Report on the Interim Measures Planned for the Implementation by GAZ-SYSTEM S.A.

in connection with the entry into force of Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks

October 2017

The English version is provided for the information purpose only.
If any discrepancy arises between this translation and the Polish original, the Polish original shall prevail.

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Introduction

Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks (hereinafter "Regulation" or "BAL NC") came into force on 16 April 2014. The Regulation sets out, among other things, the guidelines with respect to rules on gas balancing and settlements with shippers in respect of their individual imbalance. Transmission System Operators in the European Union (hereinafter: "EU"), among them Gas Transmission Operator GAZ-SYSTEM S.A. (hereinafter "GAZ-SYSTEM" or the "TSO") are obliged to apply the Regulation as of 1 October 2015.

In accordance with Article 45 of the Regulation, in the absence of sufficient liquidity of the short term wholesale gas market, and, consequently, limited viability of transmission system balancing according to the target mode set forth in the Regulation, the Transmission System Operator shall have the option to implement so-called interim measures. Interim measures are acceptable and temporary exceptions to the rules stipulated by the Regulation, and their specific list is provided in Articles 47 - 50 of the Regulation.

In order to implement interim measures, the Transmission System Operator is required to prepare a document confirming the legitimacy of the proposed interim measures.

On 10 June, the President of the Energy Regulatory Office issued a decision (sign DRR-7129-2(13)/2014/2015/AN/MSi) approving the "Report on the Interim Measures Planned for the Implementation by GAZ-SYSTEM in connection with the entry into force of Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks." On 30th September 2016, the President of Energy Regulatory Office issued a decision (sign DRR.WIR.7129.4.1.2016.JF) approving the update of the report prepared by the TSO. The approved Reports provide for the application of the following interim measures:

1) **imbalance tolerance** the level of which defines the maximum quantity of gas that can be purchased or sold by each network user in the settlement of the imbalance at weighted average price for the balancing area covering the national transmission system for high-methane gas;
2) **interim imbalance charge** which calculation method substitutes the method of the calculation of a daily imbalance charge set forth in Chapter V of the Regulation with respect to the TGPS balancing area and the balancing area covering the national transmission system for low-methane gas;
3) **balancing platform** i.e. a trading platform where the Transmission System Operator is the party of all the title products transactions and all the balancing areas.

The interim measures approved for application by the decision of the President of ERO of 10 June 2015 were in effect from 06:00 a.m. on 1 October 2015 until 06:00 a.m. on 1 October 2016.

The interim measures approved for application by the decision of the President of ERO of 30 September 2016 are in effect from 06:00 a.m. on 1 October 2016 until 06:00 a.m. on 1 October 2017.

GAZ-SYSTEM assessed the impact of the operation of individual interim measures as well as the conditions for their application and then, according to Art. 46(3) BAL NC, prepared the present Report. It provides for the continued application of the interim measures in the balancing areas where GAZ-SYSTEM acts as a transmission system operator.

1. The state of development and liquidity of short term wholesale gas market

1.1. The balancing area of the national transmission system for high-methane gas - KSP_E

1.1.1. Functioning of short term gas market

A regulated market for natural gas - the gas exchange at Towarowa Giełda Energii (hereinafter: "TGE") operates at a virtual point located within the KSP_E. The commodity is class E high-methane gas which is traded on the following markets:

- Commodity Forward Instruments Market with Physical Delivery for gas (hereinafter: CFIMg)
- Day-Ahead Market for gas (hereinafter: DAMg)
- Intraday Market for gas (hereinafter: IDMg)

Of the above mentioned markets, DAMg and IDMg are markets which conform to the criteria describing a short-term gas market.

As far as the short-term market for gas is concerned, the trade in gas takes place two days before the delivery day for deliveries taking place during weekends (GAS_WEEKEND instrument on the DAMg), on the day directly preceding the delivery day for deliveries taking place throughout the entire day (DAMg GAS_BASE) or on the day of gas delivery for selected hours during the gas day (IDMg).

All the gas markets operated at TGE trade products which involve the transfer of the title to gas between the respective market participants.

No locational products, i.e. products for which gas delivery or off-take are performed at specific physical entry/exit points to/from the transmission system, are offered at the gas exchange.

The trade in gas is also carried out in short term markets, i.e. DAMg and IDMg and takes place every day. As of 1 October 2015, TGE introduced changes to the quotation schedule on DAMg and IDMg. According to the changes the duration time of a particular session were extended until 3:30 p.m. and are scheduled as follows:

- from 09:00 a.m. until 03:30 p.m. – DAMg,
- from 08:00 a.m. until 03:30 p.m. – IDMg.

TGEgasDA is the index derived on the basis of all the transactions on DAMg (until 29 February 2016, the name of this index was POLPX gas).

On the IDMg, the trade concerns 19 hourly instruments for the delivery of gas starting from 11.00 a.m. until 05:00 a.m. (inclusive) of the current gas day (the first 5 hours of the gas day are inactive). The trade in gas on the IDMg takes place in the continuous trading system on the day of gas delivery.

For the IDMg, an index called TGEgasID was introduced as of 1 October 2015. It defines the volume weighted average price of gas for a given gas day. The index TGEgasID published by TGE is used by GAZ-SYSTEM in the determination of the average balancing settlement price (CSRB).

The following table compares basic information concerning the functioning of short term markets on the TGE.

Figure 1. Most relevant information concerning the DAMg and IDMg by key areas

Area	DAMg	IDMg
Commodity traded	The traded instruments concern the delivery of a fixed volume of gas in every hour of the delivery day(s) (*BASE*-type instrument).	The trade concerns 19 hourly instruments for the delivery of gas from 11:00 a.m. till 06:00 a.m. of a given gas hour.
Specific features of the contract	One contract corresponds to the delivery of 1 MWh of gas in each hour of the delivery day(s)	One contract corresponds to 1 MWh of gas in the designated delivery hour
Time of trading	The trading takes place on the day preceding the delivery day, from 09:00 a.m. till 03:30 p.m., and for weekend contracts, the trading takes place two days prior to the delivery day, from 09:00 a.m. till 03:30 p.m.	The trading takes place on the delivery day, starting from 08:00 a.m. till 03:30 p.m.
Quotation system	Continuous trading	Continuous trading
Indices	**TGEgasDA**	**TGEgasID**

Source: Own analysis based on TGE's data

1.1.2. Participants of short term gas market

In order to be considered a participant of the TGE's short term gas market, the interested parties must fulfil the following conditions:

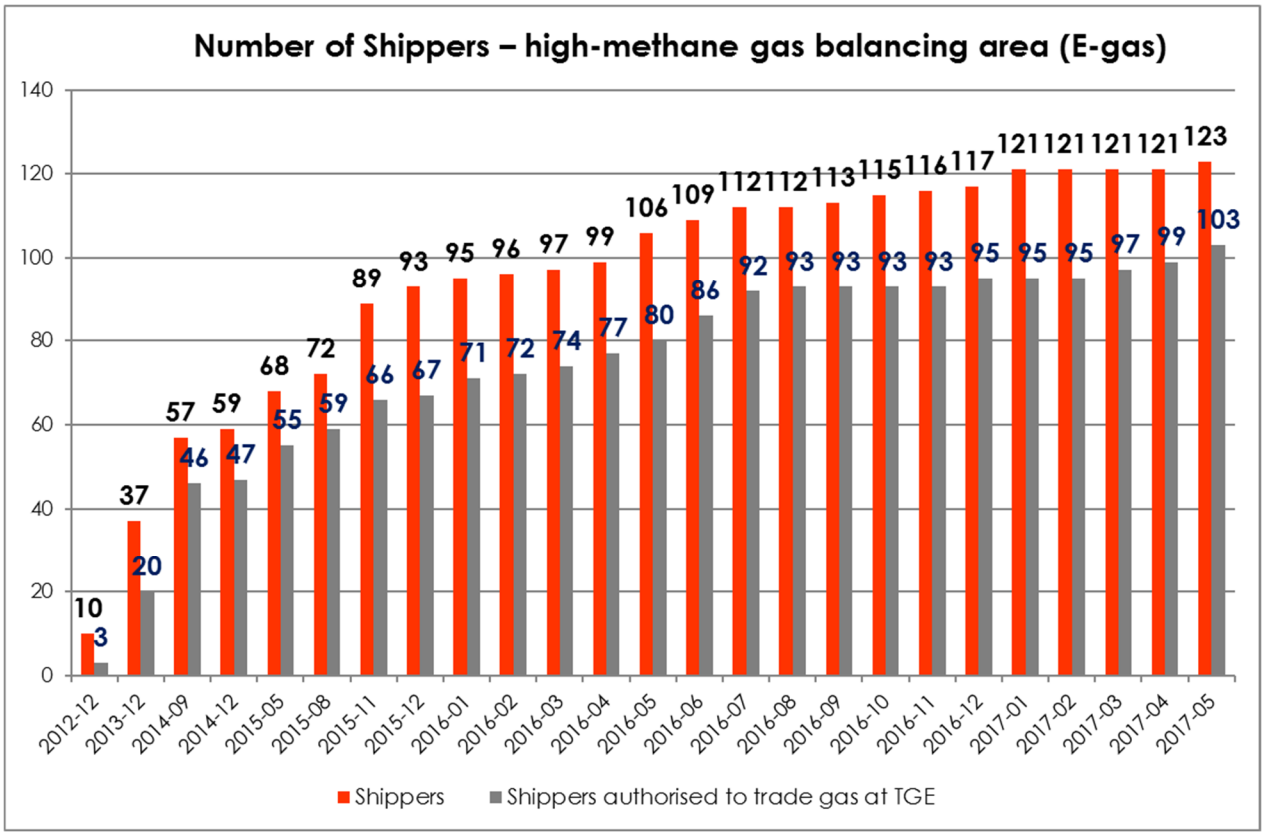
- sign transmission contract with the TSO and obtain a transmission ability allocation at the virtual entry/exit point to/from the TGE's gas exchange (have a shipper's status),
- be authorised to trade in gas at TGE.

Since 2012 the number of shippers is rapidly growing. At the moment (status as of 31 May 2017), there are 123 players with a shipper's status operating on the gas market within the KSP_E area.

Not all the entities with a shipper's status are authorised to engaged in gas trade at TGE. According to TGE's data, at 31 May 2017, 20 entities with a shipper's status did not have the right to trade in gas at TGE, and as such these shippers could not be considered as participants of the short term natural gas market at TGE.

Figure 2 presents the number of shippers in the years 2012-2017 and the number of shippers authorised to trade gas at the exchange.

Figure 2. Number of shippers in the years 2012-2017 (high methane gas balancing area)



Despite a growth in the number of shippers, including the ones authorised to trade in gas at TGE, only a fraction of the players is actively engaged in exchange trade (an active market participant means a party that entered at least into one buy or sell transaction at the DAMg or IDMg in a given month). According to the figures current at 30 September 2014, out of 46 shippers authorised to trade at TGE:

- 24 players (52.1%) were actively engaged in the DAMg, and
- 11 players (23.9%) were actively engaged in the IDMg.

According to the figures current at 31 December 2015, out of 67 shippers authorised to trade at TGE:

- 38 players (56.7%) were actively engaged in the DAMg, and
- 31 players (46.3%) were actively engaged in the IDMg.

According to the figures current at 31 May 2016, out of 80 shippers authorised to trade at TGE:

- 44 players (55.0%) were actively engaged in the DAMg, and
- 37 players (46.3%) were actively engaged in the IDMg.

According to the figures current at 28 February 2017, out of 95 shippers authorised to trade at TGE:

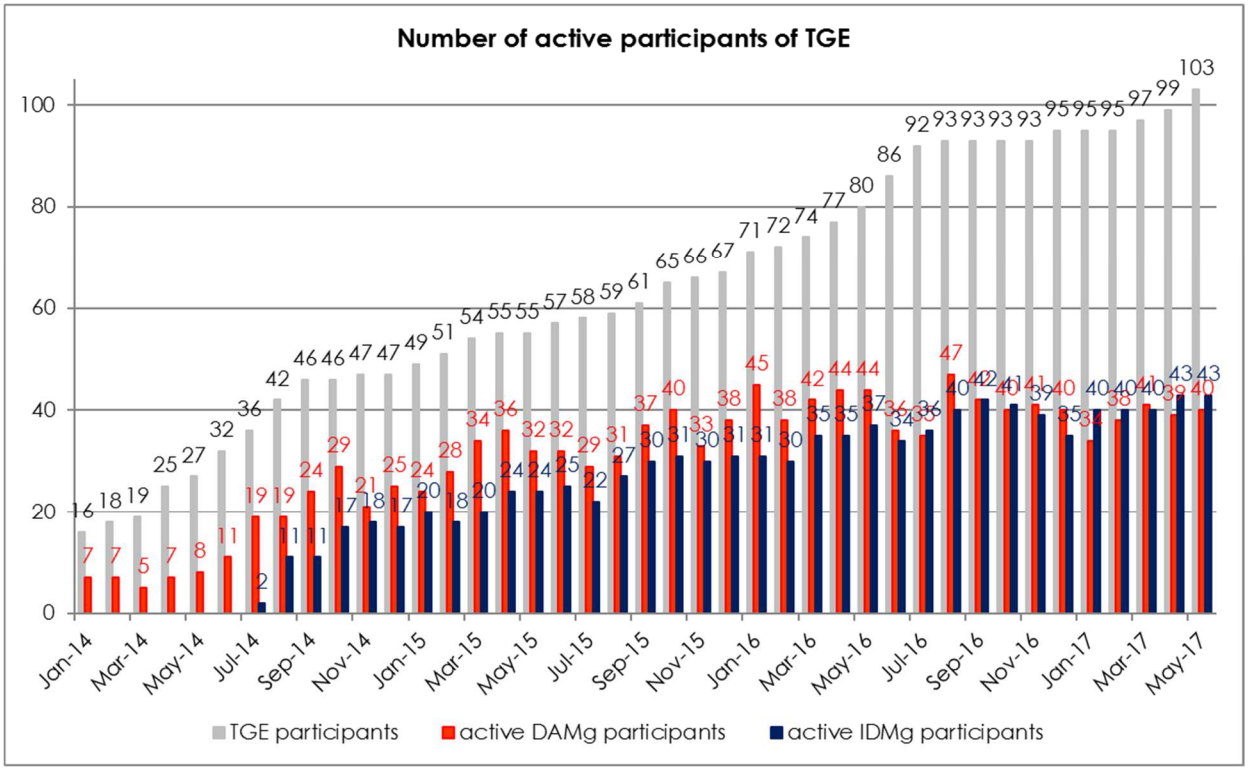
- 38 players (40.0%) were actively engaged in the DAMg, and
- 40 players (42.1%) were actively engaged in the IDMg.

According to the figures current at 31 May 2017, out of 103 shippers authorised to trade at TGE:

- 40 players (38.8%) were actively engaged in the DAMg, and
- 43 players (41.7%) were actively engaged in the IDMg.

Figure 3 presents the increase in the number of participants of the short term gas market in Poland in the years 2014-2017, by month, with the indication of the number of active participants of DAMg and IDMg markets.

Figure 3. Number of participants in trade at TGE and the number of active participants in 2014-2017



Source: TGE

The data presented in Figure 3 leads to the conclusion that the number of entities participating the IDMg stabilised following the entry of BAL NC into force, with a slight increase observed since March 2016. As far as DAMg, the number of participants varies without any clear trend.

The following Figures illustrate the market share by particular shipper calculated on the basis of volumes delivered at entry points to the transmission system and volumes off-taken at exit points to end users and DSOs (the shares do not include the quantities delivered and off-taken at virtual points Gas Exchange, OTC and UGS and export interconnection points).

Figure 4. Share of shipper volumes at entry points to the transmission system in September 2015

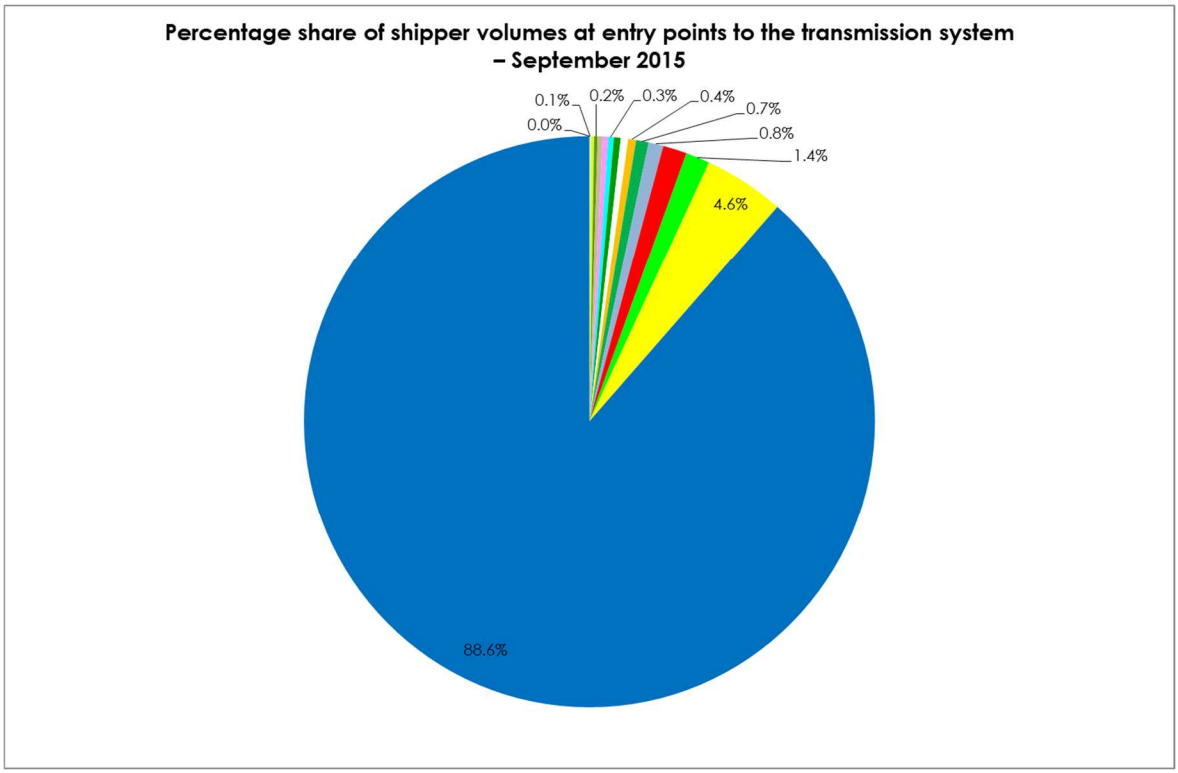


Figure 5. Share of shipper volumes at entry points to the transmission system in December 2015

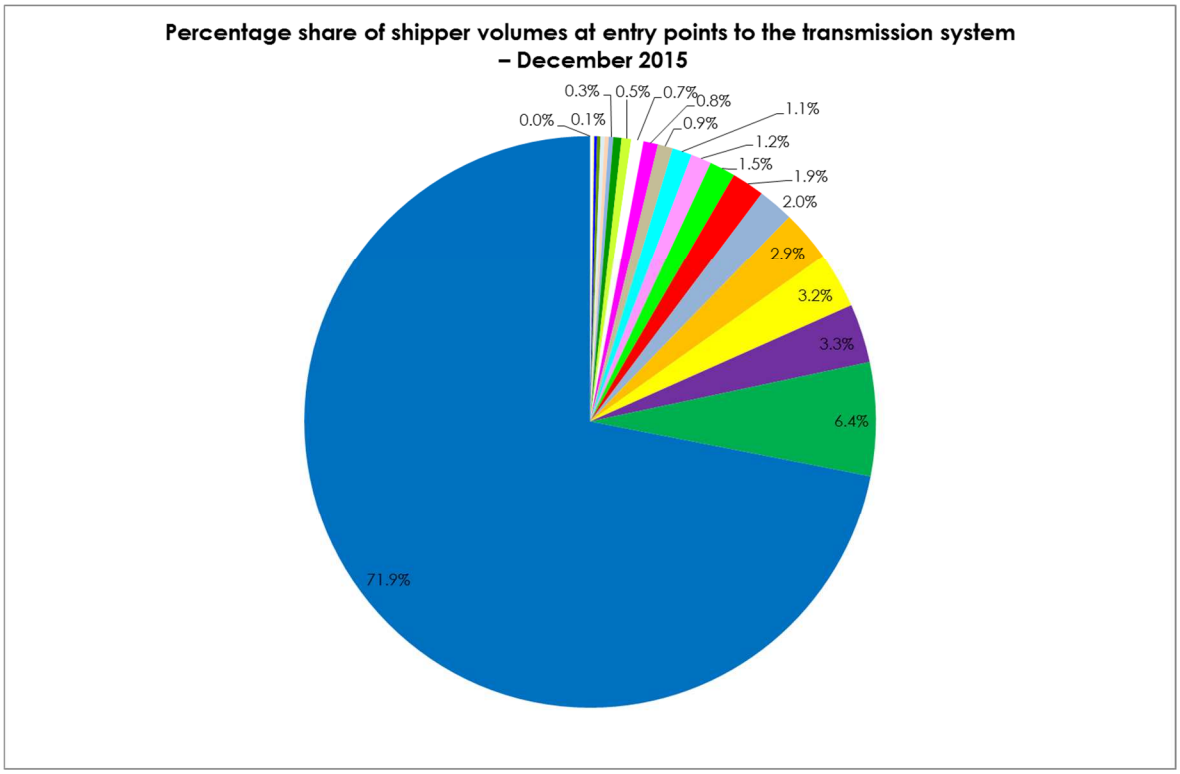


Figure 6. Share of shipper volumes at entry points to the transmission system in February 2016

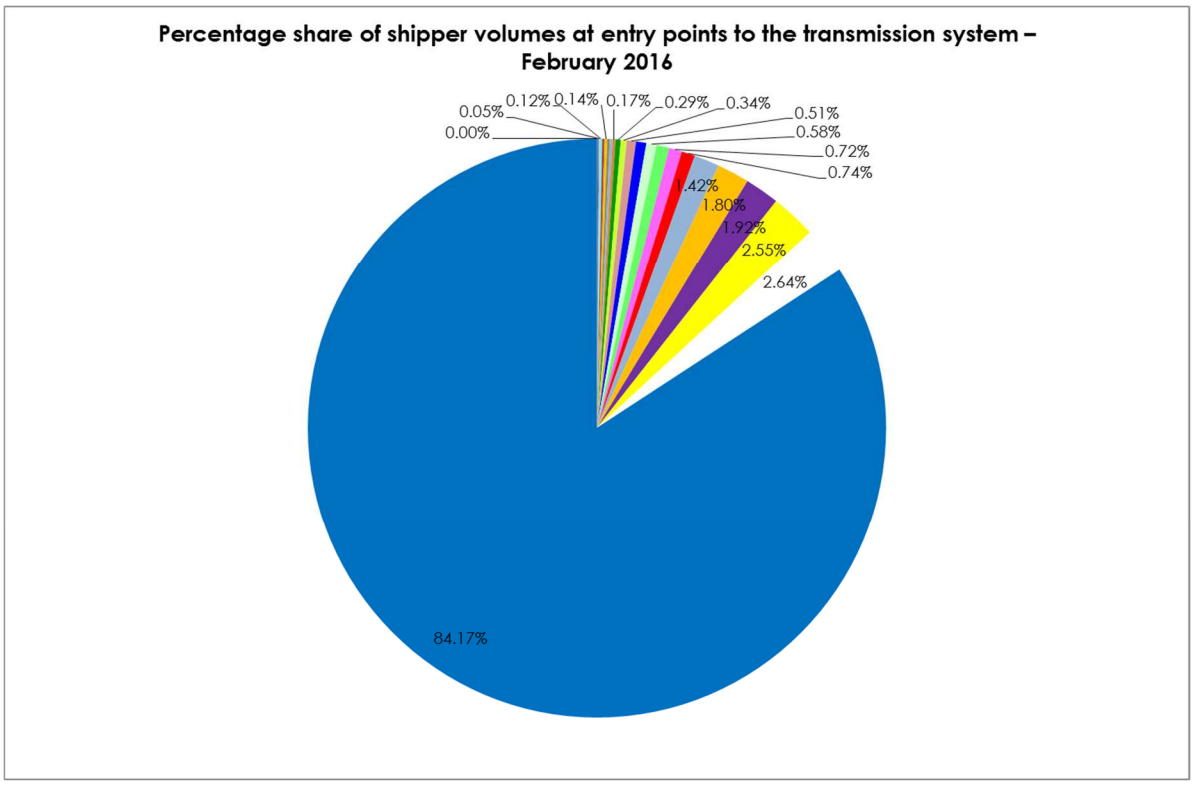


Figure 7. Share of shipper volumes at entry points to the transmission system in May 2016

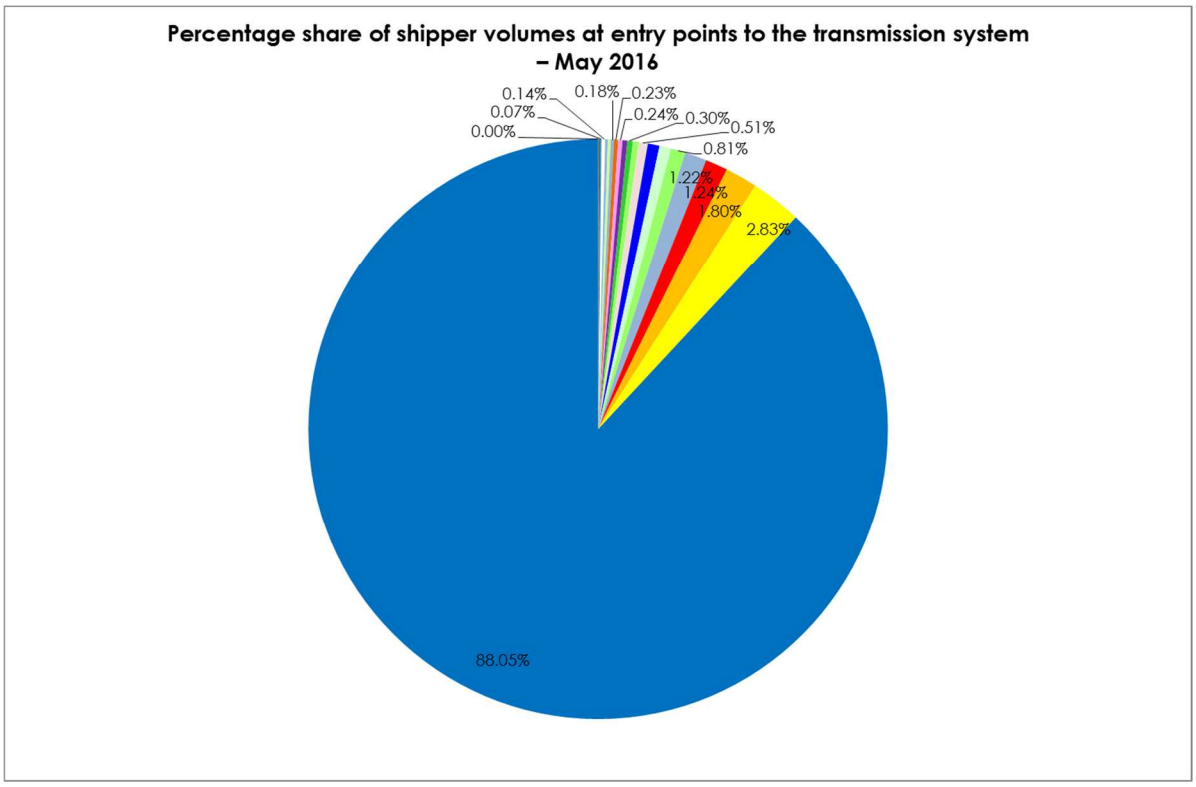


Figure 8. Share of shipper volumes at entry points to the transmission system in October 2016

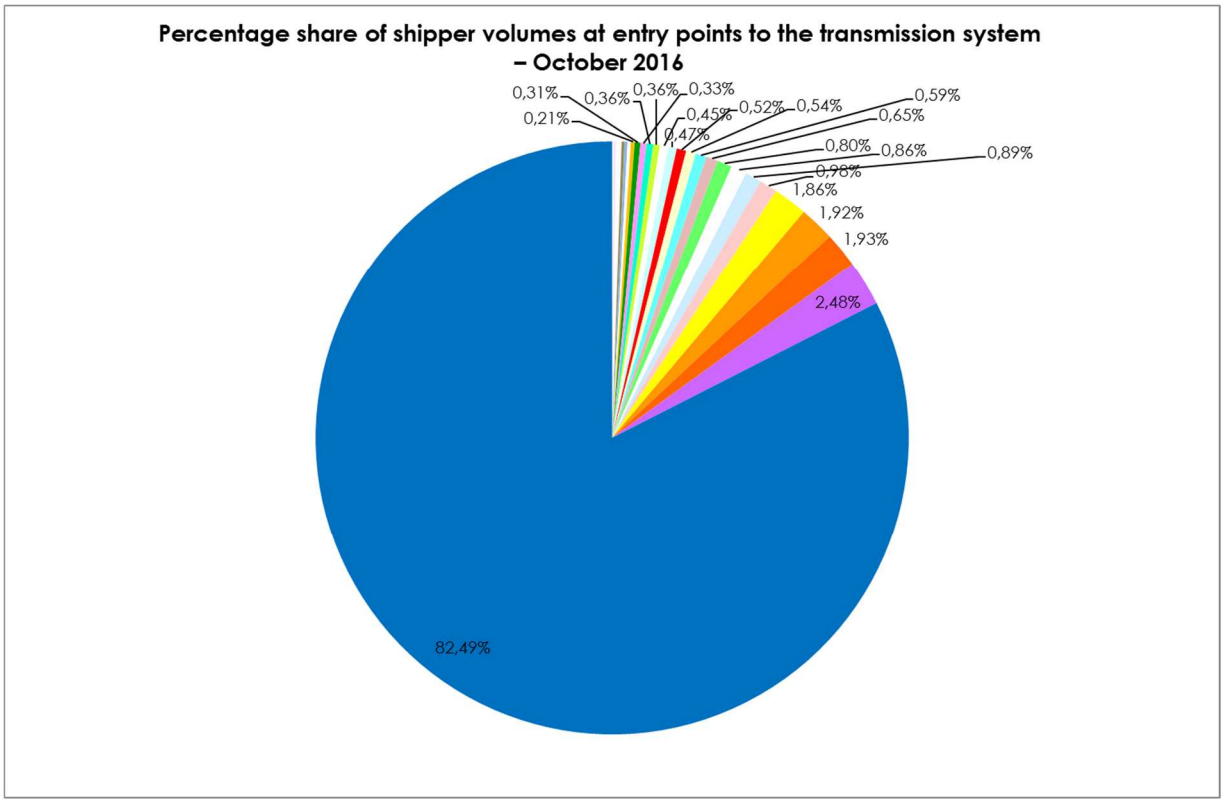


Figure 9. Share of shipper volumes at entry points to the transmission system in January 2017

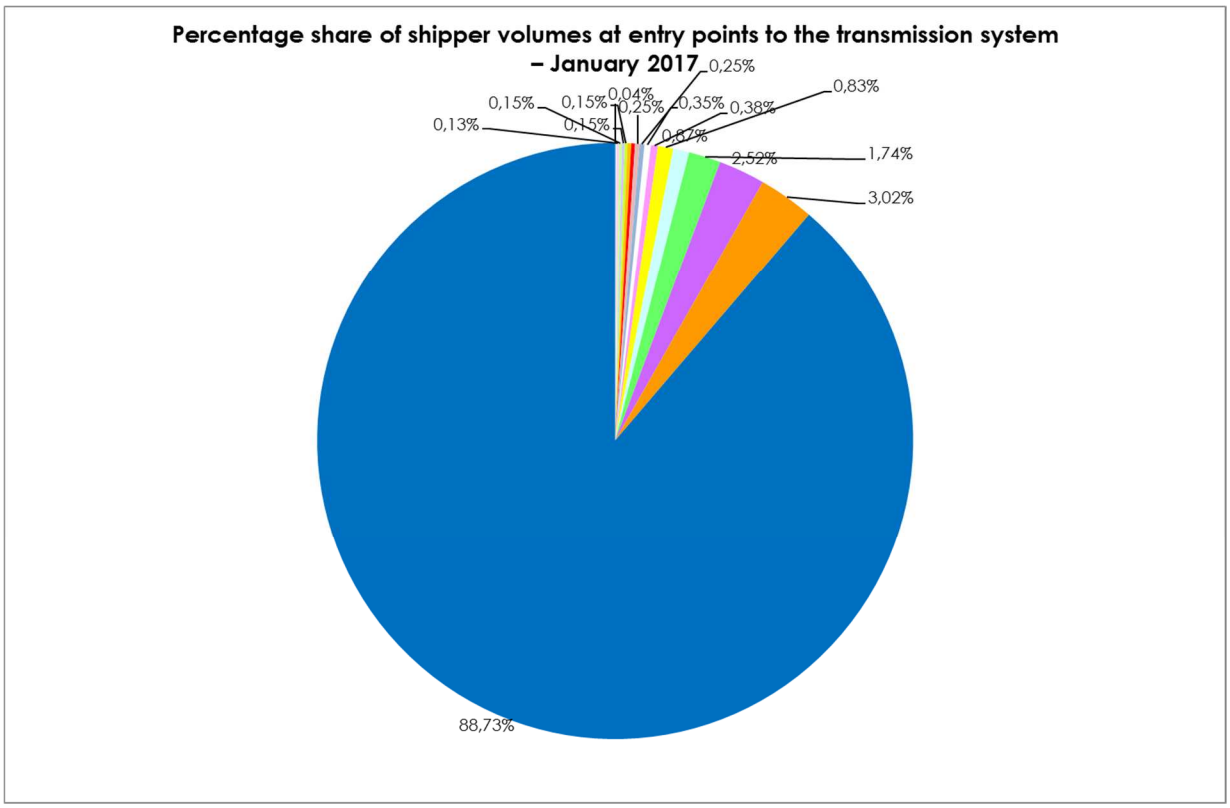


Figure 10. Share of shipper volumes at entry points to the transmission system in May 2017

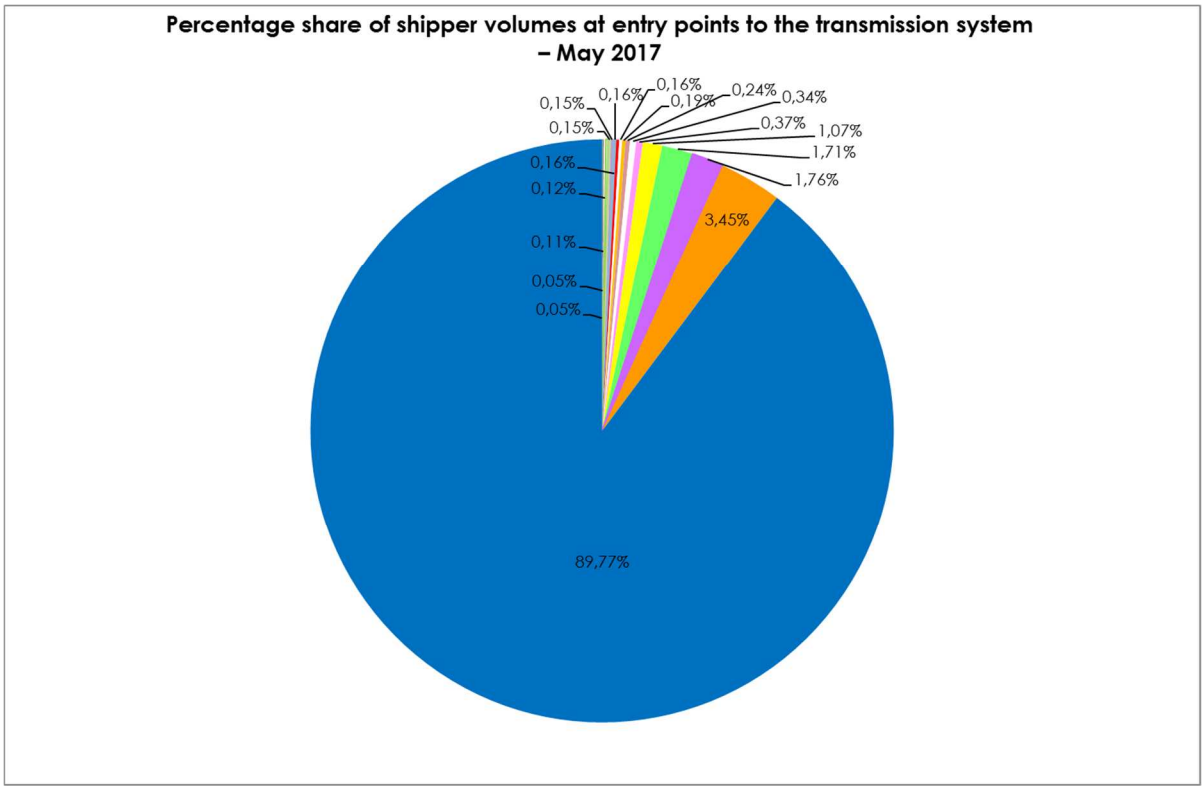


Figure 11. Share of shipper volumes at exit points from the transmission system in September 2015

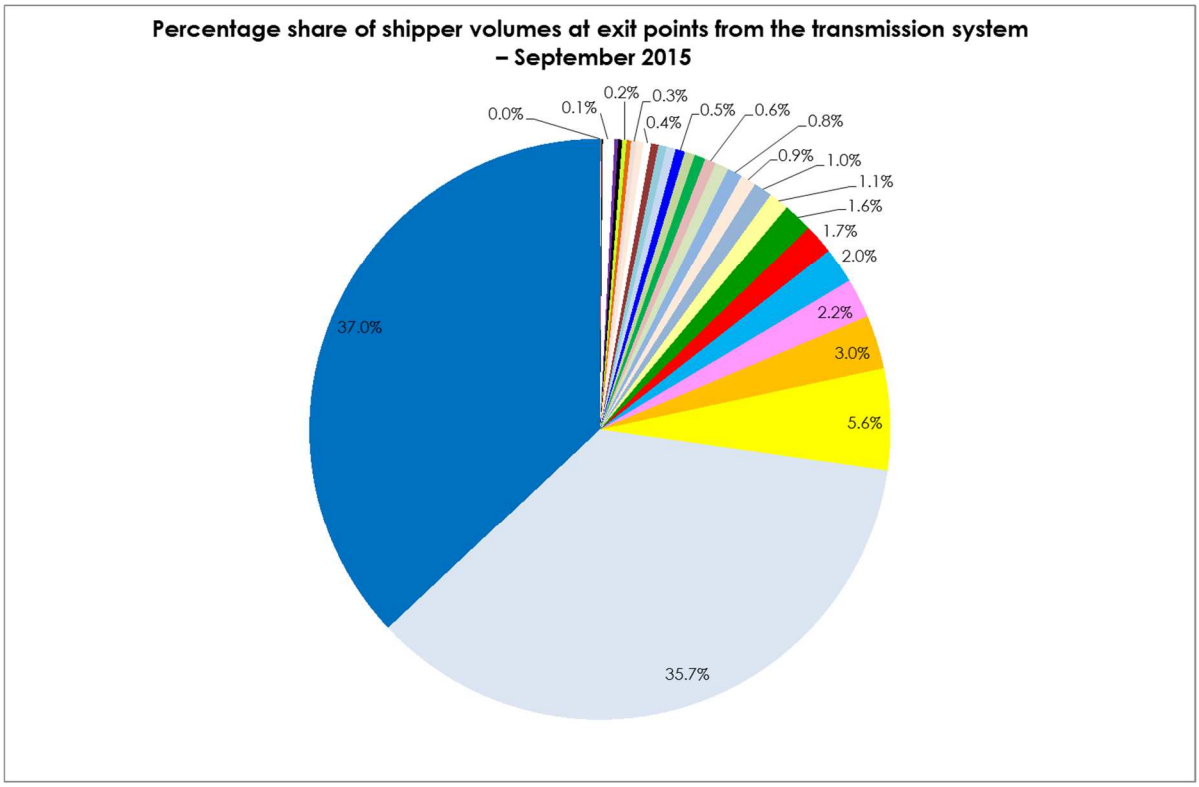


Figure 12. Share of shipper volumes at exit points from the transmission system in December 2015

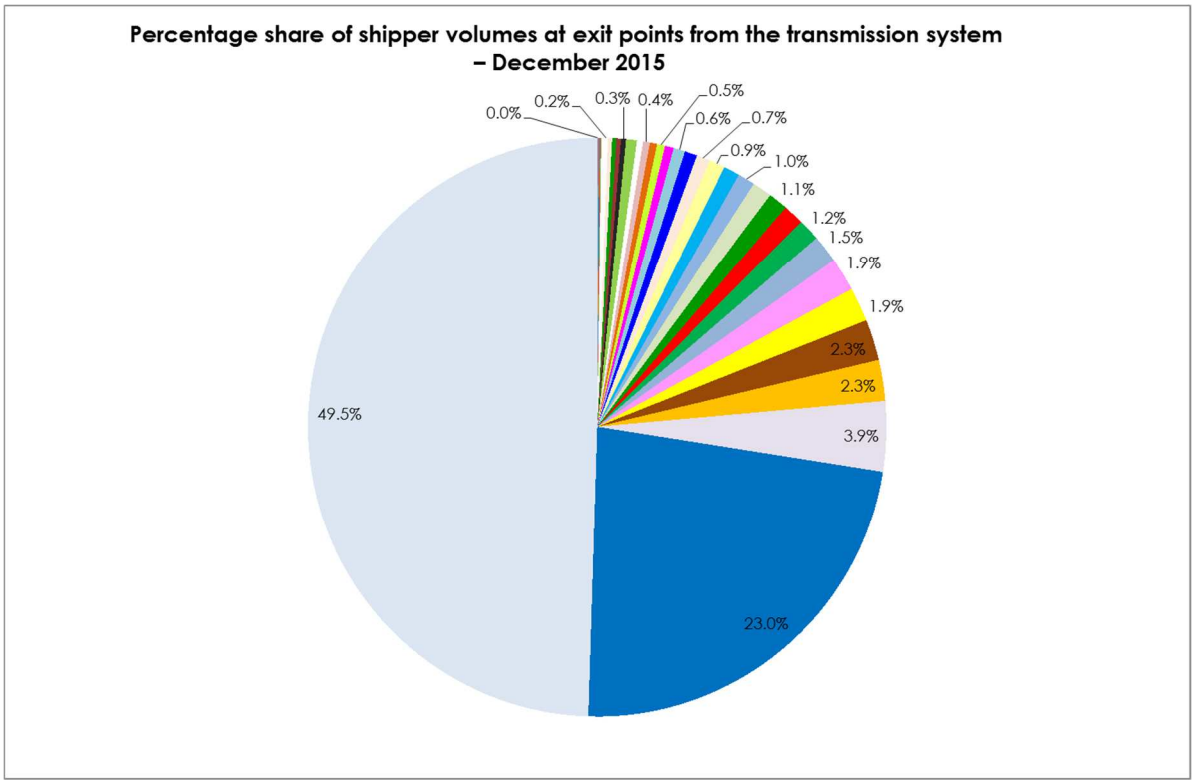


Figure 13. Share of shipper volumes at exit points from the transmission system in February 2016

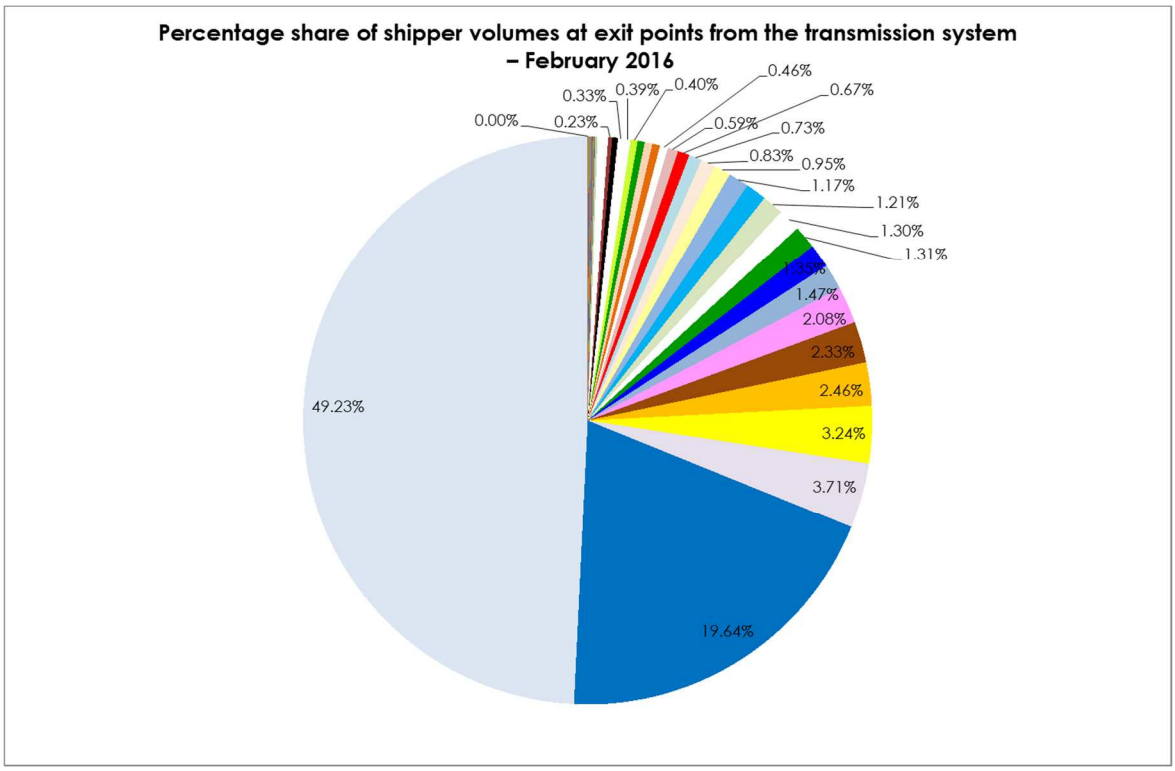


Figure 14. Share of shipper volumes at exit points from the transmission system in May 2016

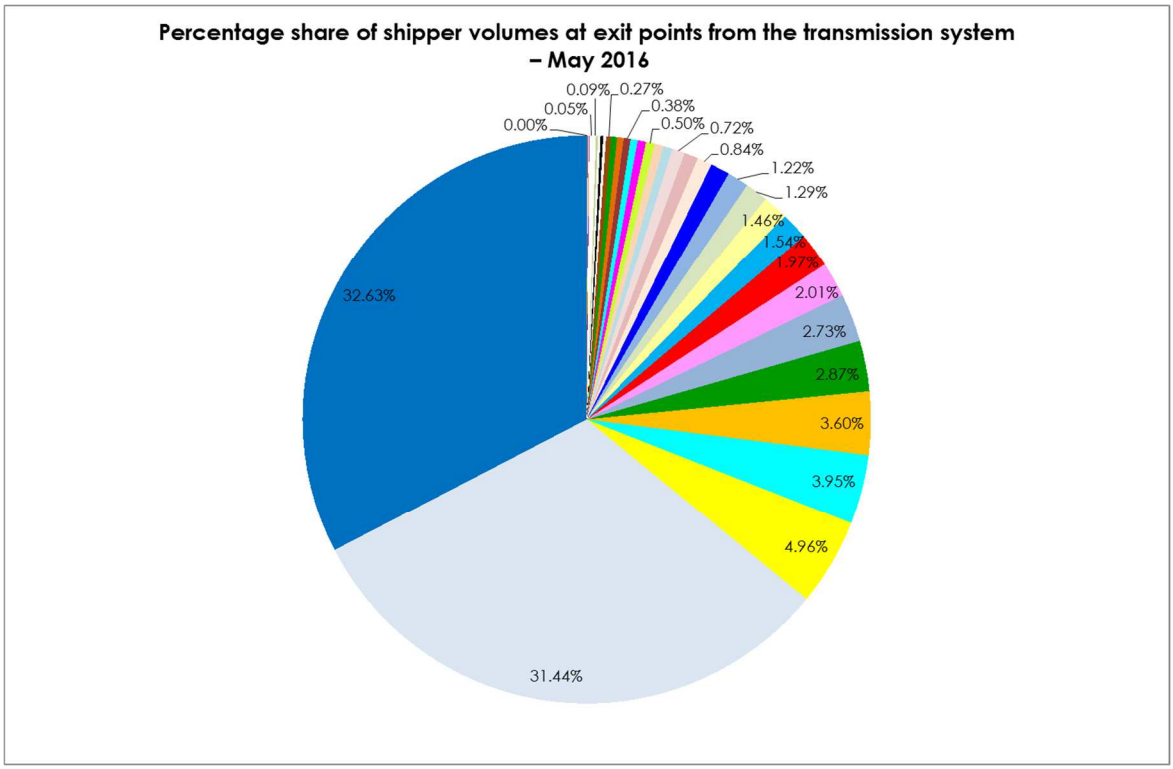


Figure 15. Share of shipper volumes at exit points from the transmission system in October 2016

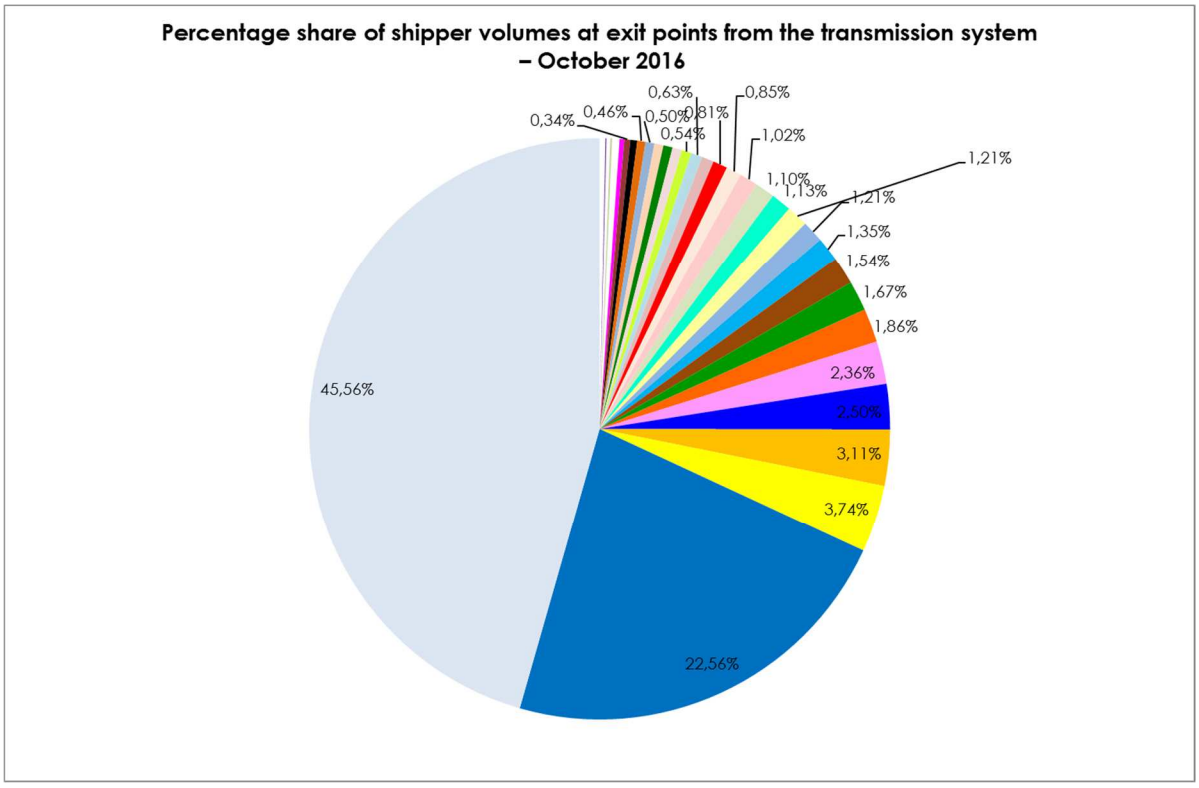


Figure 16. Share of shipper volumes at exit points from the transmission system in January 2017

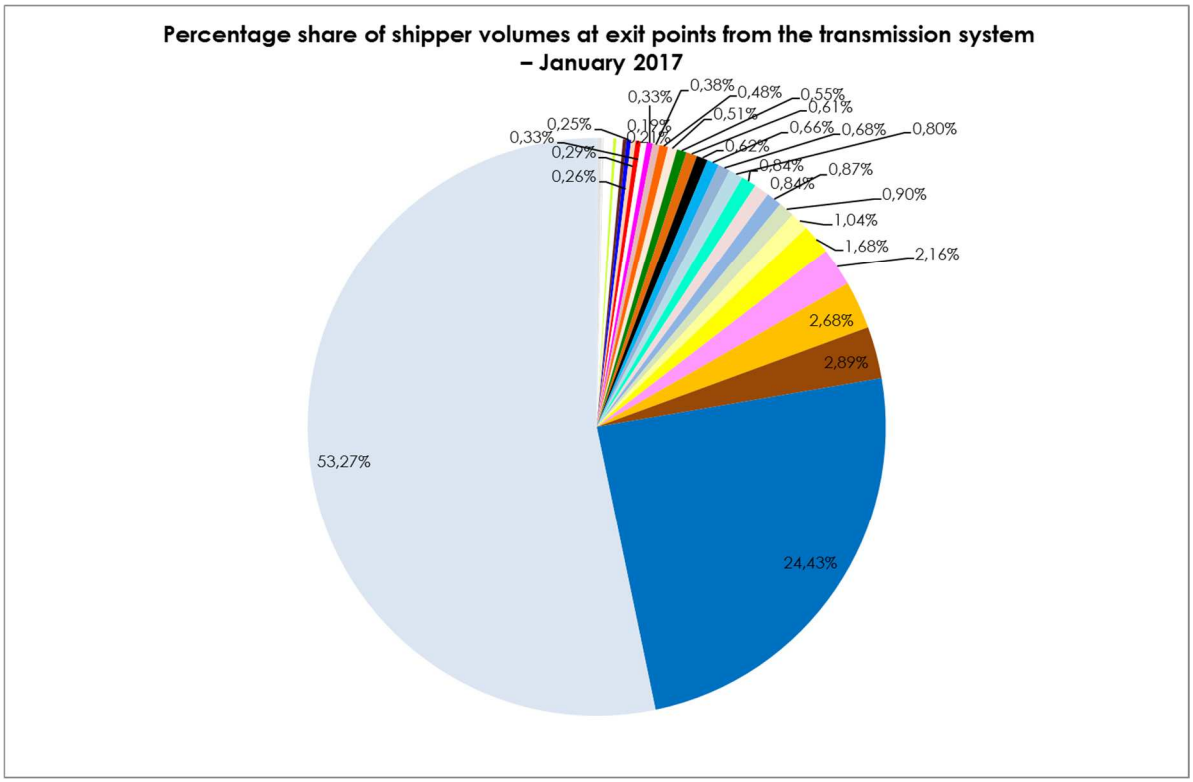
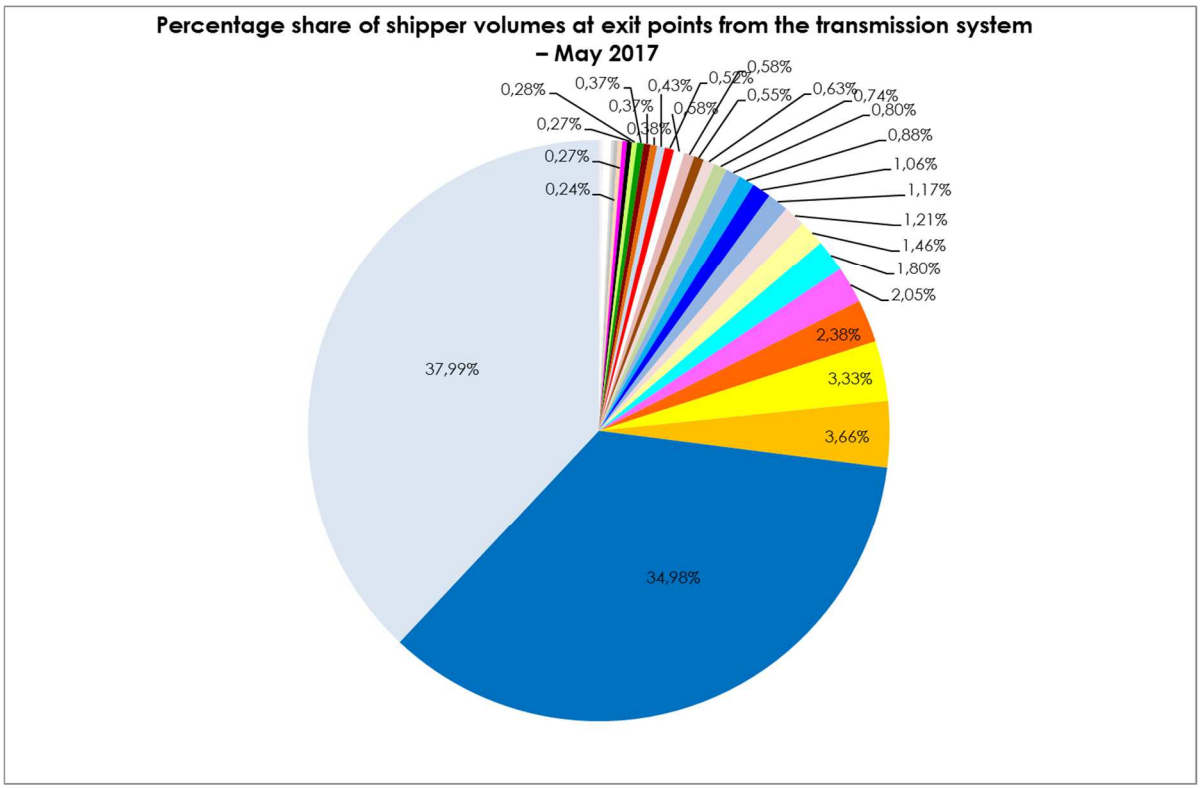


Figure 17. Share of shipper volumes at exit points from the transmission system in May 2017



Figures 4, 5, 6, 7, 8, 9,10 and 11,12 ,13 ,14 ,15,16 , 17 show how the market share of individual players developed. As far as the volumes delivered at exit points from the transmission system to end customers and DSOs, the dominant group maintained its overall market share, although the distribution within the group varied. As shown in Figures 2 and 3 which confirm the growing

number of players operating on the gas market, the market share fragmentation among "alternative" suppliers has been increasing. In the initial phase of the period under discussion, a clear difference was observed as regards the volumes delivered at the points of entry to the transmission system (Figures 4, 5), where the share of the dominant player decreased to a level corresponding exclusively to its share (group share) in the sales volume at exit points. On the other hand, the second phase of the analysed period (Figures 6, 7, 8 ,9, 10), saw one importer regain its dominant position and is also becoming visible at exit points while the growing trend in the number of players at exit points continued (Figures 11, 12, 13, 14, 15 ,16, 17). This situation was driven by changes in the market environment concerning the sourcing of gas for the domestic market, as well as by the growing importance of TGE as the principal place of gas sourcing for players operating on the domestic market, which is an alternative to the gas delivery from abroad.

1.1.3. Liquidity of short term gas market

In the European Gas Target Model 2, ACER recommends the following measures as key liquidity indicators for a short term gas market:

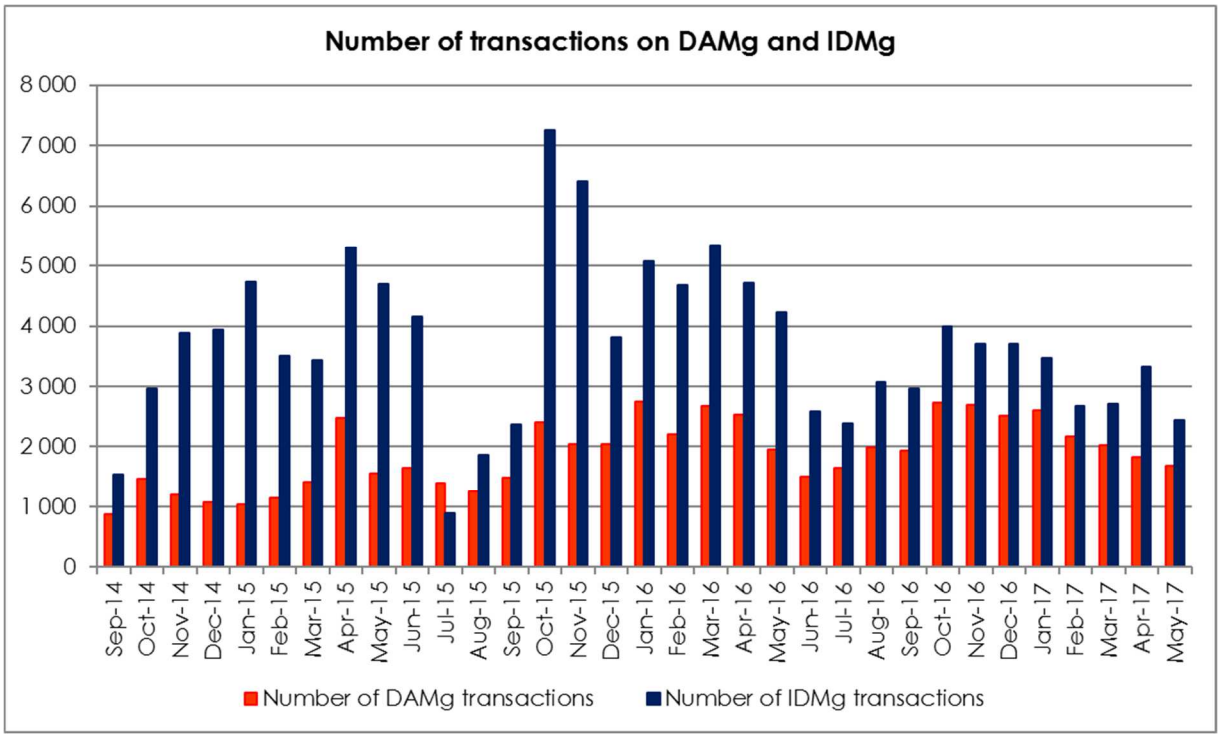
- Number of exchange transactions concluded,
- Volume of gas trade,
- Pricing differences between buy and sell offers and the volumes of buy and sell offers,
- Churn ratio,
- Short term churn ratio,
- Herfindahl-Hirschman Index (HHI).

Figure 18 shows the number of transactions concluded on the DAMg and IDMg in the months from January 2014 till May 2017.

The number of transactions concluded at the virtual trading point in general is not available to GAZ-SYSTEM.

After the entry into force of the Regulation, ie from October 2015, an increase in the number of transactions on IDMg was observed. Then, in summer of 2016, a decline in the number of transactions concluded in the short-term gas market is noticed. In the period from October 2016 to May 2017, we can see that despite the increase comparing to the summer period, the number of transactions is smaller than the number of transactions for the corresponding winter period of the previous year.

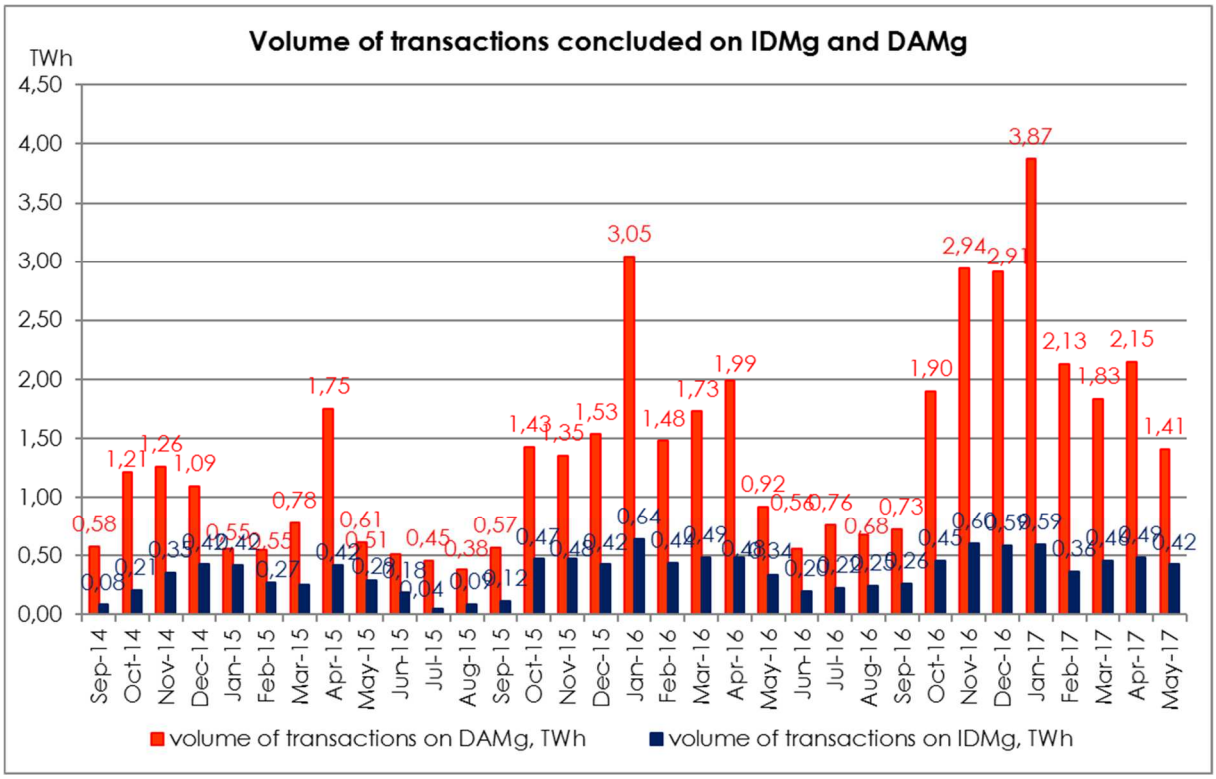
Figure 18. Number of transactions concluded on the DAMg and IDMg by month, January 2014 – May 2017



Source: TGE

Figure 19 presents the volumes of gas traded on the DAMg and IDMg in the months from January 2014 till May 2017. In the winter period from October 2015 to April 2016, the growth of gas volumes traded on the DAMg and IDMg can be observed, as compared to the period before the effective date of BAL NC. Then, in summer 2016, there is a decrease in trading volumes in the short-term gas market, however, the volume of transactions is higher than in the analogous period before the entry into force of the Regulation. From October 2016, we can see again an increase in the volume of transactions concluded on IDMg and DAMg.

Figure 19. Volume of transactions concluded on the DAMg and IDMg by month, January 2014 – May 2017



Source: TGE

The data regarding the bid/offer spreads are not available to GAZ-SYSTEM.

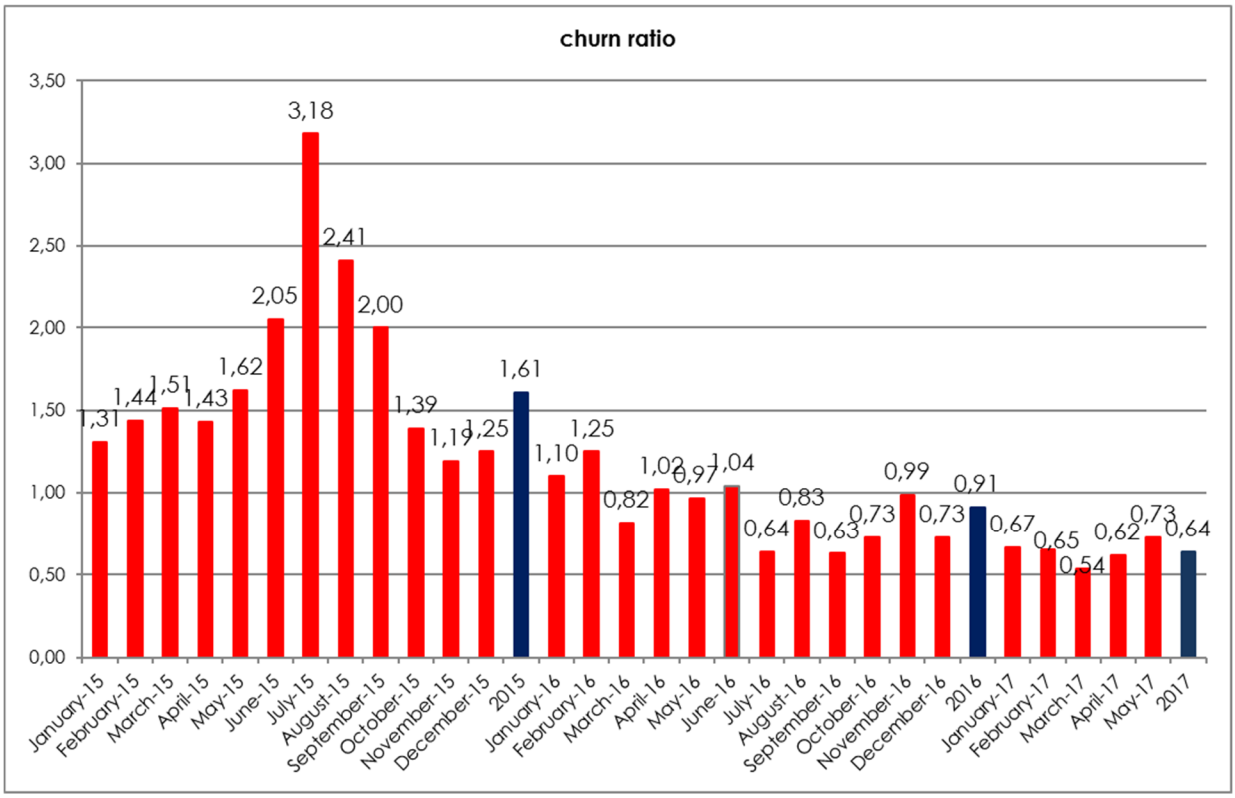
The liquidity of wholesale gas markets is also measured by the means of the churn ratio. The ratio is calculated by dividing the volume of gas sold in exchange transactions and OTC market transactions (*traded volumes*) by the volume of gas physically delivered to the exit points from the transmission system (*gas demand*) in a given time period (usually the ratio is calculated for one year periods).

The churn ratio is a synthetic measure that illustrates how many times a unit of energy (gaseous fuel) was traded in the market before it got actually delivered to the end consumer. According to the approach adopted by ACER, a market is considered to be fully liquid when the churn ratio exceeds 8[1].

Figure 20 presents the level of the churn ratio for the gas market in Poland from January 2015 till May 2017.

[1] *Functioning wholesale gas markets – Objectives and criteria, ACER, May 2014*

Figure 20. Level of the churn ratio for the gas market in Poland from January 2015 till May 2017.



In 2015, the gas market churn ratio reached its peak in July 2015. This was driven by the highest volume levels observed on the Commodity Forward Instruments Market with Physical Delivery for gas (hereinafter: CFIMg) in that month. The yearly churn ratio for 2015 was merely 1.61, which confirms still a relatively low liquidity of the natural gas market.

In the first five months of 2016, the churn ratio was much lower than in the same period of the year 2015. In January and February 2016, low churn ratio was explained by lower volumes on the CFIMg comparing to the preceding year. Meanwhile, in the period from March till May 2016, the low level of the churn ratio was mainly caused by much lower volumes on the OTC market.

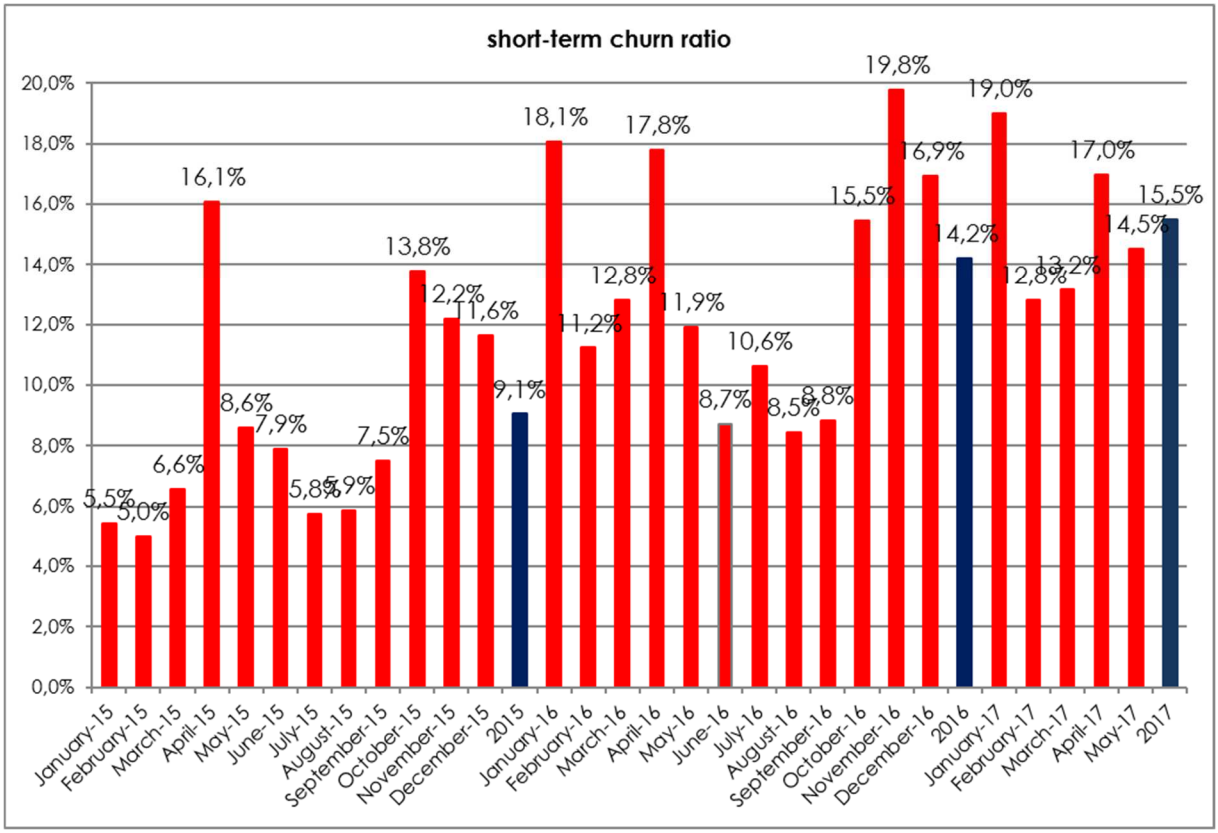
The yearly churn ratio for 2016 was 0.91, indicating a 43% decrease in liquidity compared to 2015. It can also be observed that liquidity level in the period from January to May 2017 is lower than liquidity level in the corresponding months of 2015 and 2016.

As an additional measure for assessing the liquidity of short term gas markets, the short term churn ratio is used. This ratio is calculated by dividing the volume of gas sold in short term transactions (*SPOT traded volumes*) by the volume of gas physically delivered to exit points from the transmission system (*gas demand*), multiplied by 100%.

The short term churn ratio shows what portion of the gas delivered to end consumers has been traded on short term markets.

Figure 21 presents the level of the short term churn ratio for the short term gas markets operated by TGE in the period from January 2015 till May 2017.

Figure 21. Level of the short term churn ratio for the gas market in Poland from January 2015 till May 2017.



Source: TGE

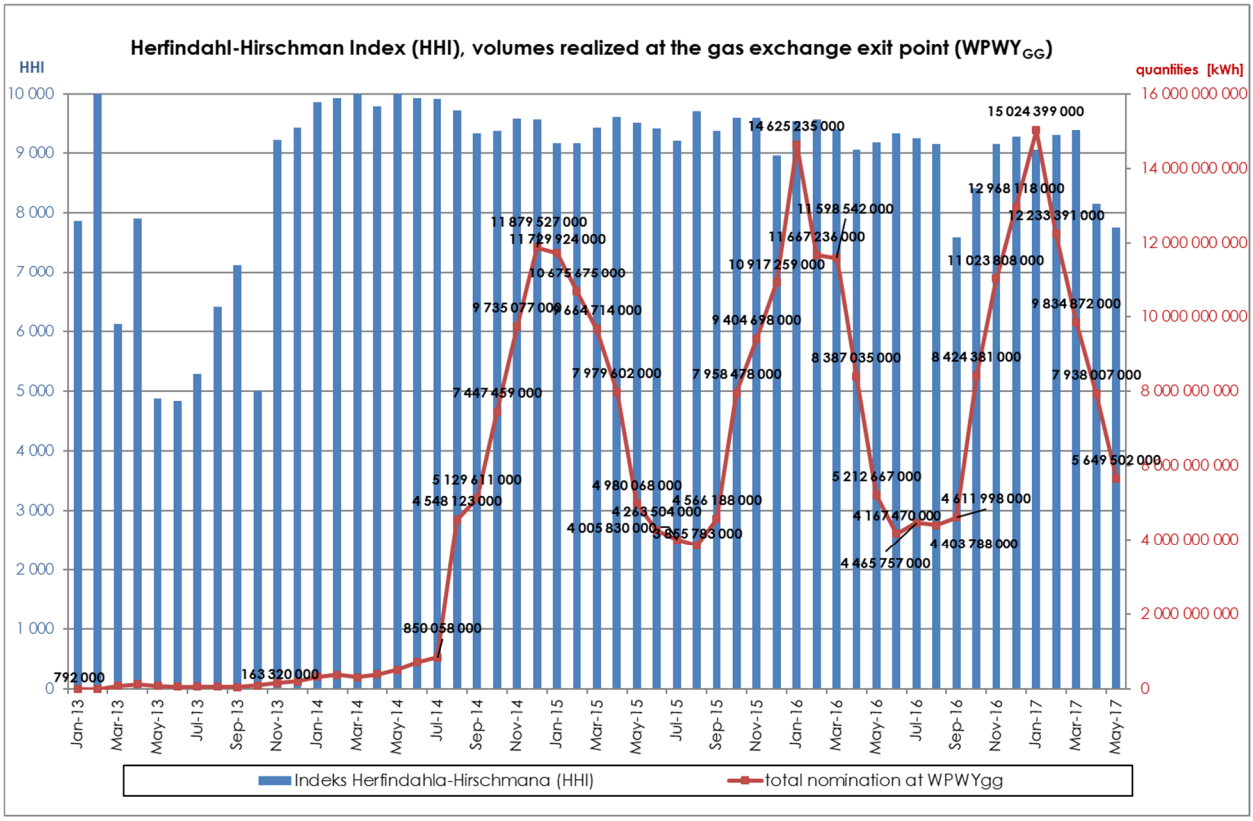
In the last quarter of 2015, the level of short term churn ratio for the natural gas market in Poland reached over 10%. The value of the ratio for the year 2015 was 9.1%, which indicates a notable growth comparing the 2014 value (approx. 4%). The high level of the short term churn ratio was observed in January 2016 (18.1%). This was explained by the large transaction volume observed on the DAMg in that month. Then, in the summer months of 2016, the short-term churn ratio fell again below 10%. Re-rise occurred in the winter months. The value of the short-term churn ratio for the 2016 is 14.2%.

In the first 5 months of 2017, the hort-term churn ratio is still higher than in the corresponding months of 2016.

However, despite the increase with respect to the 2014 figure, the churn ratio level still indicates a relatively low liquidity of the short term gas market in Poland, comparing to the British market where the ratio was approx. 30% in 2014.

Another measure ACER uses for the assessment of market liquidity and competitiveness ("European Gas Target Model" – updated in January 2015) is the Herfindahl-Hirschman Index (HHI). According to the approach presented by ACER in document titled the "European Gas Target Model", a wholesale market is considered to be competitive and liquid when HHI does not exceed 2000. Figure 22 presents the development of the HHI for the supply together with the actual daily volumes realised at $WPWY_{GG}$ (nominations submitted by TGE resulting from the concluded transactions).

Figure 22. The HHI values for the supply side and daily volumes traded at TGE.



Because of the nature of data held by GAZ-SYSTEM, the above parameters concern all the products, including both long- and short-term ones. The parameters may only illustrate the over market liquidity as perceived by market participants. In view of the provisions of Article 9(2) BAL NC, the parameters for the day-ahead market (DAMg) and intraday market (IDMg) are more crucial for the fulfilment of operational balancing needs, however GAZ-SYSTEM does not have access to this kind of commercial information at the moment.

The comparison of parameters characterising the performance of the short-term gas market in the period under discussion.

- The trade at TGE's short term gas markets is possible from 8:00 a.m. till 03:30 p.m. (for 7.5 hours per day).
- Short term gas markets operated by TGE offer only standard products which allow for the transfer of gas ownership title between market participants.
- Active players engaged in trading on short term gas markets at TGE:
  - in September 2015: 37,
  - in December 2015: 38,
  - in May 2016: 44,
  - in February 2017: 40,
  - in May 2017: 43.
- The volume of trade on the TGE's short term gas markets (DAMg and IDM combined) totalled:
  - in September 2015: approx. 683 GWh,

  - in December 2015: approx. 1.957 GWh,
  - in May 2016: approx. 1.255 GWh,
  - in February 2017: approx. 2.492 GWh,
  - in May 2017: approx.. 1.830 GWh.
- Churn ratio:
  - in 2014, the churn ratio for the Polish gas market was 0.61.
  - in 2015, the churn ratio for the Polish gas market was 1.61.
  - in 2016, the churn ratio for the Polish gas market was 0.91,
  - in the first 5 months of 2017, the churn ratio for the Polish gas market was 0.64.
- Short turn churn ratio:
  - in 2014, the short term churn ratio for short term gas markets operated by TGE was 1.9%,
  - in 2015, the short term churn ratio for short term gas markets operated by TGE was 9.1%,
  - in 2016, the short term churn ratio for short term gas markets operated by TGE was 14.2%,
  - in the first 5 months of 2017, the short term churn ratio for short term gas market operated by TGE was 15.5%.

The above figures indicated a nearly 3-times increase in trading volumes on short term gas markets in December 2015, as compared to September 2015. In May 2016, the volume of trade on short term gas markets was 2 times higher than in September 2015. As a result, the growth of churn ratio is observed by the end of 2015 (by 2.5 times) and subsequent decrease in 2016 due to lower market volumes, especially on the OTC market and a strong growth of short term churn ratio (in 2016 the short term churn ratio is 7 times higher than in 2014), which is permanent and continues also in the first months of 2017.

1.1.4. Balancing actions of GAZ-SYSTEM

According to the provisions of BAL NC, the TSO is obliged to use a trading platform for the execution of balancing actions.

In the period under discussion, GAZ-SYSTEM was undertaking balancing activities through transactions concluded at TGE.

TSO's transactions related to the balancing actions are presented in Figure 23.

Figure23. Transactions of GAZ-SYSTEM at TGE in the period: October 2015 – May 2017.

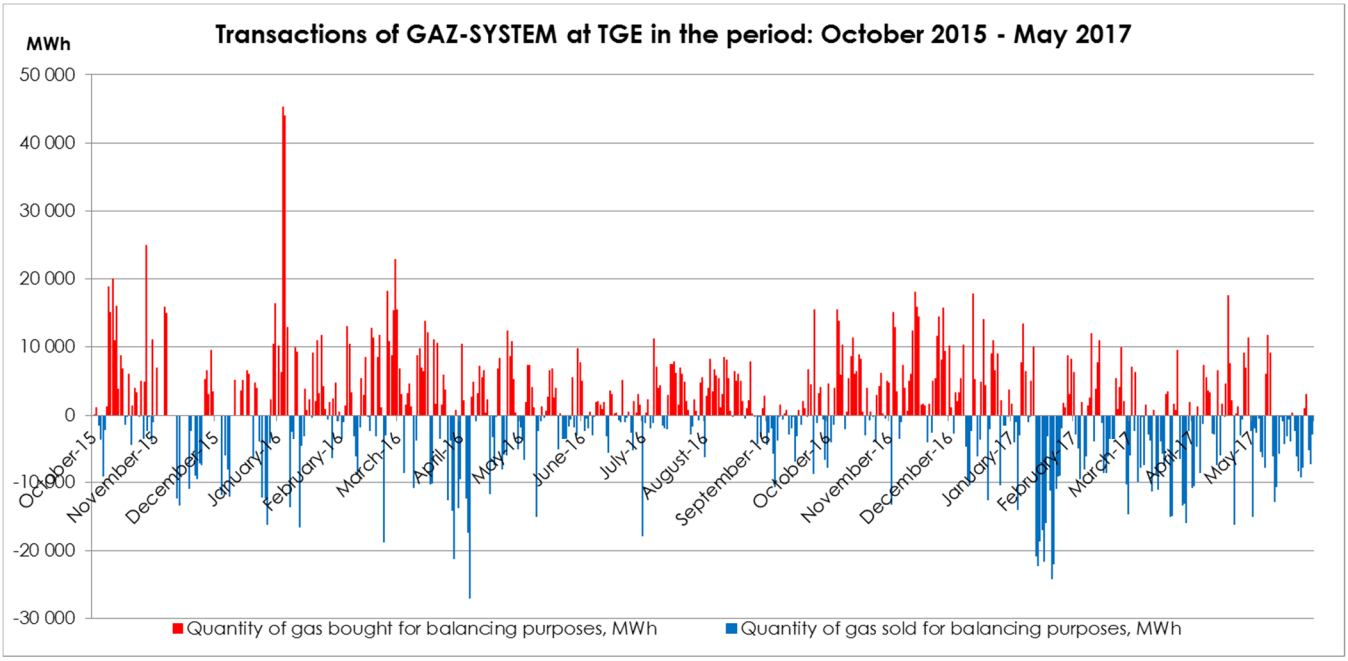
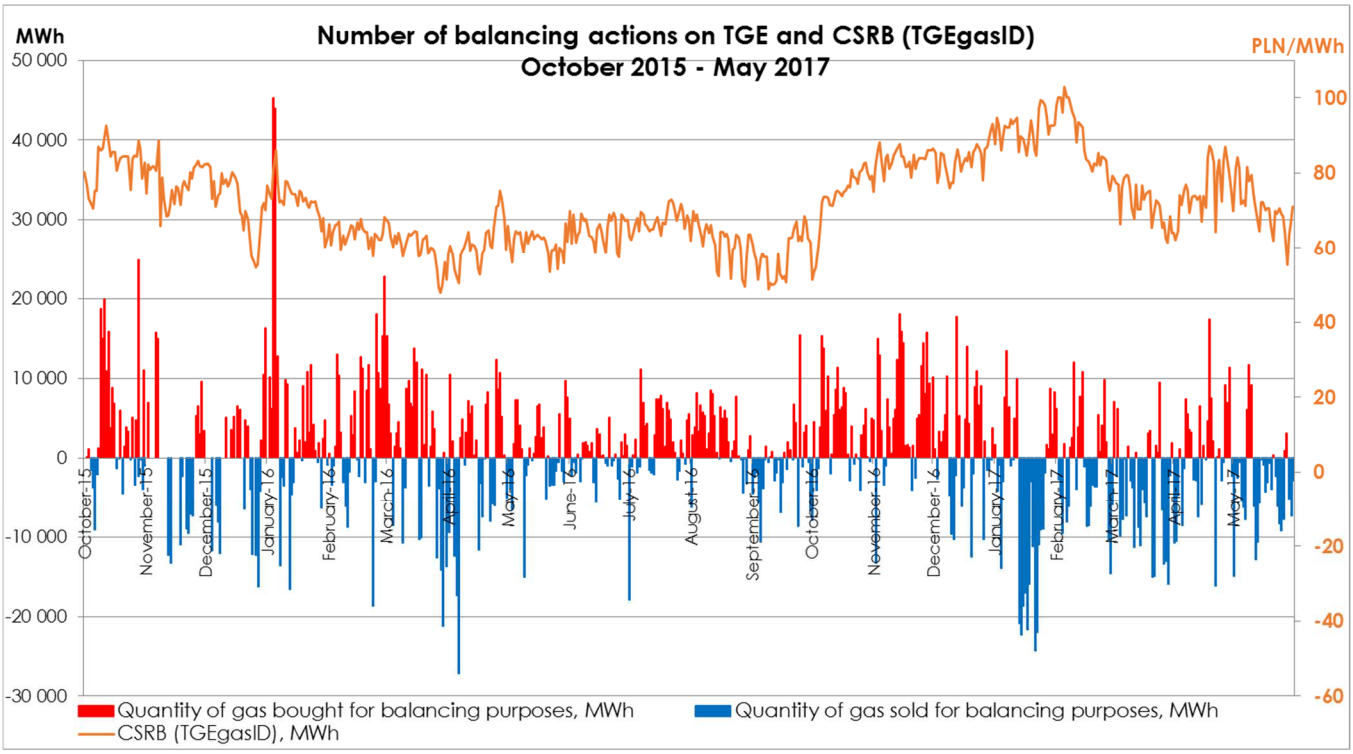


Figure24. Balancing actions of TGE vs. TGEgasID index.

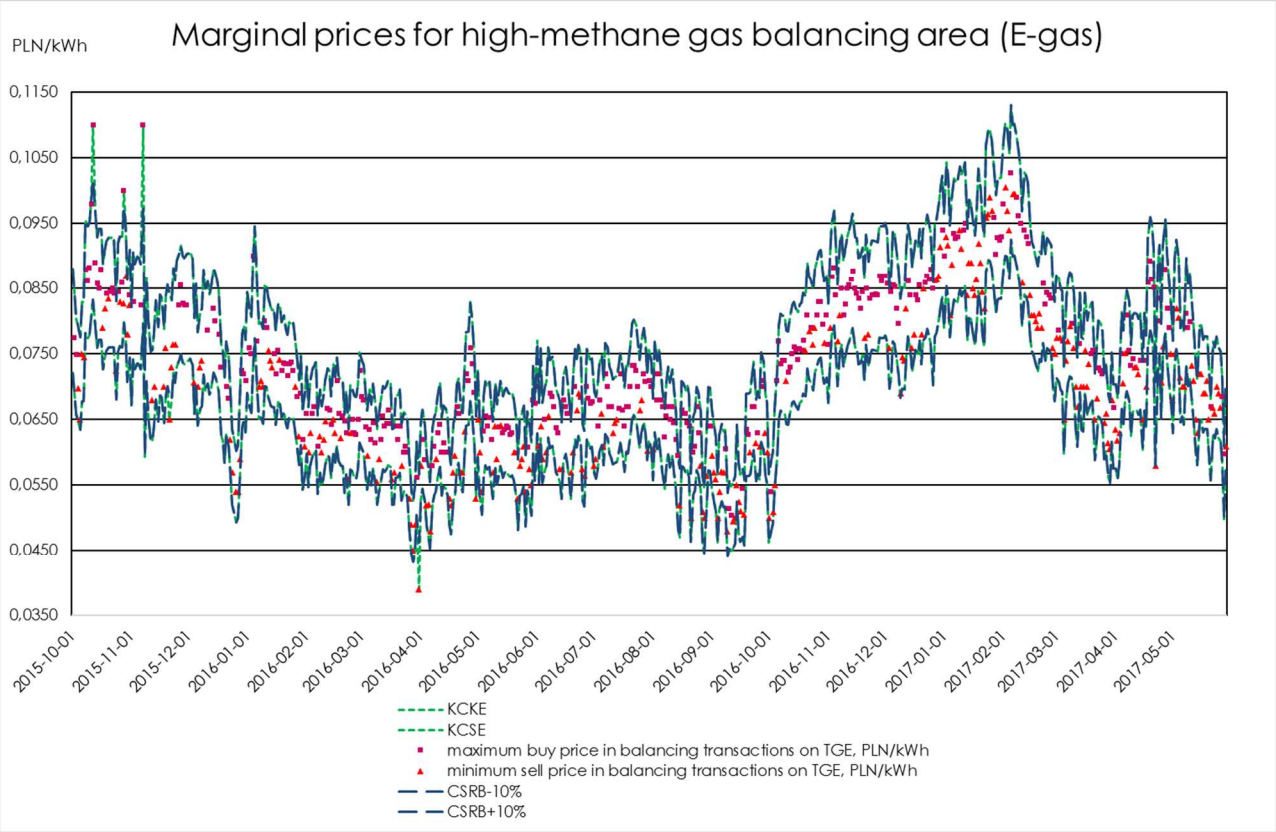


In the period from 1 October 2015 till 31 May 2017, GAZ-SYSTEM undertook 588 balancing actions, either buying or selling gas title products at TGE. Only 8 times taking a balancing action by the TSO influenced the KCK value which were in those cases greater than CSRB+10% (4 times) or resulted in determination of the KCS value lower than CSRB-10% (5 times).

The development of marginal prices for the balancing area for high-methane gas E – KSP_E is

shown in Figure 25.

Figure 25. Marginal prices for the high-methane gas balancing area (KSP_E).



On four occasions the highest price in purchase transactions for gas title products to which the TSO was a party in the period between October 2015 and May 2016 was higher than the CSRB average price (TGEgasID index) plus 10% and affected the marginal buy price (KCK) for the high-methane gas balancing area. In the period from June 2016 to May 2017, only once the price of gas bought by the TSO for balancing affected the marginal buy price KCK. On three occasions during the 8-month period from October 2015 to May 2016 the lowest price observed in purchase transactions for gas title products to which the TSO was a party was lower than the CSRB average price less 10% and affected the marginal sell price (KCS) for the high-methane gas balancing area (KSP_E). In the period from June 2016 to May 2017, the TSO's sell price from balancing transactions was never lower than the CSRB decressed by 10%.

In other cases, the marginal prices were established as CSRB (TGEgasID index) plus or minus 10%. This method of determining marginal prices has a positive influence on the market as it makes marginal prices more predictable. The probability that the TSO's transactions may affect the marginal prices is lower, which means a lower financial risk for shippers. The above data confirm that the introduction of a "small adjustment" at the level of 10% is adequate for the market liquidity level.

1.2. The balancing area of the Polish Section of the Transit Gas Pipeline System Yamal-Western Europe – TGPS

1.2.1. Functioning of short term gas market

As of 1 March 2016, along with the approval of the amendment of the Transmission Network Code for the Polish Section of The Transit Gas Pipeline SystemYamal-Europe, a virtual gas trading point was established allowing the conclusion by network users of gas title transactions between two balancing portfolios within the TGPS balancing area (OTC, Gas Exchange).

TGE started the quotation of TGPS instruments for the balancing area of the Polish section of The Transit Gas Pipeline System (TGPS Yamal-Europe) on the Day-Ahead Market for gas. The beginning of the quotations for the TGPS balancing area on the DAMg consists in the introduction of a new market instrument SGT_BASE_DD-MM-RRRR. Transactions concluded on this instrument concern the deliveries of high-methane natural gas transported within the TGPS area. A new index for transactions concerning the TGPS instruments – TGEsgtDA – was introduced.

The quotations for instruments traded on the DAMg take place between 09:00 a.m. and 03:30 p.m.

1.2.2. Participants of short term gas market

In order to be considered a participant of the TGE's short term gas market for TGPS instruments, the interested parties must fulfil the following conditions:

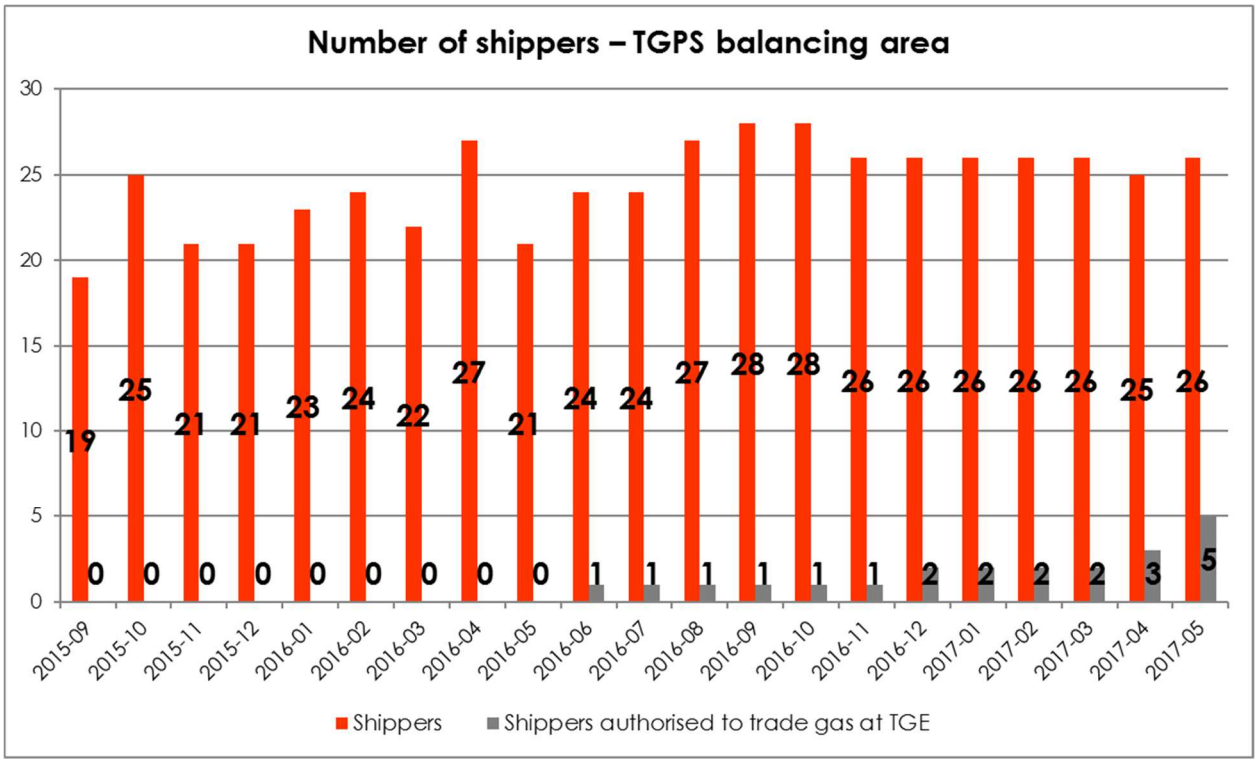
- sign transmission contract with the TSO and obtain a transmission ability allocation at the virtual entry/exit point to/from the TGE's gas market within the TGPS (have a shipper's status),
- be authorised to trade in gas at TGE with respect to a TGPS instrument.

The number of shippers operating within the TGPS balancing area in the recent months has remained at a constant level. Currently (status as at 31 May 2017), there are 26 players with a shipper's status operating on the gas market within the TGPS. There were 24 shippers operating in February 2016 on the gas market within TGPS.

Five parties have a transmission ability allocation at the point of entry to/exit from the TGE's gas market with respect to the TGPS (until December 2016, four parties had the transmission ability allocation at the point of entry to/exit from the TGE's gas market with respect to the TGPS). However, according to information obtained from TGE current at 31 May 2017, only 5 shippers were authorised to trade gas at TGE with respect to a product dedicated to the TGPS.

Figure 26 presents the number of shippers operating within the TGPS balancing area in the period from September 2015 - May 2017.

Figure 26. Number of shippers in the period from September 2015 – May 2017 (TGPS balancing area)



Despite the creation of a virtual trading point within the TGPS balancing area, no transactions were concluded in the period from 1 March 2016 until 31 May 2017. Neither were any transactions concluded on the OTC market. It should be noted that relatively short time has passed since the establishment by GAZ-SYSTEM of proper regulatory framework allowing for the creation and development of short-term gas market in the TGPS balancing area. Taking also into account the specificity of TGPS balancing area, such a rapid market development as in the case of the KSP_E balancing area can not be expected.

Nevertheless, it should be pointed out, that the provision of appropriate tools by the TSO (virtual point for OTC and Gas Exchange) is the first and at the same time a key element for the effective development of the short-term market in this area.

1.2.3. Liquidity of short term gas market

Given the early stage of the virtual point operation within the TGPS balancing area, and in view of the lack of network users' activity in respect to title transactions – both for TGPS instruments quoted at the TGE and for the OTC market, there is no possibility of full assessing the liquidity of the short term wholesale market in the TGPS. The market liquidity will be the subject of further analyses to be undertaken by GAZ-SYSTEM, and their results will influence the choice of interim measures.

1.2.4. Balancing actions of GAZ-SYSTEM

In the period under discussion, GAZ-SYSTEM did not undertake any balancing activities within the TGPS balancing area. In the period from October 2015 until May 2017, network users active within the TGPS balancing area successfully balanced their respective portfolios on their own thus reducing the need for any balancing actions to be undertaken by GAZ-SYSTEM to zero.

1.3. The balancing area of the national transmission system for low-methane gas - KSP_{Lw}

As of 1 March 2016, along with the approval of the amendment of the Transmission Network Code, a virtual gas trading point was established within the Lw gas balancing area (KSP_{Lw}) allowing the conclusion by network users of bilateral gas title transactions (OTC) between two balancing portfolios within the KSP_{Lw} balancing area. However, in the period from March 2016 till May 2017, no single title transactions was concluded within the KSP_{Lw} area.

There are 5 shippers holding capacity/ transmission ability allocations within the KSP_{Lw} area, including only 3 active entities, with the transmission volumes of the two other shippers remaining at 0 level so far. It should be noted that the market for low-methane gas within the transmission network is currently a single-producer market and there is no possibility of ensuring competition on the supplier side. New fields need to be developed in order alternative sources of supply to become available. The process of commissioning and connection of new gas field involves major capital expenditures and is time consuming. In addition it should be indicated that GAZ-SYSTEM as the certified Transmission System Operator is fully independent of any actions connected with launching new gas mains.

In view of the above, despite the creation by GAZ-SYSTEM of fundamental conditions necessary for the operation of market mechanisms within this balancing area, it is currently not possible to assess the development or liquidity of the short term wholesale market within the low-methane gas system.

2. Interim measures planned for further application

2.1. The balancing area of the national transmission system for high-methane gas - KSP_E

2.1.1. Criteria for removal of interim measures

According to the approved in 2016 "Report on the Interim Measures Planned for the Implementation by GAZ-SYSTEM S.A. in connection with the entry into force of Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks" the following interim measures are applied within the balancing area KSP_E.

- balancing platform
- tolerance.

According to the Report approved in 2016, the potential removal of an interim measure will be assessed based on the following criteria:

- The level of short term market liquidity – the achievement of the yearly short term churn ratio at a level comparable to the neighbouring markets;
- The availability of short term products – the possibility of trading on short term markets (DAMg and IDMg) for up to 22 hours, 7 days a week;
- Relevance of products offered in the market to the needs of GAZ-SYSTEM.

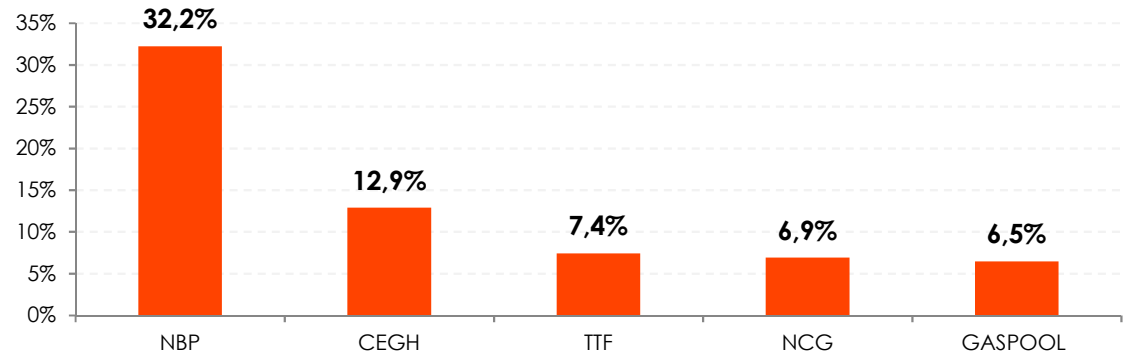
Withdrawal od the interim measures is subject to the simultaneous fulfilment of all three above mentioned market development criteria.

LEVEL OF MARKET LIQUIDITY

In Poland, the yearly average value of the short term churn ratio for the gas market operated by TGE for 2015 was 9.1%, and for the first 5 months of 2016 reached 14.6%. The yearly average value of the short term churn ratio for the gas market operated by TGE for 2016 was 14.2% and for the first 5 months of 2017 was 15.5%. The respective values for markets functioning in other balancing areas (including neighbouring markets such as GASPOOL and NCG) in 2013 are presented in Figure 27.

Figure 27. Short term churn ratio for selected gas markets in Europe, August 2013

Source: Data from individual exchange hubs and Centre for Research on Energy and Environmental Economics and



Policy, Balancing Systems and Flexibility Tools in European Gas Markets, Milan, February 2014

The market liquidity criterion which determines the possibility of the removal of interim measures for the high-methane gas balancing area has been fulfilled. Figure 21 presented in section 1.1.3 shows the increase in the short term churn ratio in the last quarter of 2015, which continued also in 2016 and first months of 2017, i.e. in the period when the interim measures were introduced. The application of interim measures supports the development of liquidity on the short term gas market.

PRODUCT AVAILABILITY

In short term wholesale gas markets in Poland trading takes place:

- for DAMg, every day from 09:00 a.m. until 03:30 p.m.;
- for IDMg, every day from 08:00 a.m. until 03:30 p.m.

Consequently, the product availability criterion which is the condition for the removal of interim measures for the KSP_E balancing area has not been met.

PRODUCT RELEVANCE

There are three major groups of standard products on the European short term wholesale gas markets: title products, locational products and specific-term products.

At the moment, only gas title products are offered in the short term gas market in Poland. In extraordinary situations such products may be insufficient for the balancing needs of GAZ-SYSTEM.

In view of the technical characteristics of the system, GAZ-SYSTEM needs in addition to title products, at least, products that would additionally indicate the physical location of the entry point to or exit point from the transmission system. It is important to point out that in TSO opinion, ensuring stable operation of transmission system and adequate network balancing by providing TSO with balancing products in the form of title products only, is highly impeded

considering the island nature of certain parts of the transmission system as well as taking into account the gas flows in the system. To provide the TSO with the necessary tools for balancing the transmission system, currently, locational products may only be available through the balancing platform (RUB) operated by the TSO.

Consequently, the product relevance criterion which is the condition for the removal of the balancing platform for the KSP_E balancing area has not been met.

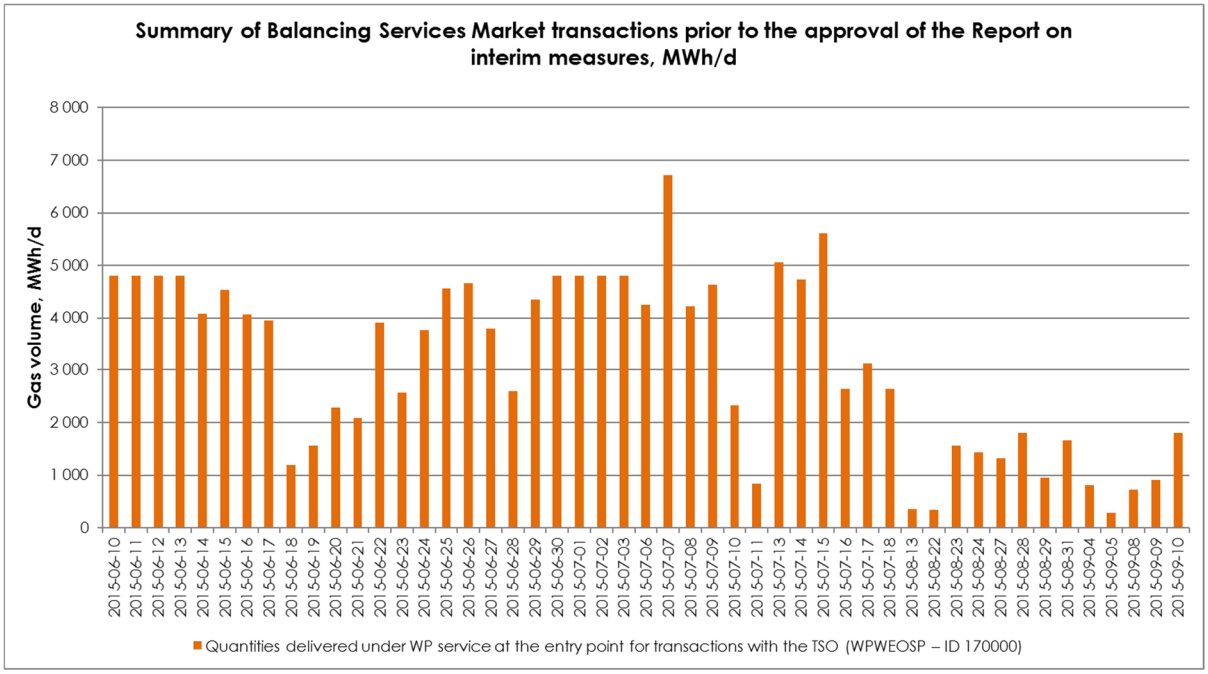
Out of 3 criteria which have to be fulfilled simultaneously in order for the interim measures to be removed according to the Report approved by the President of ERO, only one criterion has been fulfilled so far. Therefore in GAZ-SYSTEM opinion there is no ground for the decision to withdraw the interim measures.

2.1.2. Effectiveness of the interim measures

2.1.2.1. Balancing platform

During the period since the approval of the first Report (10 June 2015), WP system services were provided within the framework of the Balancing Services Market (gas off-take at the Virtual Entry Point $WPWE_{OSP}$). WP system service consists in the offtake of gas at the Virtual Entry Point ($WPWE_{OSP}$) by a Balancing Services Market Participant (URB). The performance of WP system services is shown in Figure 28.

Figure 28. Summary of Balancing Services Market transactions within the balancing area KSP_E.



The use of the Balancing Services Market for WP system services in the period between June and September 2015 was necessitated primarily by the inability of the TSO to sell excess gas quantities at TGE prior to 1 October 2015. In the period between 1 October 2015 and 31 May 2017 no transactions were concluded on the balancing services market (having regard to the fact that since 1 October 2016 the scope of the Balancing Services Market for KSP_E has been limited to entry points from the countries which are not EU members).

2.1.2.2. Tolerance

The level of tolerance is the maximum quantity of gas which may be bought or sold by each network user in the settlement of the imbalance at a weighted average price (CSRB). The daily imbalance quantity of each network user in excess of the tolerance level is sold at the marginal sell price (KCS) or purchased at the marginal buy price (KCK).

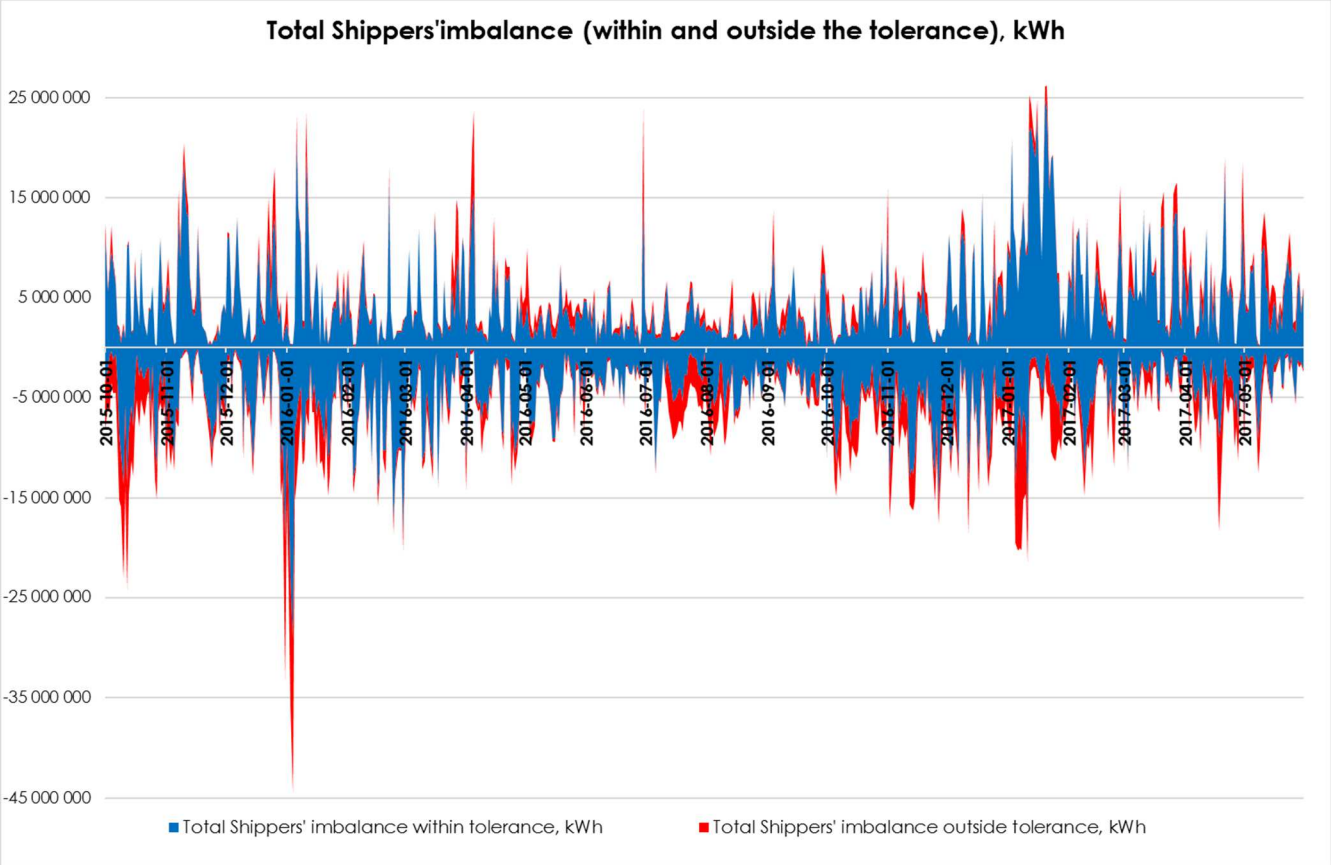
According to the Report approved in 2016, the tolerance for the high-methane gas balancing area for the gas year 2015/2016 is **5%**. According to the TNC, the tolerance is calculated according to the following formula:

$$\mathbf{DLN} = \mathbf{0,05} * \mathbf{MAX}\left[\frac{(\mathbf{R_{PWE}}+\mathbf{R_{PWY}})}{\mathbf{2}}; \mathbf{R_{PWY}}\right];$$

where R means the quantities of gas delivered/offtaken, as appropriate, at Entry/Exit Points (excluding virtual entry/exit points – Gas Exchange, OTC, Notifying Party, Balancing Services Market).

The analysis of shippers' imbalance within and outside the tolerance is shown in Figure 29.

Figure 29. Summary of shippers' negative and positive imbalance within and outside the tolerance: October 2015 – May 2017.



It may be noted that significant imbalance quantities fit within the acceptable 5% tolerance/daily imbalance limit (DLN). In January 2017 the increase of aggregated positive imbalance is observed, however only small imbalance quantites are outside tolerance.

The following figures, for the period October 2015 – May 2017, present the aggregated amounts received by shippers in the settlement of the imbalance of the gas retained in the transmission system and the aggregate charges paid by the shippers in settlement of the imbalance for the

gas withdrawn from the transmission system, taking into account 5% tolerance (i.e. settlement at CSRB price with respect to the imbalance within the tolerance limit and the settlement of the remaining imbalance quantities at marginal prices).

The application of tolerance as an interim measure reduces the exposure of network users to financial costs related to the application of a marginal sell or marginal buy price with respect to a part of or the entire daily imbalance quantity for a given gas day.

Figure 30. Aggregate amounts received by shippers in settlement of imbalance for gas remaining in the network: October 2015 – May2017.

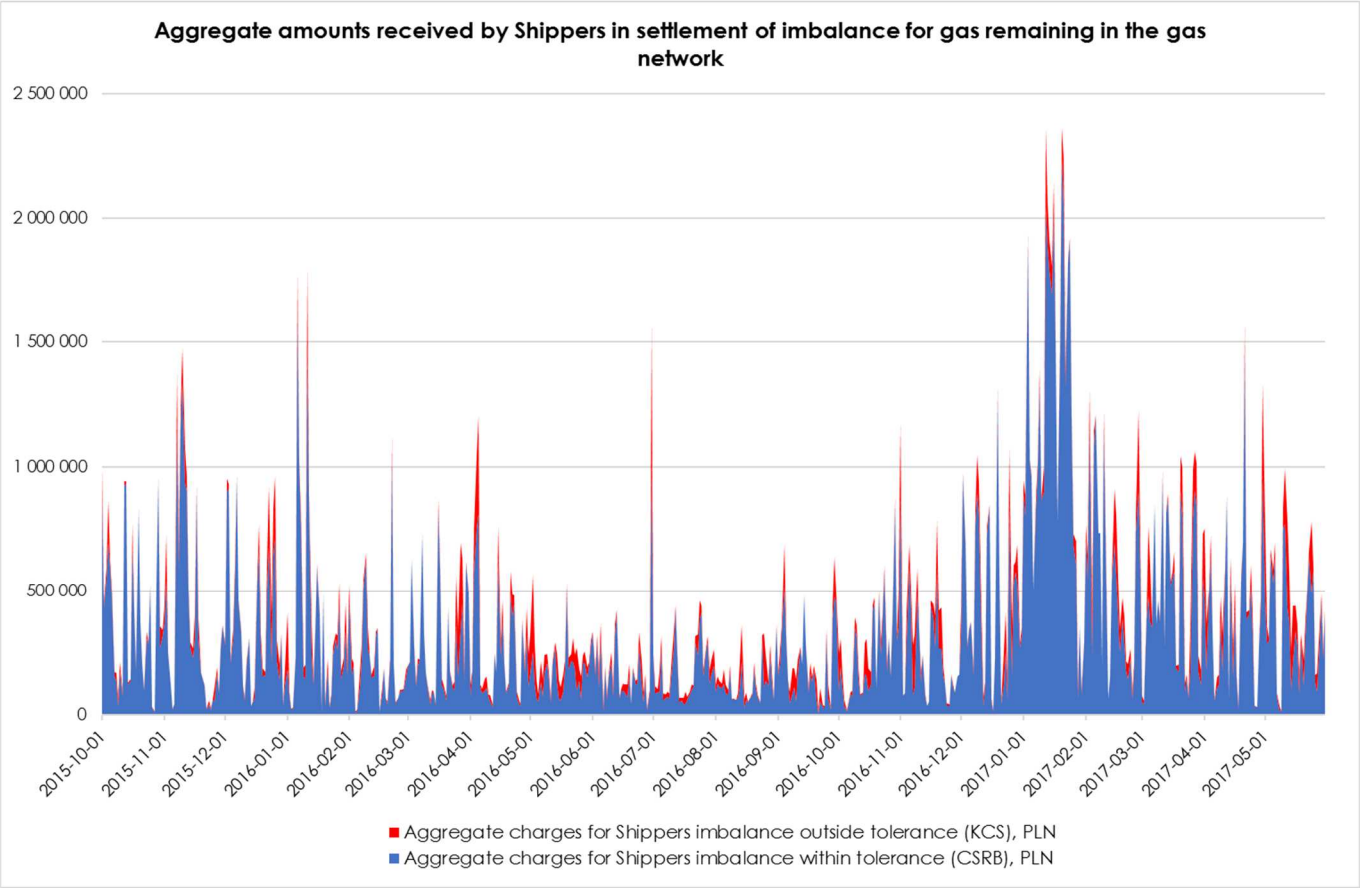
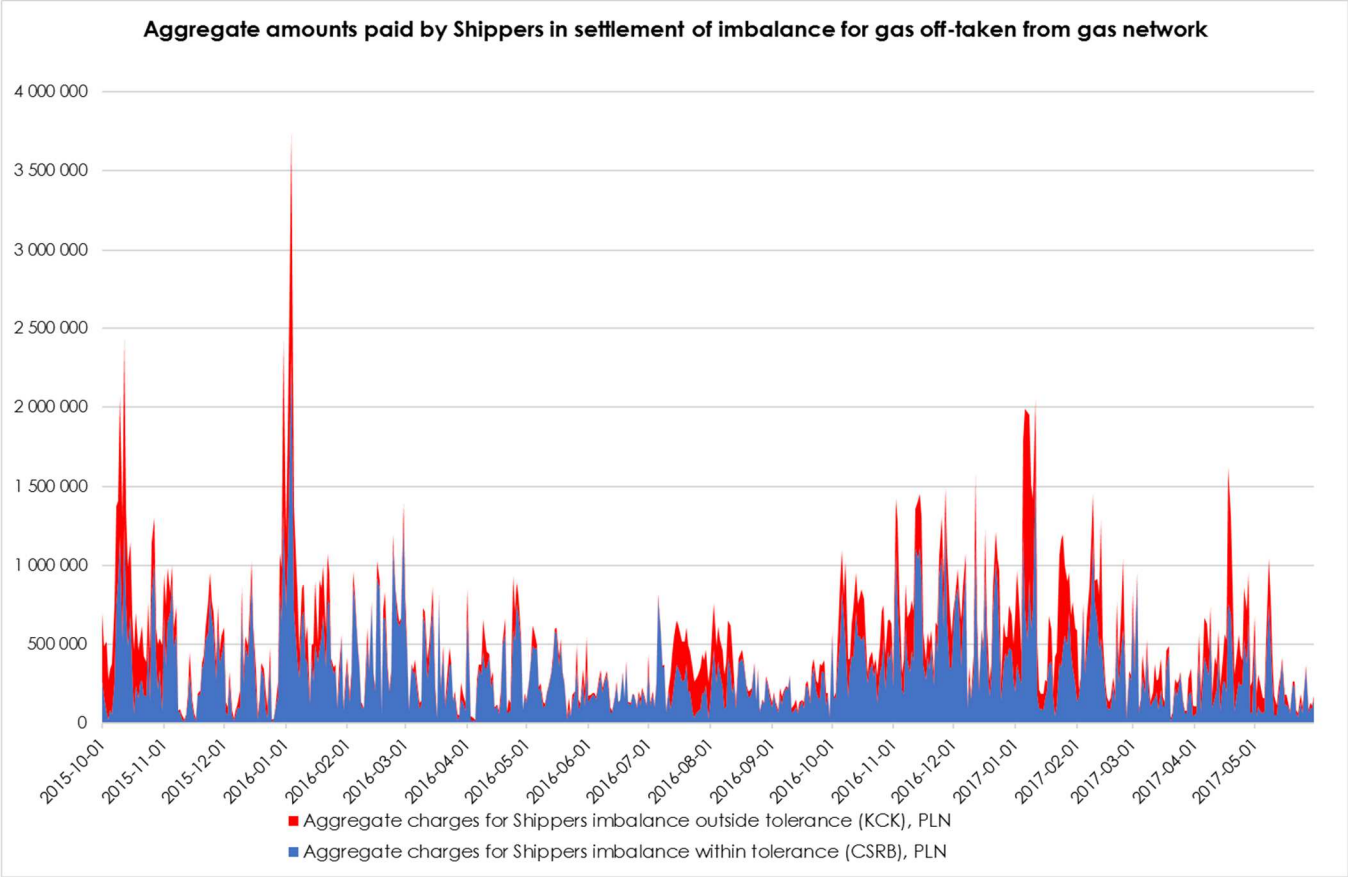


Figure31. Aggregate amounts paid by shippers in settlement of imbalance for gas off-taken from the network: October 2015 – May 2017.



As the charts show, the aggregate shippers' imbalance, and particularly the share of imbalance outside the tolerance limit (DLN) has been systematically decreasing in the beginning period after entry into force of the Regulation and implementation of interim measures. However, in the winter 2016/2017, a further increase of the aggregate shippers' imbalance is noticed. Considering the increase in the number of transactions and the volumes on the DAMg and IDMg (Figures 18 and 19), one can observe that market participants have been effective in applying market-driven instruments to reduce their imbalance. The increase in imbalance in the winter 2016/2017 is probably intended by shippers and it is a result of their policy. The financial settlement of the imbalance with the TSO is probably more beneficial to the Shippers than balancing their portfolio with the use of existing trading platforms or underground gas storage services.

2.1.3. Interim measures proposed for further application

Considering the above analysis of the development stage and liquidity of the wholesale gas market for short term transactions and the effectiveness of the interim measures and taking into consideration the comments received from market participants in the public consultations, the following interim measures are proposed for the balancing area KSP_E, i.e:

- balancing platform (Balancing Services Market) – in the range of locational products at the interconnection points with the adjacent TSOs located in the countries which are not EU members,

- tolerance - at the level of 5% (in the period from the day of the approval of this Report to 1st April 2018, 06:00), determined according to the following method:
  - $\mathbf{DLN = 0,05 * MAX\left[\frac{(R_{PWE}+R_{PWY})}{2}; R_{PWY}\right]}$;

  where R means the quantities of gas delivered/offtaken, as appropriate, at Entry/Exit Points (excluding virtual entry/exit points – Gas Exchange, OTC, Notifying Party, Balancing Services Market).
- tolerance - at the level of 2.5% (in the period from 1st April 2018, 06:00 to 1st April 2019, 06:00), determined according to the following method:
  - $\mathbf{DLN = 0,025 * MAX\left[\frac{(R_{PWE}+R_{PWY})}{2}; R_{PWY}\right]}$;

  where R means the quantities of gas delivered/offtaken, as appropriate, at Entry/Exit Points (excluding virtual entry/exit points – Gas Exchange, OTC, Notifying Party, Balancing Services Market).

For the evaluation of the possibility for the removal of interim measures in the balancing area KSP_E, the following criteria will apply:

- The level of short term market liquidity – the achievement of a stable level of liquidity of the short-term market at a level similar to the neighboring markets,
- The availability of short term products on a trading platform – the possibility of trading on short term markets (DAMg and IDMg) for up to 22 hours, 7 days a week, which will enable liquid balancing throughout the gas day,
- The availability of locational products offered on the trading platform, i.e. products which additionally indicate the physical location of the entry point to or the exit point from the transmission system (for the balancing needs of GAZ-SYSTEM).

Withdrawal od the interim measures is subject to the simultaneous fulfilment of all three above mentioned market development criteria.

2.1.4. The assessment of the impact of the interim measures on the liquidity of the short term wholesale gas market

According to GAZ-SYSTEM, continued existence of the Balancing Services Market will enhance the safety of transmission system balancing without any adverse impact on the liquidity of the wholesale market. The application of a balancing platform as an interim measure will enable more efficient functioning of the gas system thanks to the access to locational products available on market terms, which are indispensable in the process of physical balancing in case of a sudden shortage/surplus of gas in the selected fragments of transmission network.

The continuous application of a tolerance mechanism for daily imbalance quantities will facilitate the functioning of both the current and new players on the natural gas market. It will ensure a smooth transition from the regime prevailing in the transmission system before the entry into force of BAL NC to the target model envisaged in this Regulation. Thanks to the application of the interim measures the players that only recently entered the gas market (this applies to the majority of players currently operating on the wholesale gas market in Poland) according to the existing principles will be able to continue their operations on the market without any adverse effects. The transition period will afford those players the time required to adapt to new balancing mechanisms and to work out adequate operating procedures. The proposed

interim measure in the form of imbalance tolerance means that balancing charges are not collected within the limits of predefined tolerance, and the settlements with the TSO are limited to the payments for gas sold/purchased at the average market price, which may provide an additional incentive for new players entering the market, such as end consumers that so far have had their gas delivered to a specific exit point and willing to purchase gas at the exchange. The continuation of tolerance as the interim measure could have a direct influence on the development of wholesale gas market as the mechanisms proposed in this Report could significantly reduce the barriers to entry to the Polish gas market. At the same time, the proposed method of establishing the tolerance level will encourage more effective use of short-term markets at the gas exchange in the balancing actions undertaken with respect to transmission contracts.

Summing up, the proposed interim measures will have a substantial and positive impact on the liquidity of the wholesale market.

2.1.5. Steps planned to be taken with a view to the removal of interim measures and the related timing

In the opinion of GAZ-SYSTEM, in order to create conditions enabling the removal of interim measures in the balancing area KSP_E, it is necessary to take the following steps:

1. Extend the hours of short term gas trading at TGE;
2. Introduce locational products at the trading platforms;

EXTENDED THE HOURS OF SHORT TERM GAS TRADING

Currently, the trade at short term gas markets operated by TGE is only possible from 8:00 a.m. till 03:30 p.m. (for 7.5 hours per day). Such a short availability time of the marketplace will not guarantee the possibility of effective balancing actions neither for the Transmission System Operator nor for shippers in any time during a gas day. Consequently, longer trading hours at TGE's short term gas market would improve the safety of physical balancing carried out by the transmission system operator and offer shippers greater availability of commercial balancing tools. The TSO is taking intensive efforts to improve the efficiency and reliability of the cooperation with TGE, including, among other things, data exchange, to enable undisturbed interoperation along with development of the gas market. The actions taken by GAZ-SYSTEM in this regard may provide a strong stimulus to further development of the short term market. The extended scope of information to be published according to the requirements of BAL NC seems to be an additional factor influencing the potential growth of this market. Along with the continuation with theimbalance tolerance at the current level of 5%, this will be both an enabler and incentive for market participants to increasingly leverage the potential of the short term market as an instrument minimizing the imbalance of individual shippers. Since 1 October 2015, GAZ-SYSTEM has enjoyed the right to sell gas on the short term market, which has already influenced and will undoubtedly continue to influence further development of this market.

Until the moment when TGE implements appropriate rules to enable gas trading on short term markets at least 22 hours during a gas day for 7 days per week, GAZ-SYSTEM plans to maintain thetolerance as interim measure but in any case, not longer than until 16 April 2019.

INTRODUCTION OF LOCATIONAL PRODUCTS

At the moment, the trading options available in the short term gas markets operated by TGE are limited to gas title products. Title products do not enable physical balancing of transmission system areas covering the zones supplied from points such as Tietierowka. It should be indicated that locational products are necessary for the TSO, they ensure a possibility of balancing the transmission system through providing a delivery (or offtake) of gaseous fuel in specific physical points in the transmission system. This applies especially to island areas and points on the eastern border such as Wysokoje or Drozdowicze, where the TSO does not have alternative tools to balancing the deliveries and offtakes of gaseous fuel. Considering the above, the introduction of locational products in the TGE's short term gas market would enhance the safety of the transmission system. An alternative solution to locational products at points of entry at interconnections with transmission systems in EU member states, could consist in the possibility of gas trading within the neighbouring balancing areas with the consent of the regulatory authority (futures).

Until the moment when TGE introduces locational products and appropriate availability of offers is ensured, GAZ-SYSTEM plans to maintain the Balancing Services Market in the range of locational products at the interconnection points with the adjacent TSOs located in the countries which are not EU members as an interim measure, but in any case not beyond 16 April 2019.

SCHEDULE OF THE STEPS THAT WILL BE TAKEN TO REMOVE THE INTERIM MEASURES

GAZ-SYSTEM will annually assess the effects of the functioning of individual interim measures and the conditions for their application. The results of the assessment will be presented to the President of the Energy Regulatory Office in accordance with the procedure set out in Article 46(3) of the Regulation. The estimated timetable for GAZ-SYSTEM actions to remove interim measures in high-methane gas system is presented in the following table:

Term	Actions taken
Till V 2018	– Arrangements with TGE aimed at increasing the availability for the pursuit of short-term gas trading on the gas exchange in a broader spectrum of time; – Arrangements with TGE in order to launch locational products at the gas exchange, ie. products transferring ownership of the gas in a specific location (entry point or exit point); – Submission of the updated Report to the President of the Energy Regulatory Office.

2.2. TGPS balancing area

2.2.1. Criteria for removal of interim measures

According to the approved "Report on the Interim Measures Planned for the Implementation by GAZ-SYSTEM in connection with the entry into force of Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks" the following interim measures are applied within the TGPS balancing area.

– balancing platform

– interim imbalance charge.

According to the approved Report, the potential removal of an interim measure will be assessed based on the following criteria:

– Level of short term churn ratio/market liquidity for the TGPS;

– Availability of short term products in the TGPS;

The removal of interim measures will be possible when both of the above mentioned market development criteria are simultaneously fulfilled.

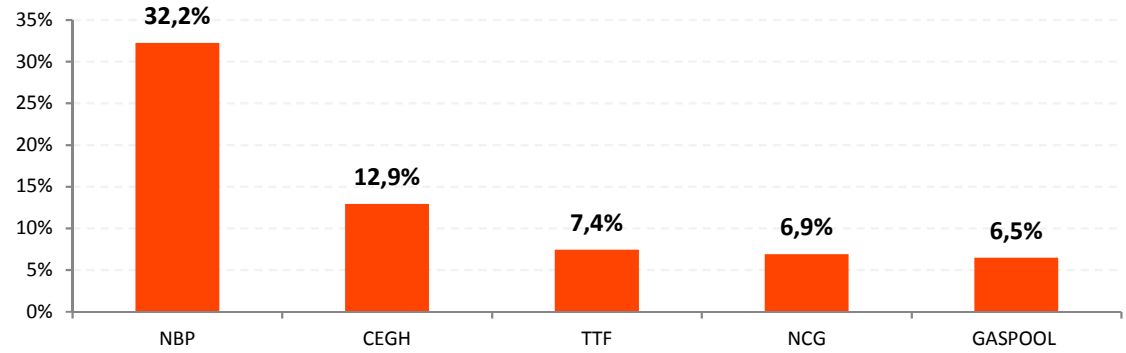
LEVEL OF MARKET LIQUIDITY

The level of liquidity of wholesale gas markets is described by the means of a short-term churn ratio.

The yearly average values of the short-term churn ratio for markets functioning in other balancing areas (including neighbouring markets such as GASPOOL and NCG) are presented in Figure 32.

Figure 32. Short-term churn ratio for selected gas markets in Europe, August 2013

Source: Data from individual exchange hubs and Centre for Research on Energy and Environmental



Economics and Policy, Balancing Systems and Flexibility Tools in European Gas Markets, Milan, February 2014

In view of the above, GAZ-SYSTEM suggests that the removal of the interim measure from the Transit Gas Pipeline System be made conditional on the achievement of a yearly value of the short-term churn ration at a level comparable to the neighbouring markets.

Currently there is no possibility to calculate the value of the short-term churn ratio in TGPS – there was no transaction executed at the short-term gas market in TGPS in the period from March to May 2017.

PRODUCT AVAILABILITY

The most liquid short-term gas markets in the EU enable trading in short-term products for nearly 22 hours 7 days a week (a technical break usually lasts for around 2 hours). The absence of major breaks in gas trading enables smooth balancing by Shippers and TSOs throughout the gas day.

In view of the above, GAZ-SYSTEM suggests that the removal of the interim measure from the TGPS balancing area be made conditional prolonging the time of trading on short-term markets (DAM and IDM) to 22 hours and 7 days a week.

From March2016 the trade on short-term wholesale gas market in the balancing area of TGPS can be conducted in the framework of DAMg every day from 9:00 to 15:30.

Taking the above into account, the criterion of product availability conditioning the possibility of withdrawal of interim measures for the balancing area TGPS was not met.

Due to the lack of shippers' activity on the TGPS short term market, the criteria for removal of interim measures have not been fulfilled.

2.2.2. Effectiveness of the interim measures

2.2.2.1. Balancing platform

On 1 March 2016, along with the approval of the amended Transmission Network Code for the Polish Section of the Transmission Gas Pipeline System Yamal-Europe, a balancing platform (Balancing Services Market) was launched in the TGPS (owing to the creation of a virtual point).

The agreement for the participation in the Balancing Services Market for the TGPS has been signed by 2 entities. In view of the lack of shipper imbalance, there was no demand for system services within the Balancing Services Market. Consequently no offer was made nor accepted on the Balancing Services Market for the TGPS.

2.2.2.2. Interim imbalance charge

In the period from 1 October 2015 until May 2017, no imbalance occurred during the performance of transmission contracts. All users submitted balanced nominations in the TGPS (quantities nominated at entry points equal to quantities nominated at exit points), and therefore did not cause any imbalance.

According to the Report approved in 2016 and TNC for TGPS, the interim imbalance charge within the TGPS balancing area provides for a price spread mechanism with prices determined based on market indices for the day-ahead markets at TGE (RDN_{TGE}) and EEX (RDN_{EEX}) plus the costs of gas transmission (under the daily product on the firm basis) through the Mallnow point to the TGPS (KP_M) and the IP with the TGPS(KP_{PWP}) in a way which prevents price arbitrage between EEX and TGE on the one hand and the trading platform functioning within the TGPS. The marginal prices are set on the basis of the following formulas:

- Marginal sell price (KCS_{SGT}):

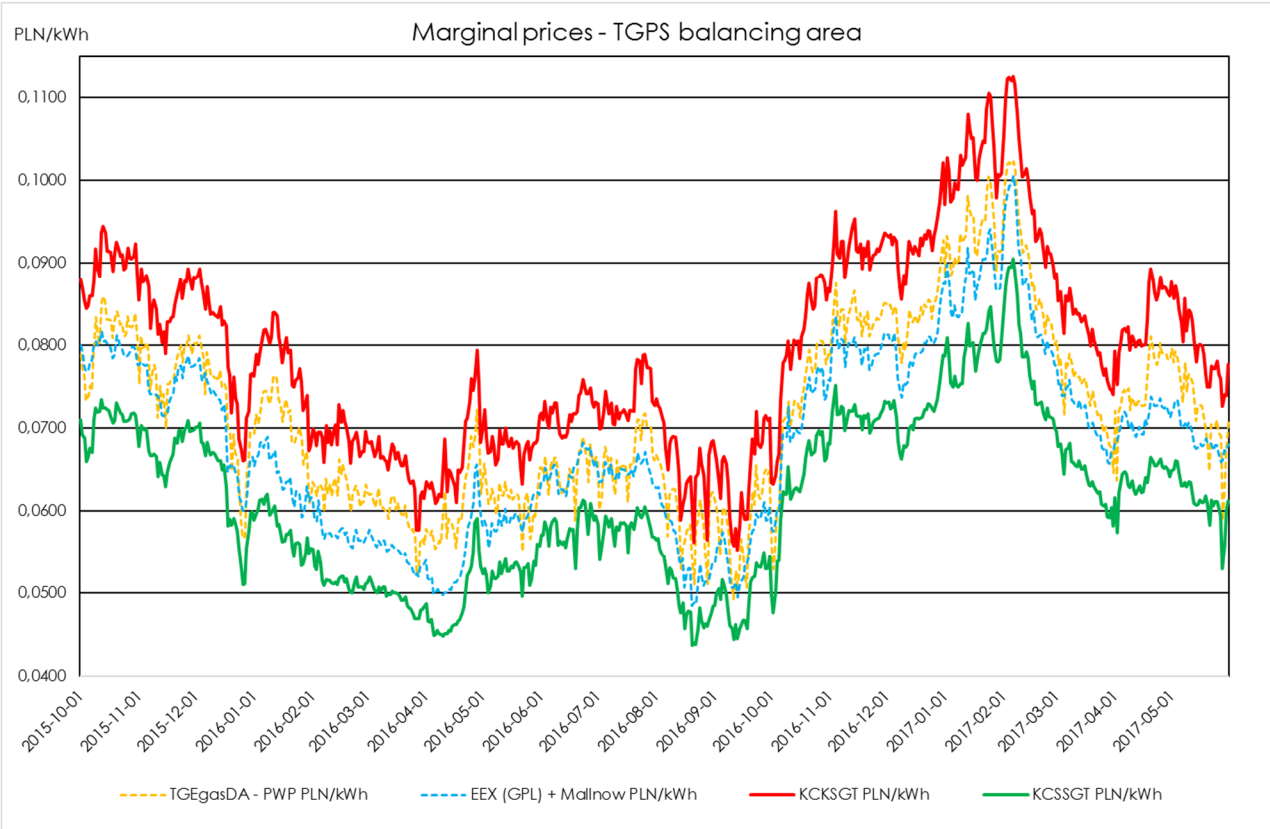
$$\mathrm{KCS_{SGT}} = \min[(\mathrm{RDN_{TGE}} - \mathrm{KP_{PWP}}), (\mathrm{RDN_{EEX}} + \mathrm{KP_{M}})] \cdot 0{,}9$$

- Marginal buy price (KCS_{SGT}):

$$\mathrm{KCK_{SGT}} = \max[(\mathrm{RDN_{TGE}} - \mathrm{KP_{PWP}}), (\mathrm{RDN_{EEX}} + \mathrm{KP_{M}})] \cdot 1{,}1$$

The development of marginal prices for the TGPS area since 1 October 2015 is presented in Figure 33.

Figure 33. Marginal prices for the TGPS balancing area in the period October 2015 – May 2017.



The interim imbalance charge approved by the President of ERO was set at a level which motivates shippers to balance their transmission contracts. It is an effective interim measure, and is adequate for the current stage of market development.

2.2.3. Interim measures proposed for further application

Considering the above analysis of the development stage and liquidity of the wholesale gas market for short term transactions and the effectiveness of the interim measures, it is proposed that the currently applicable interim measures for the TGPS balancing area be maintained, i.e:

- balancing platform (Balancing Services Market),
- interim imbalance charge providing for the mechanism of marginal prices set on the basis of indices of day ahead market at TGE (DAM_{TGE}) and EEX (DAM_{EEX}) and the transportation costs (under the daily product on a firm basis) to TGPS throught the Mallnow point (KP_M)and through PWP from TGPS (KP_{PWP}) so as to avoid speculation on the price difference between EEX and TGE and trading platform functioning in the TGPS.

The marginal prices are set in the following way:

- Marginal sell price (KCS_{SGT}):

$$\mathrm{KCS_{SGT}} = \min[(\mathrm{DAM_{TGE}} - \mathrm{KP_{PWP}}), (\mathrm{DAM_{EEX}} + \mathrm{KP_M})] \cdot 0{,}9$$

- Marginal buy price (KCK_{SGT}):

$$\mathrm{KCK_{SGT}} = \max[(\mathrm{DAM_{TGE}} - \mathrm{KP_{PWP}}), (\mathrm{DAM_{EEX}} + \mathrm{KP_M})] \cdot 1{,}1$$

Where:

DAM_{TGE} – a volume-weighted average price from all transactions of TGE session of Day Ahead Market

DAM_{EEX}- – a volume-weighted average price from all transactions of EEX session of Day Ahead Market (Daily Reference Price – GPL)

KP_{PWP} – transportation costs under the daily product on a firm basis from TGPS to KSP through PWP

KP_{M} - transportation costs under the daily product on a firm basis to TGPS through Mallnow point.

The exchange rate to be used for currency conversion is the average exchange rate according to Table A of the National Bank of Poland for the day preceding the gas day the price relates to.

For the evaluation of the possibility for the removal of interim measures in the TGPS balancing area, the following criteria will be used:

- The level of the TGPS short term market liquidity – the achievement of the yearly short term churn ratio at a level comparable to the neighbouring markets presented in Figure 32,
- The availability of short term products for the TGPS on a trading platform – the possibility of trading on short term markets (DAMg and IDMg) for up to 22 hours, 7 days a week, which will enable liquid balancing throughout the gas day.

Withdrawal od the interim measures is subject to the simultaneous fulfilment of the two above mentioned market development criteria..

2.2.4. The assessment of the impact of the interim measures on the liquidity of the short term wholesale gas market

In the absence of a functioning short-term gas market in the area of TGPS, in the assessment of GAZ-SYSTEM, the continuation of RUB will increase the safety of balancing the transmission system. Despite the introduction of DAMg on the TGE, which is a big step towards increasing the liquidity of short-term gas marketin TGPS balancing area, no transaction was executed on TGE within the area of TGPS so far. Therefore, it is necessary to continue the interim measures in the form of RUB as well as interim imbalance charge. The use of interim imbalance charge referred to the market prices in neighboring balancing areas will enable to apply the mechanism of objective evaluation of the potential imbalance.

2.2.5. Steps planned to be taken with a view to the removal of interim measures and the related timing

As of 1 March 2016, a virtual point and a trading platform were launched, which enables short term trading. At the moment, TGE offers the possibility of transacting on the Day-Ahead Market for the TGPS balancing area. Even though no transaction was concluded on this market yet, the interest in the opportunities offered by the trading platform for the TGPS area is slowly growing. This is indicated by the transmission ability allocations made for entry/exit points at shippers' request with respect to transactions concluded at TGE and the registration of first shippers on the trading platform for the TGPS balancing area. With the conditions for the operation and development of the short term gas market in the TGPS balancing area created

by GAZ-SYSTEM, the products dedicated to TGPS traded at TGE will become equally popular as those currently traded at TGE for the KSP_E balancing area. The development of the short-trm gas market in TGPS would enable the removal of the interim imbalance charge. The trade in TGPS instruments at TGE is currently scheduled between 9:00 a.m and 03.30 p.m. This is a short time period, which will not be sufficient to enable effective balancing actions neither by the TSO nor by the shippers.

Consequently, longer availability of short term trading on the trading platform dedicated to the TGPS, including the launch of an Intra-Day Market for the TGPS balancing area, would improve the safety of physical balancing carried out by the Transmission System Operator and improve the availability of commercial balancing tools for the shippers.

Until round-the-clock gas trading is enabled on short term markets with respect to the TGPS area, GAZ-SYSTEM plans to maintain the interim imbalance charge and the Balancing Services Market as interim measures for the TGPS balancing area, but in any case not longer than until 16 April 2019.

SCHEDULE OF THE STEPS THAT WILL BE TAKEN TO REMOVE THE INTERIM MEASURES

GAZ-SYSTEM will annually assess the effects of the functioning of individual interim measures and the conditions for their application. The results of the assessment will be presented to the President of the Energy Regulatory Office in accordance with the procedure set out in Article 46(3) of the Regulation. The estimated timetable for GAZ-SYSTEM actions to remove interim measures in TGPS is presented in the following table:

Term	Actions taken
X 2017 – III 2018	– Work on the target imbalance settlement model, including the analysis of the possibility of introducing within day obligations.
III 2018	– Publication of the methodology and assumptions referred to in Article 26 paragraph 4 of BAL NC in case of decision on the introduction of within day obligations.
Till V 2018	– Arrangements with TGE aimed at increasing the availability for the pursuit of short-term gas trading on the gas exchange in a broader spectrum of time; – Submission of the updated Report to the President of the Energy Regulatory Office.
IX 2018	– Submission to the President of the Energy Regulatory Office of the updated TNC with the recommended within day obligations.
IV 2019	– Start of application of within day obligations.

2.3. The balancing area of the national transmission system for low-methane gas KSP_{Lw}

2.3.1. Criteria for removal of interim measures

According to the approved "Report on the Interim Measures Planned for the Implementation by GAZ-SYSTEM in connection with the entry into force of Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks" the following interim measures are applied within the balancing area KSP_{Lw}.

- balancing platform
- interim imbalance charge.

For the evaluation of the possibility for the removal of interim measures in the balancing area KSP_{LW}, the following criteria will apply:

- The level of short term market liquidity – the achievement of a stable level of liquidity of the short-term market at a level similar to the neighboring markets;
- The availability of short term products in the range of low-methane gas on a trading platform – the possibility of trading on short term markets (DAMg and IDMg) for up to 22 hours, 7 days a week, which will enable liquid balancing throughout the gas day;
- The availability of locational products in the range of low-methane gas offered on the trading platform, i.e. products which additionally indicate the physical location of the entry point to or the exit point from the transmission system (at least for the balancing needs of GAZ-SYSTEM).

Withdrawal od the interim measures is subject to the simultaneous fulfilment of all three above mentioned market development criteria.

2.3.2. Effectiveness of the interim measures

2.3.2.1. Balancing platform

On 1 March 2016, along with the approval of the Transmission Network Code, a balancing platform was put into operation within the balancing area for low-methane (Lw) gas (through the creation of a virtual point).

However, not a single agreement for the participation in the Balancing Services Market with respect to KSP_{Lw} area had been concluded yet. For this reason, it is not possible to assess the effectiveness of the interim measure in the form of a balancing services market in the balancing area KSP_{Lw}.

2.3.2.2. Interim imbalance charge

According to the Report approved in 2016, the interim imbalance charge applicable in the KSP_{Lw} balancing area provides a spread pricing mechanism based on a price derived from transactions concluded on the balancing platform. The marginal sell price is set as the lower of the following variables:

- The lowest price from transactions concluded on the Balancing Services Market for gas day n;

– The weighted average price of gas in transactions concluded on the Balancing Services Market for gas day n, minus10%.

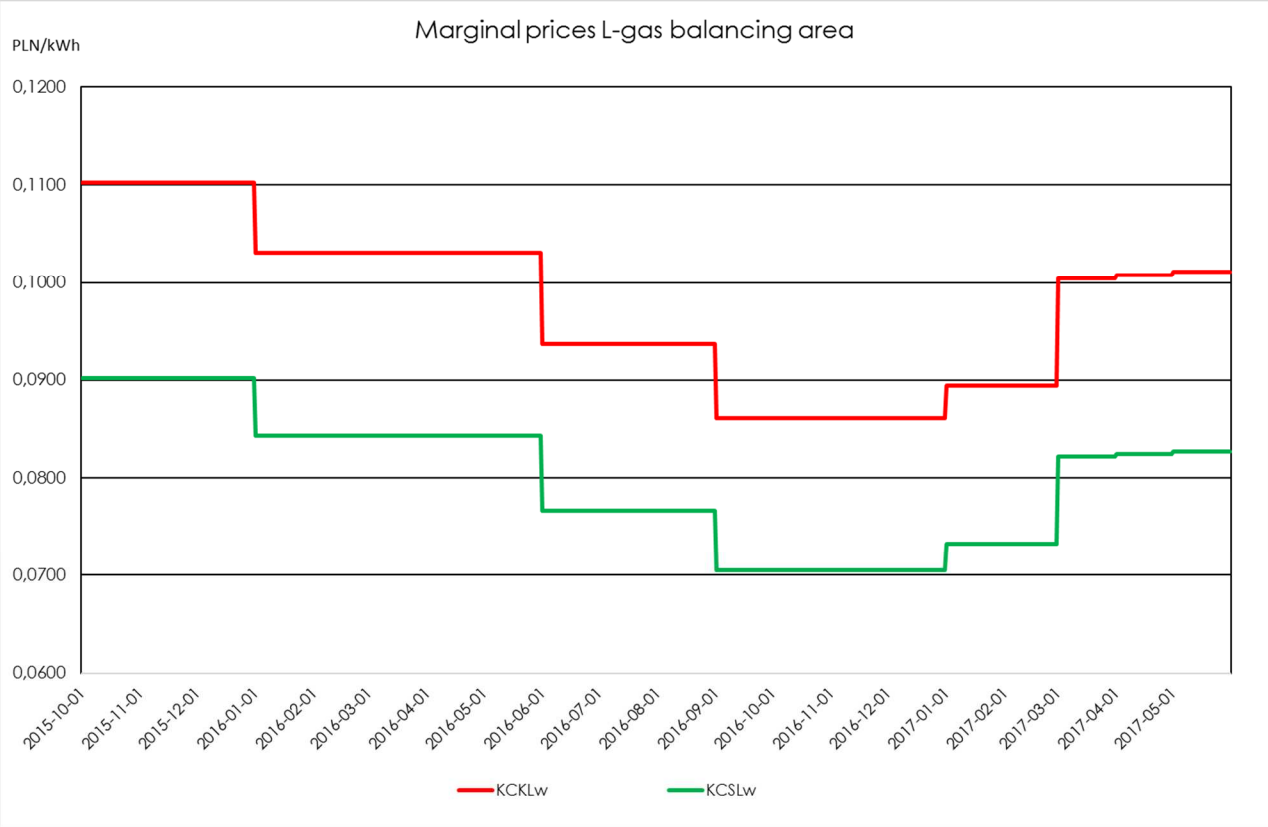
Meanwhile, the marginal buy price is the higher of the following variables:

– The highest price from transactions concluded on the Balancing Services Market for gas day n;
– The weighted average price of gas in transactions concluded on the Balancing Services Market for gas day n, plus 10 %.

In case when no transactions are concluded on the Balancing Services Market with respect to the gas day, the prices established for the previous gas day apply. According to the TNC, until the moment when the first transaction is concluded on the Balancing Services Market, the Reference Gas Price (CRG) for low-methane (Lw) gas is applied as the weighted average price of gas.

The marginal prices for the KSP_{Lw} area calculated based on CRG as the weighted average price of gas (because of the lack of transactions on the Balancing Services Market) are presented in Figure 34.

Figure 34. Marginal prices for the KSP_{Lw} balancing area in the period October 2015 –May 2017.



2.3.3. Interim measures proposed for further application

Considering the above analysis of the development stage and liquidity of the wholesale gas market for short term transactions and the effectiveness of the interim measures, it is proposed that the currently applicable interim measures for the KSP_{Lw} balancing area be maintained, i.e:

– balancing platform (Balancing Services Market)

– interim imbalance charge, providing for the mechanism of marginal prices set on the basis of transactions executed at the balancing platform.

Marginal sell price is determined as the lower of the two following prices:

– lowest price recorded in transactions concluded on the Balancing Services Market for low-methane gas balancing area,
– weighted average price of gaseous fuel in transactions concluded on the Balancing Services Market in respect to that gas day, reduced by 10%.

Marginal buy price is determined as the higher of the two following prices:

– highest price recorded in transactions concluded on the Balancing Services Market for low-methane gas balancing area,
– weighted average price of gaseous fuel in transactions concluded on the Balancing Services Market in respect to that gas day, plus 10%.

In the absence of transactions on the Balancing Services Market in the low-methane gas balancing area in the given gas day, the prices from the previous gas day shall apply. By the time of making the first transaction on the Balancing Services Market in the low-methane gas balancing area, CRG_{LW} is assumed as the weighted average price of gaseous fuel for determining the marginal prices in KSP_{LW}.

For the evaluation of the possibility for the removal of interim measures in the balancing area KSP_{LW}, the following criteria will apply:

– The level of short term market liquidity – the achievement of a stable level of liquidity of the short-term market at a level similar to the neighboring markets;
– The availability of short term products in the range of low-methane gas on a trading platform – the possibility of trading on short term markets (DAMg and IDMg) for up to 22 hours, 7 days a week, which will enable liquid balancing throughout the gas day;
– The availability of locational products in the range of low-methane gas offered on the trading platform, i.e. products which additionally indicate the physical location of the entry point to or the exit point from the transmission system (for the balancing needs of GAZ-SYSTEM).

Withdrawal od the interim measures is subject to the simultaneous fulfilment of all three above mentioned market development criteria.

2.3.4. The assessment of the impact of the interim measures on the liquidity of the short term wholesale gas market

In the absence of a functioning short-term gas market in the low-methane gas balancing area, in the assessment of GAZ-SYSTEM, the continuation of RUB will increase the safety of balancing the transmission system and determines the potential settlement of imbalance on a market basis. Similarly, the use of interim imbalance charge referred to the transactions on RUB will enable to apply the mechanism of objective evaluation of the potential imbalance.

2.3.5. Steps planned to be taken with a view to the removal of interim measures and the related timing

As of 1 March 2016, a virtual point was put into operation, which enables the conclusion of title transactions (under OTC transactions).

In view of the specific nature of the low-methane gas balancing area (Lw), considering the lack of interest among active shippers in title transactions, in the TSO assessment the creation of a trading platform for this area will not stimulate significantly the short term market liquidity. In the low-methane (Lw) gas system, all the gas sources are currently controlled by a single supplier and as long as other gas supply sources do not enter the market, in the TSO assessment the creation of a liquid gas market will be extremely difficult to achieve.

The interim measures are necessary within this area due to the non-applicability of the target solutions resulting from the BAL NC. Therefore, taking into account the annual review of the validity of the interim measures, GAZ-SYSTEM envisages their use in the balancing area KSP_{Lw} in the maximum long term, ie. Until 16 April 2019.

SCHEDULE OF THE STEPS THAT WILL BE TAKEN TO REMOVE THE INTERIM MEASURES

GAZ-SYSTEM will annually assess the effects of the functioning of individual interim measures and the conditions for their application. The results of the assessment will be presented to the President of the Energy Regulatory Office in accordance with the procedure set out in Article 46(3) of the Regulation. The estimated timetable for GAZ-SYSTEM actions to remove interim measures in low-methane gas balancing area is presented in the following table:

Term	Actions taken
X 2017 – III 2018	– Work on the target imbalance settlement model, including the analysis of the possibility of introducing within day obligations.
III 2018	– Publication of the methodology and assumptions referred to in Article 26 paragraph 4 of BAL NC in case of decision on the introduction of within day obligations.
Till V 2018	– Arrangements with TGE in order to launch short-term market at gas exchange, under which it will be possible to acquire low-methane gas; – Submission of the updated Report to the President of the Energy Regulatory Office.
IX 2018	– Submission to the President of the Energy Regulatory Office of the updated TNC with the recommended within day obligations.
IV 2019	– Start of application of within day obligations.

3. Conclusion

Our analysis confirms the systematic development of short term gas market within the KSP_E balancing area for high-methane gas since the entry of the BAL NC into force and the implementation of interim measures.

Therefore, the analysis results presented in this Report confirm that the primary objective for the implementation of interim measures, i.e. increasing the liquidity of wholesale gas market for short term transactions, has been achieved. This is especially evidenced by the increase of the short-term churn ratio. Under the BAL NC, balancing actions taken by the transmission system

operator in case when the interim measures are applied, should improve, as far as possible, the liquidity of the wholesale gas market for short term transactions. The presented data confirm this principle.

However, given that the criteria for the removal of interim measures in the KSP_E area have not been fulfilled, GAZ-SYSTEM proposes that the interim measures be upheld, and specifically: the balancing platform in the range of locational products at the interconnection points with the adjacent TSOs located in the countries which are not EU members and the tolerance at the levels specified in section 2.1.3).

For the low-methane gas balancing area (KSP_{Lw}) and the TGPS balancing area, it should be pointed out, that the actions taken by the TSO, ie the launch of virtual points and the cooperation with the gas exchange (for the TGPS balancing area) are the first step towards the creation of a short term gas market in these areas. Nevertheless, until the gas markets in both these areas can be considered competitive and liquid, it is necessary to provide the TSO with adequate network balancing mechanisms. Therefore, the continuation of the currently applicable interim measures, i.e. the balancing platform and the interim imbalance charge (in accordance with section 2.2.3 and 2.3.3) is in the TSO's assessment necessary. In addition, it should be pointed out, that the continuation of these measures, in the TSO's assessment, will favor this further development of the liquid short-term gas market in both balancing areas, as they ensure the safety and stability of gas supply.