our own market area, whilst giving due regard to transportation markups and markdowns to reflect the additional costs incurred for transportation charges, we can generate benefits for market participants.

A proposal for how the methodology currently used to determine transportation markups and markdowns could be adjusted is provided below. The following table provides an overview of our capacity contracts and the transportation charges we incurred in relation thereto. We only booked capacity at the regulated tariff, no premiums were paid.

Table 2: Overview of transportation capacity costs by month

Contract period	Auction type	System point ID	Capacity type	Contracted capacity in kWh/h/term	Capacity charges in EUR
01/10/2015 - 31/10/2015	Month	GUD-L (L139)	firm/bundled	1,000,000	486,543.00
01/11/2015 - 30/11/2015	Month	GUD-L (L139)	firm/bundled	1,000,000	475,290.00
01/12/2015 - 31/12/2015	Month	GUD-L (L139)	firm/bundled	1,000,000	624,243.00
01/01/2016 - 31/01/2016	Month	GUD-L (L139)	firm/bundled	1,000,000	711,453.75
01/02/2016 - 29/02/2016	Month	GUD-L (L139)	firm/bundled	1,000,000	634,973.75
01/03/2016 - 31/03/2016	Month	GUD-L (L139)	firm/bundled	1,000,000	521,901.00
01/04/2016 - 30/04/2016	Month	GUD-L (L139)	firm/bundled	500,000	254,756.25
24/08/2016	WD	GASCADE (1632)	firm/bundled	1,000	10.82
24/08/2016	WD	GUD-H (H095)	firm/bundled	1,000	16.78
24/08/2016	WD	GUD-L (L139)	firm/bundled	500	7.70
24/08/2016	WD	GTG (21Z000000000079G)	firm/bundled	1,500	11.22

For the winter period (October 2015 to April 2016) we booked bundled firm capacity at the IP Oude Statenzijl connecting the GTS system and the low CV network area operated by Gasunie Deutschland GmbH & Co. KG for transports to the GASPOOL market area on a monthly basis. For the months from October to March we booked a capacity of 1,000,000 kWh/h and for April we booked a capacity of 500,000 kWh/h. Our total costs for these capacity contracts amounted to EUR 3,709,207.27. This amount was charged to the balancing neutrality account.

In addition, we also booked several small amounts of capacity in August in preparation of our switch to short-term capacity bookings in the upcoming new GY.

3. Current methodology used to calculate transportation markups and markdowns for gas trades in adjacent market areas

According to the GaBi Gas 2.0 ruling and the Balancing Group Contract Terms & Conditions (as set out in Appendix 4 to the network code governing third-party access to the German gas networks, the so-called Cooperation Agreement), the MAMs have to take transportation costs into account whenever they use MOL2 products to take balancing actions. Where gas is purchased or sold (balancing buy or sell transactions) on the exchange in adjacent market areas, the resulting transportation markups and markdowns are factored in when calculating the negative and positive daily imbalance prices.

Determination and application of transportation markups and markdowns

- Separate transportation markups and markdowns are calculated and applied in relation to SystemBuy (purchases of gas for balancing purposes) and SystemSell (sales of gas for balancing purposes) balancing requirements.
- In the case of SystemBuy transactions the applicable transportation markup is added to the buy price agreed in relation to the corresponding exchange trade.
- In the case of SystemSell transactions the applicable transportation markdown is deducted from the sell price agreed in relation to the corresponding exchange trade.
- In this way the applicable transportation markups and markdowns are taken into account when determining the daily imbalance prices.
- The transportation markups and markdowns calculated for each delivery month are published on the MAM's website on an ex-ante basis on the 10th business day (BD) of the preceding month.

The applicable transportation markups and markdowns are calculated according to the following formula:

$$(1)\ \text{transportation markup/markdown} = \frac{\text{daily transportation tariff (€/MWh/h)}}{\text{Ø utilisation period (h)}}$$

Calculation of the daily transportation tariff

- The calculations are based on the daily capacity tariffs (regulated tariffs) as published in the relevant transmission system operators' price sheets and as applicable on the Dutch and German sides of the IPs the MAM uses for transportation purposes.
- Annual/monthly tariffs are converted to daily tariffs by applying the multipliers or seasonal factors valid for the relevant month on each side of the border (i.e. the factors applicable to daily capacity bookings as determined in accordance with the Federal

Network Agency's so-called "BEATE" decision on specifications for the conversion of annual capacity tariffs to within-year capacity tariffs for capacity rights with a duration of less than a year and on specifications for the calculation of transportation tariffs in accordance with section 15(2) to (7) of the German Gas Network Tariff Regulations).

- The daily capacity tariffs thus calculated are then added together for both sides of the border.
- Where gas transports are effected via more than one IP, the applicable daily tariff for each direction is calculated as the arithmetic mean of all daily tariffs payable in that direction.

Determination of the average utilisation period

- For the purpose of calculating the utilisation period only days on which the contracted transportation capacity is actually used are taken into account:

$$\text{daily utilisation period} = \frac{\text{total quantity supplied/received on the day (MWh)}}{\text{maximum hourly quantity supplied/received on the day (MWh/h)}}$$

- The average utilisation period is calculated as the average of the daily utilisation periods determined, with separate average utilisation periods being calculated for winter (1 October to 31 March) and summer (1 April to 30 September) periods.
- All calculations are based on the data available for the last complete winter or summer period, as the case may be.

The average utilisation period remains unchanged throughout each validity period.

In the period before 1 May 2016 GASPOOL did not execute any sell transactions for delivery at the TTF, which means that no historical data on actual utilisation was available initially. In consultation with the Federal Network Agency we assumed an initial value of 19.2h, which corresponds to a utilisation rate of 80% for the capacity contracted for each day. This value is adjusted on a monthly basis to reflect average actual utilisation.

4. Future adjustments to the methodology used to calculate transportation markups and markdowns for gas trades in adjacent market areas

Thus far we have calculated transportation markups and markdowns based on our actual average capacity utilisation in the preceding winter or summer period (as the case may be). This approach was chosen to reflect the fact that up to the spring of 2016 the MAMs used to book capacity on a monthly basis. Following the introduction of within-day capacity products and the possibility to renominate day-ahead capacity contracts, the MAMs started booking capacity on a daily basis.

It therefore appears appropriate that the current model should be adjusted so as to reflect the MAMs' use of short-term capacity contracts. Given that capacity is no longer booked on a monthly basis, it is also no longer necessary to base calculations on monthly capacity utilisation rates. As the GASPOOL VTP and the TTF both provide us with an option to specifically procure high CV or low CV gas and thus to take quality-specific balancing actions, the two trading hubs are almost interchangeable from a daily perspective. So both trading hubs can generally be considered equivalent when it comes to meeting our balancing requirements. Leaving aside price differences, situations when the exchange is unavailable or other similar scenarios, we could theoretically use either only the GASPOOL VTP or the TTF to respond to quality-specific balancing requirements.

In deciding which trading hub to use for our MOL2 balancing actions, we will in any case continue to factor in cost considerations and procure gas at the TTF only if the commodity price plus or less the applicable transportation markup or markdown is more cost-effective than using the GASPOOL VTP.

IV. Procurement and use of balancing services

1. Long-Term Options

A Long-Term Option (LTO) is an external balancing transaction under which a provider undertakes to ensure its availability throughout the agreed contract period to sell gas to or buy gas from GASPOOL on a Rest-of-the-Day (RoD) basis.

Where a Long-Term Option is contracted on a RoD basis, the relevant provider has an obligation to ensure its availability on each and every gas day of the relevant contract period to receive or supply a specified gas quantity at a constant hourly rate on a specified gas day on receiving an instruction to this effect from GASPOOL (this instruction is referred to as a "call order"), with delivery in each case starting from the relevant "call hour", i.e. the hour from which the provider is instructed to receive or supply gas, up until the end of the relevant gas

day, i.e. for a maximum of 24 hours per gas day[3] and a minimum of one hour per gas day (this period of time is referred to as the “call period”). GASPOOL issues call orders for LTOs in compliance with a lead time of no less than three hours ahead of the start of the relevant call hour. Call orders instructing a provider to receive or supply gas at varying hourly rates over the course of a call period and/or for a period of time ending before the end of the relevant gas day are not permitted. Each provider has to ensure that it will receive or supply each instructed gas quantity from the relevant call hour onwards.

The period of time throughout which a provider is required to procure availability of the contracted balancing product may correspond to a week, a month, a quarter, a half-year or a year. The parties may also agree shorter periods covering only a part of the above durations in individual cases. The contract period always commences at the start of the first gas day of the relevant contract period and ends on the last gas day of the relevant contract period.

The lot size specified in LTO bids must correspond to a delivery rate of 10 MWh/h.

Providers have the right to specify a capacity charge to be applied throughout the agreed contract period so as to remunerate the provider for its availability to supply gas to or receive gas from GASPOOL. Where a capacity charge is specified, it is applied constantly throughout the relevant contract period (i.e. it is not subject to variation). Capacity charges must always be positive prices and are paid irrespective of whether GASPOOL issues any call orders or not. If no capacity charge is specified, the applicable capacity charge is recorded as zero.

Providers who submit LTO bids must always specify a commodity charge in EUR/MWh for the supply and/or for the receipt of gas quantities. In both cases the commodity charge must be a positive price, which, in the case of gas quantities being supplied by the provider, the MAM must pay to the provider, and which, in the case of gas quantities being received by the provider, the provider must pay to the MAM.

No LTO contracts were tendered out or signed in the GASPOOL market area for the GY covered by this report. Based on the present circumstances, we do not currently see any future requirements in this area either.

Our procurement of option contracts for the purpose of implementing the BMWi policy paper is addressed separately in chapter 5.

[3] On days when the clocks change back from daylight saving time a call period may comprise up to 25 hours.

2. Flexibility product

Our “Flexibility” product involves the provision of short-term “parking” and “lending” services in the event of an oversupply or undersupply of gas in the GASPOOL market area. Both GASPOOL and the provider may supply or receive gas under this service. Both directions are possible:

- “to GASPOOL” means that the MAM temporarily receives gas quantities from the provider and subsequently returns these gas quantities to the provider (“lending”); and
- “from GASPOOL” means that the MAM temporarily supplies gas quantities to the provider and subsequently receives these gas quantities back from the provider (“parking”).

The Flexibility product is a combined “lending/parking product”. The supply or receipt of gas under the service commences within a few minutes after being instructed by the MAM but no later than 90 minutes thereafter. In duly justified exceptional cases the supply or receipt of an instructed gas quantity may also take place outside the above time window, provided GASPOOL has expressly approved this new time window beforehand. The product does not involve any call order or nomination processes. The Flexibility provider supplies or receives an exact gas quantity in kWh at a specified physical entry or exit point; the service can only be offered for a network area of a TSO operating in the GASPOOL market area.

All gas quantities supplied or received by a provider are returned or received back at the point where the gas was originally supplied or received, generally in the course of the gas day on which the gas quantities were originally supplied or received.

The period of time throughout which a provider is required to procure availability of the contracted balancing service may correspond to a month, a quarter, a half-year or a year. The parties may also agree shorter periods covering only a part of the above durations in individual cases specified by GASPOOL. Tender invitations and contracts may be for either firm or interruptible products.

The lot size specified in a Flexibility bid must correspond to a gas quantity delivered at a rate of 10 MWh/h.

When submitting a bid, each provider may specify a positive price to be applied without variation throughout the entire contract period.

Each provider must specify a positive commodity charge to be applied to the hourly balances of the provider’s gas account.

Two contract periods fell within GY 15/16, the period from October 2015 to March 2016 and from April 2016 to September 2016, respectively. For the period from October 2015 to

February 2016 we contracted firm delivery capacity in the amount of 1,500 MW and for March 2016 we contracted firm delivery capacity in the amount of 1,350 MW. For the summer period from April 2016 to September 2016 we contracted firm delivery capacity in the amount of 500 MW for each month. The capacity charges we paid as a result amounted to EUR 8,347,195.00 in the winter period and to EUR 1,413,861 in the summer period. We accepted all contract offers that were submitted on an interruptible basis; in relation to these contracts no capacity charges must be paid.

Additional information on the flexibility agreements we entered into in GY 15/16 is provided in Table 3 and Table 4.

Table 3: Contracted firm flexibility services

Contract period	Capacity required (GW)	Capacity offered (GW)	Capacity contracted (GW)	Number of bidders	Number of bids	Number of bidders who were awarded a contract	Costs for capacity charges (EUR)
01/10/2015 - 01/11/2015	1.5	4.482	1.5	4	19	3	1,369,366.00
01/11/2015 - 01/12/2015	1.5	5.032	1.5	5	20	3	1,369,366.00
01/12/2015 - 01/01/2016	1.5	5.032	1.5	5	20	3	1,369,366.00
01/01/2016 - 01/02/2016	1.5	5.082	1.5	5	20	3	1,369,366.00
01/02/2016 - 01/03/2016	1.5	5.082	1.5	5	20	3	1,369,366.00
01/03/2016 - 01/04/2016	1.25	4.15	1.25	4	18	2	1,500,365.00
01/04/2016 - 01/05/2016	0.5	0.8	0.5	3	7	2	383,861.00
01/05/2016 - 01/06/2016	0.5	0.8	0.5	3	6	1	270,000.00
01/06/2016 - 01/07/2016	0.5	0.8	0.5	3	6	1	190,000.00
01/07/2016 - 01/08/2016	0.5	0.8	0.5	3	6	1	190,000.00
01/08/2016 - 01/09/2016	0.5	0.8	0.5	3	6	1	190,000.00
01/09/2016 - 01/10/2016	0.5	0.8	0.5	3	6	1	190,000.00

Table 4: Contracted interruptible flexibility services

Contract period	Capacity offered (GW)	Capacity contracted (GW)	Number of bidders	Number of bids	Number of bidders who were awarded a contract
01/10/2015 - 01/11/2015	3.95	3.95	4	10	2
01/11/2015 - 01/12/2015	3.95	3.95	4	10	2
01/12/2015 - 01/01/2016	3.95	3.95	4	10	2
01/01/2016 - 01/02/2016	3.95	3.95	4	10	2

01/02/2016 - 01/03/2016	3.95	3.95	4	10	2
01/03/2016 - 01/04/2016	3.95	3.95	4	10	2
01/04/2016 - 01/05/2016	4.1	4.1	2	6	2
01/05/2016 - 01/06/2016	4.1	4.1	2	6	2
01/06/2016 - 01/07/2016	4.1	4.1	2	6	2
01/07/2016 - 01/08/2016	4.1	4.1	2	6	2
01/08/2016 - 01/09/2016	4.1	4.1	2	6	2
01/09/2016 - 01/10/2016	4.1	4.1	2	6	2

Chart 16 shows the aggregate gas account movements for all flexibility agreements in place for the high CV networks.

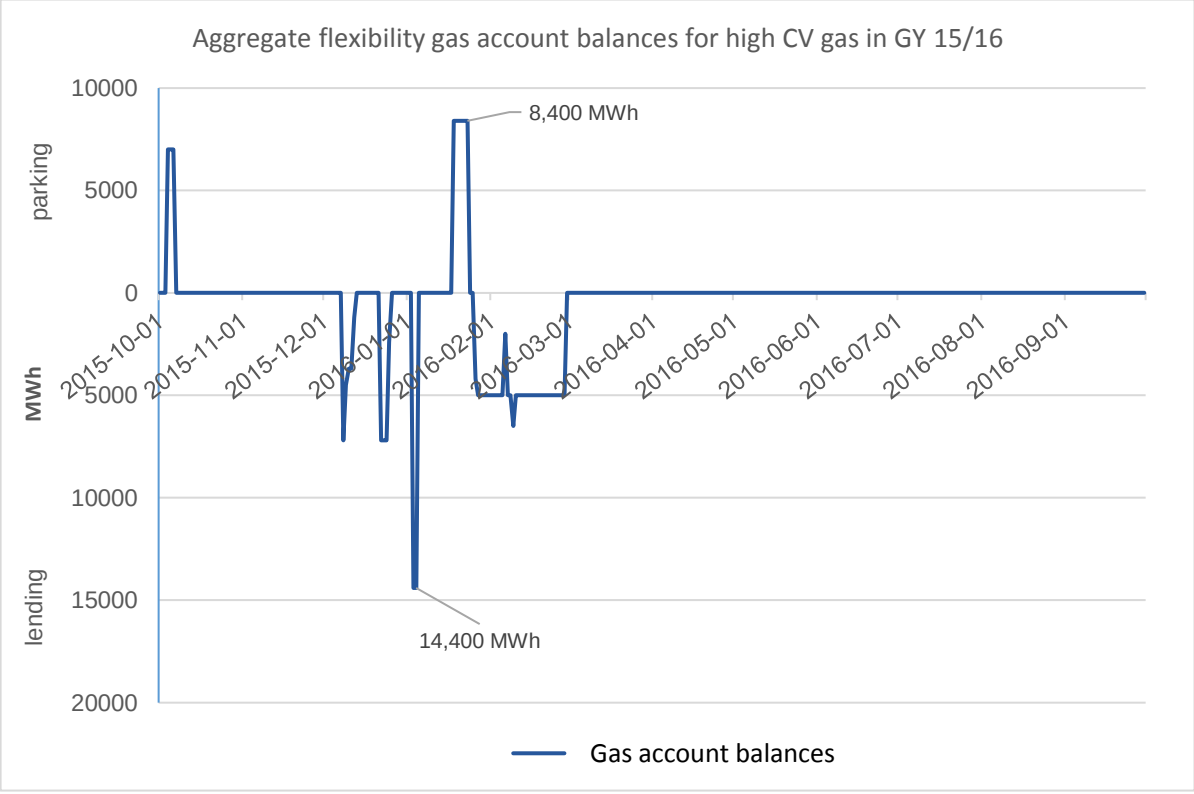

Chart 16: Aggregate flexibility gas account balances for high CV gas in GY 15/16

As can be seen in the chart, we only made use of our high CV flexibility agreements on days falling within the heating season. Maximum utilisation – for both parking and lending – fell into the period between the end of January and February 2016.

Chart 17 shows the aggregate gas account movements for all flexibility agreements in place for the low CV networks.

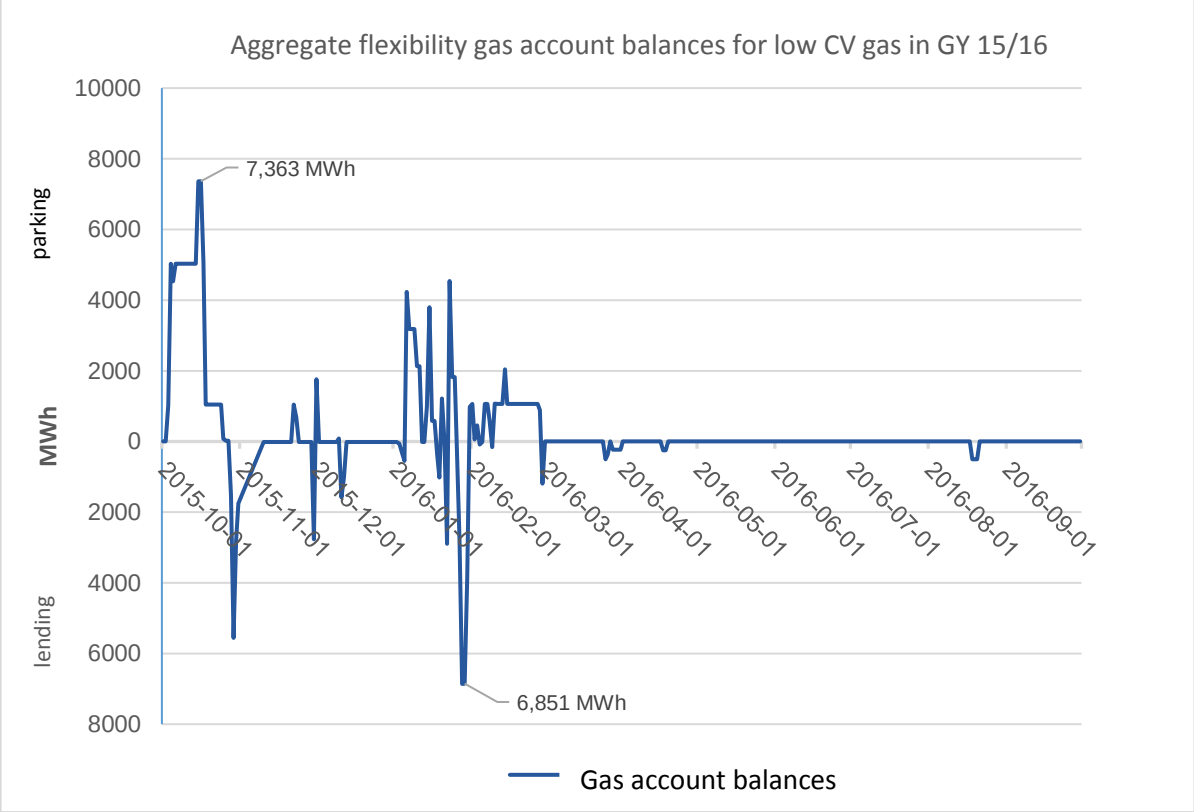

Chart 17: Aggregate flexibility gas account balances for low CV gas in GY 15/16

We made most active use of our low CV flexibility agreements in the months from October to January. In the parking direction we saw the highest daily utilisation rates in October 2015, in the lending direction this was in January 2016.

Article 8(6) of the BAL Code places an obligation on the MAMs to review potential options for reducing their balancing service contract volumes.

From today's perspective we do not see any possibility to reduce current contract volumes in the GASPOOL market area. Owing to the underlying contractual arrangements, especially due to their short-notice availability within 90 minutes of receipt of a service instruction, our contracted Flexibility products deliver a significant contribution to upholding supply security. As there are presently no alternative products available on the exchange, we do not currently believe that we will be able to reduce our Flexibility needs.

4. Allocation of costs to the balancing neutrality accounts

All costs and revenues arising as a consequence of our balancing actions are allocated to the two separate balancing neutrality accounts set up for our market area – one for non-daily metered "SLP" exit points (where daily allocations are based on standard load profiles) and one for intraday-metered "RLM" exit points (where daily allocations are based on measured offtakes) – according to causation4. The allocation of these costs and revenues is carried out on a daily basis using daily allocation keys. The costs and revenues allocated for the period October 2015 to June 2016 are shown in Table 5.

Table 5: Allocation of system balancing costs and revenues between the two neutrality accounts (October 2015 to June 2016)

	SLP balancing neutrality account (EUR m)	RLM balancing neutrality account (EUR m)
Costs	74.1	28.6
Revenues	24.0	11.4

For gas days on which no external balancing actions were taken an annual allocation key is applied, which is calculated on an ex-post basis. This annual allocation key is calculated for each neutrality accounting period on an ex-post basis as the mean of all daily allocation keys determined for the individual days falling within the neutrality accounting period. This mean is not calculated on a volume-weighted basis.

When the Federal Network Agency consulted market participants on its GaBi Gas 2.0 ruling (ref: BK7-014-020), some respondents called for the annual allocation key to be determined on a volume-weighted basis (based on the corresponding balancing quantities). This request was not reflected in the final decision. However, the MAMs were asked to consider the potential advantages and disadvantages of the volume-weighted approach when producing their System Balancing Reports.

[4] See section 7 of the operative part of the GaBi Gas 2.0 ruling.

In this context we would first like to address the specific rules for the calculations carried out to determine the applicable daily allocation keys. If the aggregate SLP and RLM balances determined for the market area have the same sign (both positive or both negative, i.e. they are congruent) and if that sign corresponds to the direction of the external balancing actions taken on the relevant day, the applicable daily allocation key is determined based on the ratio between these two aggregate balances (Case A). If only one of the two aggregate balances corresponds to the direction of the external balancing actions taken (i.e. the aggregate balances are incongruent), 100% of the costs or revenues determined for that day are allocated to this group of exit points. 0% are then allocated to the other group (Case B).

The examples below are provided to illustrate the effects the volume-weighted approach would have. For simplification purposes we have assumed that the neutrality accounting period in all examples has a duration of four days. Let us consider Case A first. In this case the signs of both aggregate balances correspond to the direction of the balancing actions taken on all days. Table 6 shows the daily allocation keys determined for each day alongside the daily balancing quantities. A total of 171,000 units was traded for balancing purposes over the course of the neutrality accounting period.

Table 6: Daily allocation keys for congruent SLP and RLM balances and daily balancing quantities

	Daily allocation key SLP	Daily allocation key RLM	Balancing quantity
Day 1	0.4	0.6	1,000
Day 2	0.1	0.9	50,000
Day 3	0.9	0.1	20,000
Day 4	0.3	0.7	100,000

The corresponding annual allocation keys are shown in Chart 18. Under the current rules, the calculations give an SLP allocation key of 42.5% and an RLM allocation key of 57.5%. If the annual allocation keys were determined using the volume-weighted approach, the RLM share would be 68.8% since this customer group caused a higher share of balancing actions than the SLP group, especially on days with high balancing quantities.

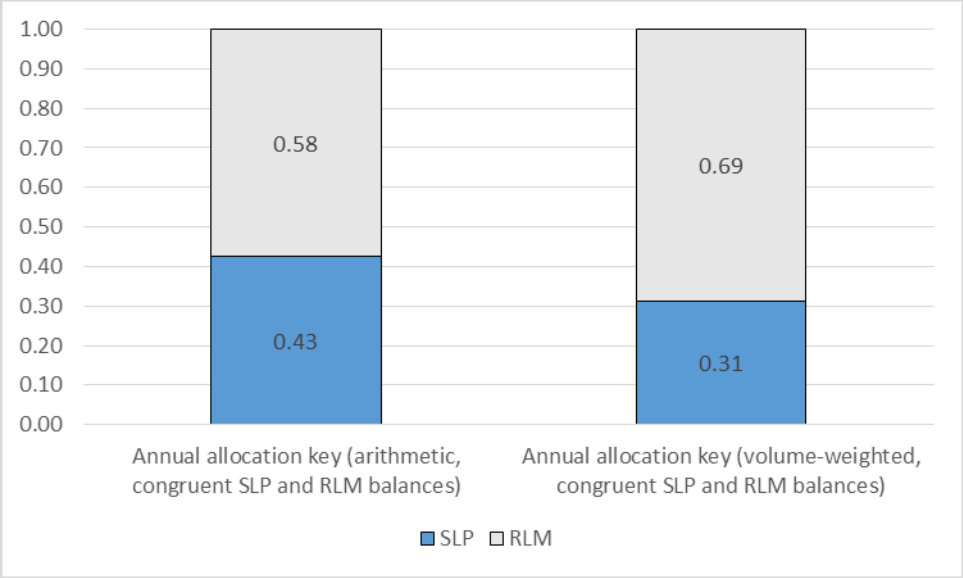

Chart 18: Comparison of alternative approaches to calculating annual allocation keys for congruent SLP and RLM balances

If only Case A occurred during a neutrality accounting period, the volume-weighted approach to determining annual allocation keys could provide a more accurate measure of causation than the simple, arithmetic approach. In actual practice, however, the rate of occurrence of Case B is significant. In the period between October 2015 and June 2016 this was the case on 13 days in a month on average.

Due to the all-or-nothing allocation rule, the volume-weighted approach would have a distorting effect in Case B. Let us consider the following example to illustrate this. In this new case, as shown in Table 7, the aggregate RLM and SLP balances are incongruent on day 3 and day 4. So on these days 100% are allocated to the group which has the sign that corresponds to the direction of the balancing actions taken. The total balancing quantity still is 171,000 units.

Table 7: Daily allocation keys for incongruent SLP and RLM balances and daily balancing quantities

	Daily allocation key SLP	Daily allocation key RLM	Balancing quantity
Day 1	0.4	0.6	1,000
Day 2	0.1	0.9	50,000
Day 3	1.0	0.0	20,000
Day 4	0.0	1.0	100,000

Under the method currently applied, the result is an annual allocation key of 62.5% for the RLM group and of 37.5% for the SLP group (see Chart 19). If the volume-weighted approach were to be applied, the RLM share would increase to 85%. This is because the balancing quantity deployed on day 4 is very high compared with the other days and all costs/revenues are fully allocated to the RLM group.

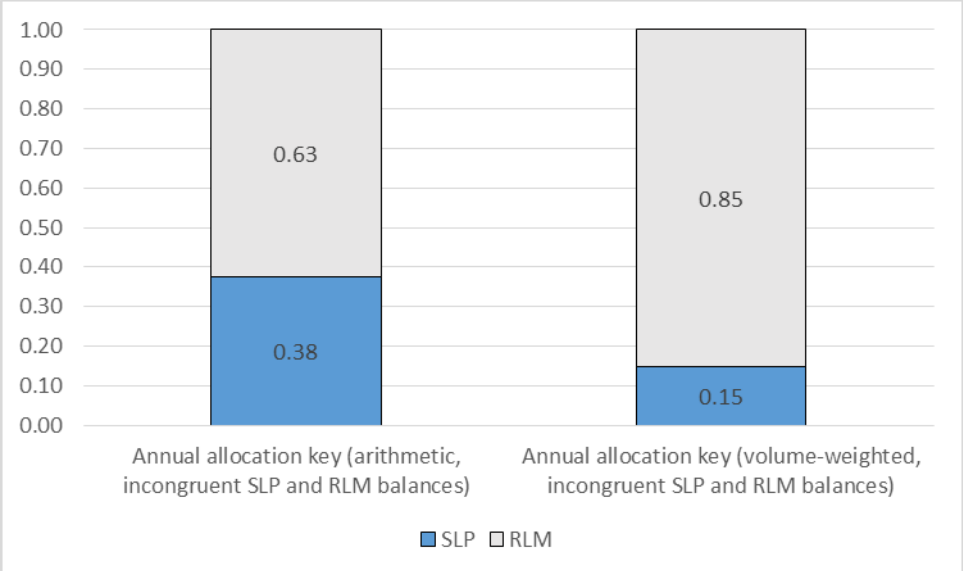

Chart 19: Comparison of annual allocation keys for incongruent SLP and RLM balances

Under the volume-weighted approach, the 100% allocation rule for incongruent SLP and RLM balances produces distorted results. Allocating costs/revenues on an all-or-nothing basis means that the magnitude – and thus the degree of causation – of the aggregate balance that corresponds to the direction of the balancing actions taken is not reflected proportionately. Even if this balance equals only 1 kilowatt-hour, the corresponding group is allocated 100% of the costs or revenues determined for that day.

The magnitude of our daily balancing actions may fluctuate strongly between days. The lowest and highest balancing quantities deployed in the GASPOOL market area in GY 15/16 ranged between 12 MWh and 228 GWh for a single day in the SystemBuy direction. Application of the volume-weighted approach on days with incongruent SLP and RLM balances in conjunction with high balancing quantities may therefore result in distorted annual allocation keys.

Arithmetic means are more robust against such “Case B” distortions. In view of this background GASPOOL believes that no advantages can be gained by introducing volume-weighted annual allocation keys and we therefore recommend to retain the current approach to calculating annual allocation keys without any changes for the above reasons.

5. Supply security measures in accordance with the BMWi policy paper

In December 2015 the German Federal Ministry for Economic Affairs and Energy (BMWi) published a policy paper[5] according to which the level of supply security was to be increased. The MAMs were asked to procure additional reserves through their existing Long-Term Options (LTO) product at short notice. Additional details were specified by the Federal Network Agency in its first notification on implementation of the GaBi Gas 2.0 ruling[6].

GASPOOL subsequently issued supplemental tender invitations and contracted total reserves of 15.9 GWh in individual batches distributed over the seven weeks falling within the relevant overall contract period.

Table 8 below shows the key metrics for the tender process and the tender results.

Table 8: Supplemental tender results

Contract period	Delivery rate required (GW)	Delivery rate offered (GW)	Delivery rate contracted (GW)	Number of bidders	Number of bids	Number of bidders who were awarded a contract	Costs for capacity charges (EUR)
01/02/2016 - 15/02/2016	3.0	7.2	3.0	7	44	7	1,101,323
15/02/2016 - 22/02/2016	2.4	9.2	2.4	7	55	3	364,685
22/02/2016 - 29/02/2016	2.5	7.6	2.5	7	67	3	294,970
29/02/2016 - 07/03/2016	2.5	6.9	2.5	3	55	2	236,858
07/03/2016 - 14/03/2016	2.5	7.7	2.5	7	81	6	178,155
14/03/2016 - 21/03/2016	2.0	6.6	2.0	6	41	3	93,789
21/03/2016 - 28/03/2016	1.0	4.8	1.0	7	26	2	27,305
28/03/2016 - 04/04/2016	0.0	-	-	-	-	-	-

No call orders were issued on any of the products contracted.

[5] https://www.bmwi.de/BMWi/Redaktion/PDF/E/eckpunkte-gasversorgungssicherheit,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf (German)

[6] http://www.bundesnetzagentur.de/DE/Service-Funktionen/Beschlusskammern/1BK-Geschaeftszeichen-Datenbank/BK7-GZ/2014/2014_0001bis0999/2014_001bis099/BK7-14-0020_BKV/BK7-14-020_MitteilungNr1_download.pdf?__blob=publicationFile&v=2 (German)

As our calculations showed that we did not have an additional balancing requirement in the last week of the relevant period, from 28 March 2016 to 4 April 2016, we did not invite any bids for that week.

The bids we received in response to our invitations to tender generally exceeded our requirements. The number of bidders who responded to the invitations to tender was limited and largely the same for all contract periods. The capacity charges quoted by bidders went down significantly over the course of the overall period.

6. Review of approved interim measures (MOL3) in accordance with Article 46 of the BAL Code

As part of the administrative proceedings underlying the GaBi Gas 2.0 ruling the MAMs had filed an application seeking permission for continued use of their existing balancing platforms. In its GaBi Gas 2.0 decision the Federal Network Agency approved this interim measure until 16 April 2019. It was further specified, however, that the balancing platforms may only be used to procure balancing products which are not traded on the exchange. The aim of this provision was to further promote use of the exchange as a balancing tool. Still, once locational products were available on the exchange, procurement via the balancing platform was only to be ceased after an appropriate implementation phase.

After a harmonised target model for system imbalance management was adopted by GASPOOL and NCG, we had already been procuring the major part of our balancing quantities on the exchange since October 2013. On 17 November 2015 Powernext launched order books for zone-specific products for delivery in the GASPOOL market area. This allowed us to also trade products subject to locational delivery restrictions on the exchange.

Yet despite the positive developments seen over the last few years, we believe that we still need to be able to use our balancing platform. One of the reasons for this is that we think that we should continue to observe the development of the level of liquidity but especially also of the availability of zone-specific products for now. It cannot be ruled out that the trading options available on the exchange may at times be insufficient for us to meet our balancing requirements. This can be the case whenever a balancing action is required in a specific network zone or even at a specific system point. Especially in this kind of situation it is extremely important that we can meet our balancing requirements in order to ensure system stability.

In addition, the existing platform represents a fall-back solution for situations when the exchange's IT system is unavailable for technical reasons. In GY 15/16 exchange unavailability was due to scheduled maintenance in 12 cases but in ten cases the exchange was also unavailable following unplanned outages, according to information provided by Powernext.

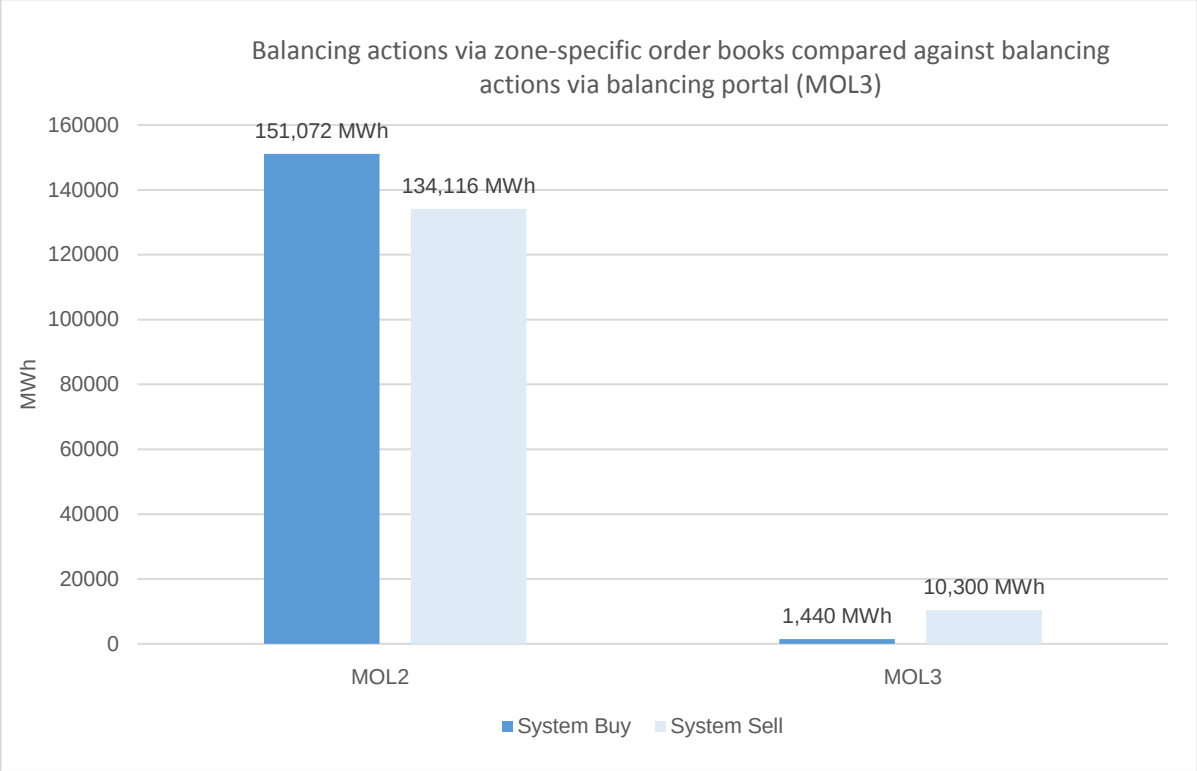

Chart 20: Balancing actions via zone-specific order books compared against balancing actions via balancing portal (MOL3)

Chart 20 shows that the balancing platform has become of marginal importance for our balancing actions when compared with our use of the zone-specific order books. What is more, call orders were only issued on MOL3 products until mid-October 2015, when the zone-specific products had not yet been launched on the exchange. So the balancing platform is not a mere alternative to the zone-specific order books but primarily continues to serve as a safety net for situations when the products needed to meet our locational balancing requirements are not offered on the exchange or the quantities available on the exchange are insufficient.

Given the above circumstances GASPOOL continues to believe that the existing balancing platform is a necessary balancing tool and should be retained as an interim measure.

7. Inclusion of zone-specific products in the determination of daily imbalance charges

GASPOOL cannot assess conclusively at present whether the prices of the zone-specific products traded on the exchange should be taken into account when determining daily imbalance prices and what effect this would have. However, we will continue to observe the developments in this area.

8. Summary

Throughout the period covered by this report we were consistently able to manage the system imbalances arising in the GASPOOL market area and thus to meet one of our key responsibilities in our capacity as MAM. We carried out our balancing activities not only effectively but also efficiently whilst meeting the regulatory requirements set out in the GaBi Gas 2.0 ruling. The prices we paid and received in connection with our balancing actions in GY 15/16 were lower than expected. We purchased a net quantity of 1,246 GWh for the high CV networks in our market area, resulting from total purchases of 3,682 GWh and total sales of 2,436 GWh. For the low CV networks we purchased a net quantity of 2,046 GWh, resulting from total purchases of 2,815 GWh and total sales of 750 GWh. So the net high CV balancing quantity stood at approximately 51% relative to the net low CV balancing quantity. We met 99.98% of our balancing requirements by trading gas on the exchange, which is a very high level that is in accordance with the regulatory requirements. An increasing number of our balancing actions was taken on a within-day basis. No option contracts were procured for the GASPOOL market area.

As regards the calculation methodology used to determine transportation markups and markdowns, GASPOOL recommends to adjust the underlying formula in a way that does not change the principal approach currently applied, which is based on historical utilisation rates and the day-ahead tariffs payable at the IPs used. We rather propose to adjust the basis used to determine utilisation rates in order to reflect the fact that GASPOOL no longer books capacity on a monthly but on a daily basis. As the GASPOOL VTP and the TTF both provide us with an option to specifically procure high CV or low CV gas and thus to take quality-specific balancing actions, they are almost interchangeable from a daily perspective. It therefore appears logical to take all MOL2 transactions, other than those for zone-specific products, into account when determining the utilisation period.

When it comes to determining the annual allocation keys used to allocate costs and revenues between the SLP and RLM balancing neutrality accounts, GASPOOL is of the view that a volume-weighted mean does not have any advantages over an arithmetic mean. Quite to the contrary, if the volume-weighted approach were to be introduced, this would have to be reflected by way of changes to the financial settlement rules and would incur additional costs.

GASPOOL continues to see its balancing platform as a necessary balancing tool that should be retained for use in certain situations. The platform can provide a fall-back solution for situations when the exchange's IT system is unavailable. Furthermore, GASPOOL believes that the development of the availability of zone-specific products on the PEGAS platform should continue to be observed before operation of the GASPOOL platform is discontinued. Considering the volumes traded through the zone-specific order books on the PEGAS platform, the GASPOOL platform cannot be seen as a competing balancing tool. It rather serves as a safety net.