



South Gas Regional Initiative

Balancing regime in the Region

October 2015 to September 2017

10th September 2018

Disclaimer

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1. Background

The South Gas Regional Initiative (‘SGRI’) has developed Work Plans since 2011 in order to facilitate the compliance with the provisions of the EU 3rd Package and to promote the early implementation of Network Codes. The Work Plan for 2017-2018 focuses its attention on monitoring the implementation and performance supervision of Network Codes (‘NC’), in particular, the balancing NC.

The European Commission adopted the Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks. The balancing NC sets out gas balancing rules, including network-related rules on nomination procedures, imbalance charges, settlement processes associated with the daily imbalance charge and operational balancing between transmission system operators’ networks.

The Code seeks to improve the economic efficiency by shifting the responsibility of balancing from monopoly agents, namely the Technical System Manager, to individual network users and developing the corresponding market-based mechanisms.

The present report, which is the second target of the Work Plan 2017-2018, aims at describing, assessing and drawing learnings from the implementation of the balancing NC in the three countries of the Region. The timeframe of analysis covers from the entry into force of the regulation of balancing in each country of the South Region to September 2017, namely, from 1st October 2015 to 30th of September 2017 in France and from 1st of October 2016 to 30th of September 2017 in Portugal and Spain.

The aim of the report is to provide an in-depth analysis of the functioning of balancing regimes in the three countries encompassed in South Region, taking into account the particularities of each country and assessing if there is room for further cross-border cooperation in the implementation. In no case, it tries to duplicate the content of the ACER IMR on balancing report. On the contrary, it seeks to complement the information, conclusions and findings of the ACER IMRs and deepen knowledge of those regulatory areas.

This report has been done jointly by the National Regulatory Authorities: Comisión Nacional de los Mercados y la Competencia (CNMC), Commission de Régulation de



l'Energie (CRE) and Entidade Reguladora dos Serviços Energéticos (ERSE); and the Transmission System Operators: ENAGAS, TERÉGA, GRTgaz and REN.

2. Description of the balancing regimes in place

The Commission Regulation (EU) No 312/2014 establishing a Network Code on Gas Balancing of Transmission Networks was passed on 26 of March 2014. The idea behind the Code is to introduce a market-based approach for balancing operations to gain economic efficiency. If each shipper is close to balance, the network should overall be close to balance. If the system is not sufficiently close to balance or whenever flow patterns envisaged by the network users cannot be accommodated in the system, then the TSO intervenes as a residual player. The Code promotes the creation of markets that allows both TSOs to procure balancing services from network users and network users to trade imbalance positions. In Spain, the biggest TSO (ENAGAS) is the TSO in charge of making balancing actions (Technical System Manager, TSM). To ensure that network users are able to balance their accounts, network users require: a) information provided by the Technical System Manager (TSM) in Spain, or by TSOs in France and Portugal, about the overall network status, the balancing actions and their portfolio information, b) access to flexible gas via physical flexibility (LNG and storage facilities) or via trading arrangements (VTP or trading platforms/exchanges) and c) access to network flexibility.

The balancing NC entered into force by 1st October 2015 in France and by 1st October 2016 in Spain and Portugal prior to the TSOs' request of a deferral.

With regard to the balancing areas in the Region, the contractual architecture of the gas system in France has been progressively simplified from seven balancing zones in 2003 to two market areas with three balancing zones today. The developments included the merger of L and H gas market zones in 2013 (contractually speaking, two calorific values remain physically). Since 1 April 2015, there are two marketplaces in France, the PEG Nord and the Trading Region South (TRS), shared by GRTgaz and TERÉGA. The next step consists in the creation of a single market area for France (Trading Region France, TRF). Following an in-depth cost and benefit analysis, the merger of PEG Nord and TRS was decided in 2014 (CRE deliberation of 7 May 2014) with the completion of Val de Saône and Gascogne Midi projects, representing a total investment of 823M€. However, these developments do not allow to fully remove all congestions; contractual congestion relief mechanisms will be implemented on an ad hoc basis to ensure firm capacities are actually guaranteed.

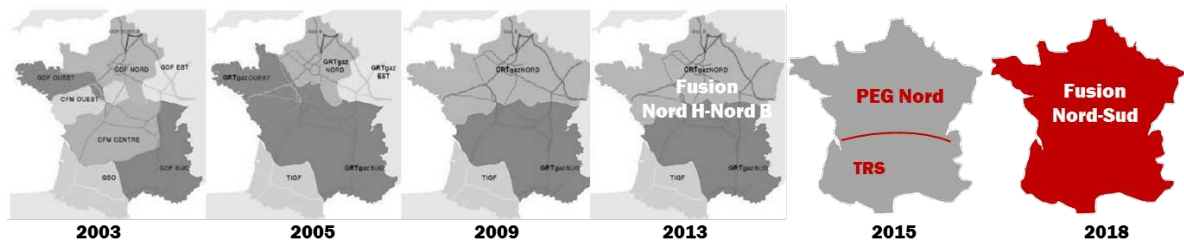


Figure 1. Evolution of market areas in France

In summary, currently there are five balancing areas in the South Gas Region: three in France (GRTgaz Nord, GRTgaz Sud and TERÉGA), one in Spain and one in Portugal managed by the corresponding TSOs, namely, GRTgaz, TERÉGA, ENAGAS and REN respectively. Each balancing area has its own balancing rules within the limitations provided by the Code reflecting the peculiarities of each area. For the time being, there are three marketplaces in the Region: two in France (PEG Nord and TRS) and one in Spain (MIBGAS). The regulation currently under development in the Region foresees evolving to two marketplaces: TRF resulting from the merge of PEG Nord and TRS, including the PEG VTP resulting from the merge of PEG Nord and TRS VTPs, in France and MIBGAS in Iberia (Spain and Portugal).

Regarding the pieces of national regulation implementing the balancing NC in each of the three countries, in Spain, Circular 2/2015¹, of 22 July, approved by Spain's National Authority for Markets and Competition (CNMC) establishing the regulation on gas balancing of transmission networks, implements the Code and develops those aspects that the Code leaves to NRA's criteria. The Circular was submitted to public consultation and the comments received were duly taking into consideration.

In France, the implementation of the provisions of the Regulation 312/2014 has been triggered by the CRE Deliberation of 10 September 2015. The current regime has been established by the Deliberation of 15 September 2016, regulating balancing as from 1 October 2016. The balancing regime within the future single Trading Region France has

¹ https://www.cnmc.es/sites/default/files/1568003_3.pdf

been established by the CRE Deliberation 2017-246 of 26 October 2017.

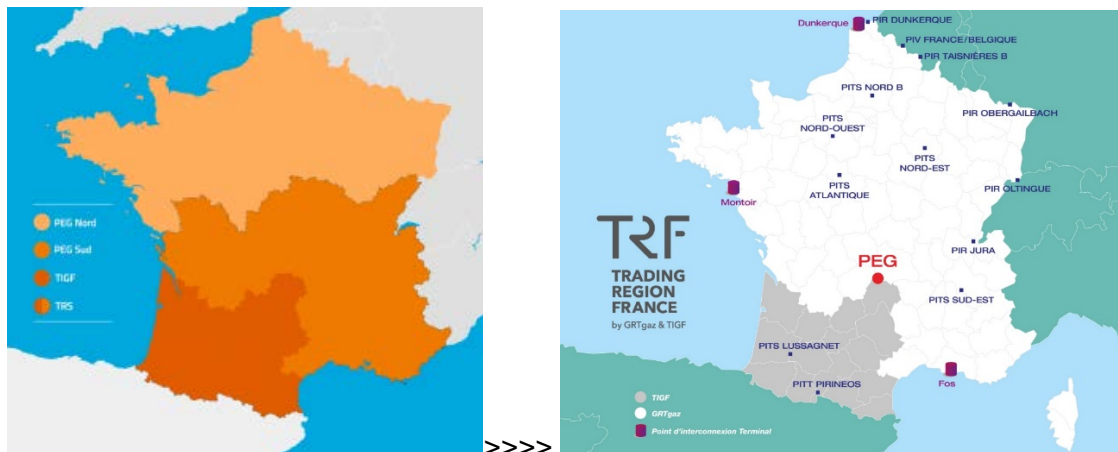


Figure 2. Balancing and market areas in France

In Portugal, the implementation of the Balancing NC established the need of an in-depth review of the National System of Natural Gas (NSNG) and the Manual of Global Technical Management Procedures² (MPGTG) since the rules for the transmission network compensation in place as well as the scope of the NSNG's Global Technical Manager (GTG) and the distribution system operators were substantially different from the practice in force.

In this sense, ERSE started the discussion of the gas infrastructure's compensation model, in the beginning of 2015, which resulted in an important contribution to the revision of the Regulation for Operation of Infrastructures (ROI), published in April 2016 (Regulation No.417/2016, of the 29th of April, approving the Regulation for Operation of Infrastructures in the natural gas sector³).

The subsequent amendment of the Manual of Global Technical Management Procedures integrated the procedures that consolidate the practices and competences of the Global Technical Manager at operational level, and its interaction with the

² http://www.erse.pt/pt/gasnatural/regulamentos/operacaodasinfra-estruturas/Documents/Diretiva%2018_2016%20de%2027%20de%20outubro.pdf.

³ <https://dre.pt/application/file/74305613>



operators of the infrastructures in the National System of Natural Gas, with the market agents and with the market operators.

The Manual of Global Technical Management Procedures substantially reinforced the interaction between the transmission network compensation methodology and the operation of the future organized market (MIBGAS), aiming at greater individual accountability of market agents supported by an enhanced information provision and reporting obligations from the Global Technical Manager. The public consultation of the Manual of Global Technical Management Procedures took place between July 22nd and September 7th with approval at 28th of September and entry into force on the 1st of October of 2016, through the publication of the ERSE Directive no. 18/2016.

Hereafter are the key elements of the balancing regimes in place in each of the three countries of the Region.

2.1 General principles

SPAIN

The regulation on balancing in Spain follows the Network Code, promoting the development of the market increasing its liquidity and fostering competition.

Users are responsible for keeping their gas position balanced in the network and they are provided with the necessary tools, namely, day ahead and intraday information, nomination and re-nomination schedules, etc. ENAGÁS GTS (entity in charge of the security of supply and the correct coordination of the whole gas system in Spain) is responsible for keeping the network within the normal operational limits.

The timeframe for the individual balancing calculation for each user is the gas day (06:00h to 06:00h). ENAGÁS GTS calculates the imbalance position (inputs minus offtakes) of each user at the end of the gas day. Network users that are not in balance at the end of the day are charged the corresponding daily imbalance charges and their balancing accounts are set to zero. This involves that at the beginning of every day all the network users starts the gas day in balance.



FRANCE

In its Decision of 1 December 2013, CRE approved roadmaps for changing to a target balancing system proposed by GRTgaz and TERÉGA. In accordance with these paths and through decisions dated 21 June 2012, 20 September 2012, 5 February 2013, 4 April 2014 and 15 January 2015, CRE approved, in particular, changes concerning:

- the level and frequency of information made available to shippers by transmission system operators (TSOs);
- regulation of shipper imbalances, by gradually reducing imbalance tolerance levels;
- rules for TSO balancing actions on the market to incentivize shippers to be balanced by applying a marginal price to cash out imbalances.

In its Decision of 10 September 2015, approving balancing rules for GRTgaz and TERÉGA transmission networks on 1st October 2015, CRE validated the implementation of a balancing system complying with the balancing code which featured:

- invoicing from the 1st kWh imbalance at the daily marginal price, i.e. the maximum purchase price (with respective minimum sale price) of TSO trades on the markets if any, or the daily weighted average price with 2.5% small adjustment otherwise;
- the possibility for all shippers delivering gas to subscribe to a service of flexibility based on TSO's linepack for the days when they take any balancing action.

In addition, CRE validated the launch of an experiment on the use of locational products by GRTgaz.

With the creation of the single market place in France scheduled for November 2018, GRTgaz will merge its North and South balancing areas; TERÉGA balancing areas remains identical. The distribution of imbalances between the two balancing areas will be identical to the TRS rules.

The principle is that the existence of two physical balancing areas is neutral for users, i.e. the trading region works as an unique balancing zone. Accordingly, imbalances of users will be calculated on the scale of the whole trading region. Daily imbalances will then be split between the balancing areas by the TSOs, depending on the type of user:



end user, supplier, transit operator without deliveries or PEG trader. The objective is to reflect accurately the responsibility of the users in the actions taken by each of the TSOs to restore the balance. Consequently:

- the imbalance of a user who delivered gas to end users ("supplier" type user) would be distributed among the two balancing areas in proportion to their allocations at the delivery points;
- the imbalance of a user with quantities allocated only as entry and exit of the Trading Region France (TRF) to the interconnections PIR, LNG terminals PITTM and storage PITS, i.e. not delivering an end user, ("transit operator" type user) would be distributed in proportion to the entry and exit allocations of the TRF at PIR, PITTM and PITS;
- the imbalance of an user having exclusively conducted transactions at the virtual trading point PEG ("trader" type user) would be entirely allocated to the GRTgaz area.

The marginal price includes also the trades resulting from the use of locational products.

PORTUGAL

Agents adjust their positions in the transmission network by modifying their inputs and offtakes or trading natural gas in the VTP. The regulatory framework in force ensures that all gas transactions in the Portuguese system materialize in physical delivery in the VTP. Transactions at the interconnection points are no longer allowed.

The natural gas transactions in the VTP are carried out on bilateral basis, since, presently, the Portuguese pole of the MIBGAS has not been implemented yet.



2.2 Virtual trading point

SPAIN

Network users are responsible to keep in balance their portfolios. To this end, users can modify their physical inputs/offtakes in the transmission network or buy/sell gas in the virtual trading point⁴ in both the trading platform MIBGAS (title products) or bilaterally.

In Spain, before the entry into force of the balancing NC, there already existed a virtual trading point called AOC where users were able to exchange gas without taking into account the physical location of the gas in the transmission network (all gas is considered to be located in a single virtual point). After the entry into force of the balancing NC, the AOC was renamed as PVB and it is the reference to trade title products and the virtual place where users have to keep balance (inputs=offtakes).

FRANCE

As from 1st of November 2018, there will be a single entry-exit system for France called TRF (Trading Region France), resulting from the merge of the current market places PEG Nord and TRS. At this date, current French virtual trading points will be merged into a single virtual trading point called PEG.

PORTUGAL

In Portugal, a trading platform with adequate characteristics to support the balancing actions of the system's Global Technical Manager (GTG) has not been implemented yet. However, it is expected that in the course of 2018 the MIBGAS Portuguese hub will be functional, allowing balancing actions as well as the application of prices in the determination of daily imbalance charges.

⁴ Virtual location in the transmission network where the network users can exchange gas. It is the virtual place where the balance of each network user (inputs minus offtakes) is calculated.



2.3 Trading Platform

SPAIN

The trading platform (MIBGAS) started working in December 2015. Users can use this platform for both trading and balancing purposes. ENAGÁS GTS must use MIBGAS for the acquisition of normalized products. Since 1 October 2016, the trading platform allows to market two kind of Short Term Standardised Products (STSP) for ENAGÁS GTS balancing purpose: title products and locational products.

FRANCE

As part of its balancing system, both TERÉGA and GRTgaz sell and buy quantities of gas via Powernext's PEGAS platform.

PORTUGAL

In Portugal, a trading platform with adequate characteristics to support the balancing actions of the system's Global Technical Manager (GTG) has not been implemented yet. However, it is expected that in the course of 2018 the MIBGAS Portuguese hub will be functional, allowing balancing actions, as well as the application of prices in the determination of daily imbalance charges.

2.4 Notifications

SPAIN

The VTP (PVB) effectively enables Trade Notifications to the Spanish Technical System Manager (ENAGÁS GTS) since November 2015. Notifications are made by the users (when it is on bilateral trade) and by the operator of the trading platform (when the transaction takes place on the trading platform). Day ahead, and within day notifications up to three hours before the end of the gas day, are possible.

The time when the Technical System Manager receives a notification to the time of registration and accounting may not exceed 30 minutes, except for notifications that are issued before the gas day, which may have a 2-hour extension to the processing period. When the notification quantities communicated by the users involved in the trade do not



coincide, ENAGAS GTS will reject both notifications and it will be communicated for the users to correct the notification.

PORTUGAL

Presently, the natural gas transactions carried out in the transmission network balancing area (VTP) are exclusively associated with bilateral trading. However, the regulatory framework in force takes into account the implementation of the Portuguese pole of MIBGAS and the implemented procedures are in compliance with Commission Regulation (EU) No 312/2014 of 26 March.

Trading notifications should be submitted by the market agents involved, in the case of bilateral trading, or by the market operator, if the transactions occur in an organized market.

Transaction notifications shall be confirmed by the GTG to the market agents within a maximum period of 2 hours, after receiving a pair of consistent notifications, except when trade occurs in the gas day where a maximum of 30 minutes must be applied. GTG must applied the same procedure to the trading notifications issued by a market operator.

2.5 Balancing actions and system flexibility

The Technical System Manager, must continuously evaluate if the system integrity is at risk. The Technical System Manager may carry out balancing actions with the aim of keeping the transmission network within normal operating conditions, or acquire a different quantity of gas in the network at the end of the day in order to have a linepack consistent with an efficient and economic operation of the system.

SPAIN

In order to facilitate the follow-up of the system, regulation has defined three operating bands: indifference, monitoring and alert that determine the thresholds of normal operation of the transmission network outside of which balancing actions are triggered⁵. ENAGÁS GTS has developed and published the corresponding procedure to calculate

⁵ See PD 18: <http://www.enagas.es/stfls/ENAGAS/Gestión%20Técnica%20del%20Sistema/Documentos/PD%20-actualización.v8.pdf>

the parameters⁶ defining the normal operation of the system. The procedure will be reviewed every two years. ENAGÁS GTS will update the parameters whenever necessary or 1) at least twice a year, once finished winter and summer periods to accommodate them to demand patterns and 2) when new infrastructures commissioning increases the linepack capacity by at least 2%. The new values will be published in ENAGÁS GTS website at least one month prior to their entry into force. The linepack flexibility is not currently marketed but the possibility is included in the Spanish regulation.

In the next graph are represented the operating bands abovementioned:

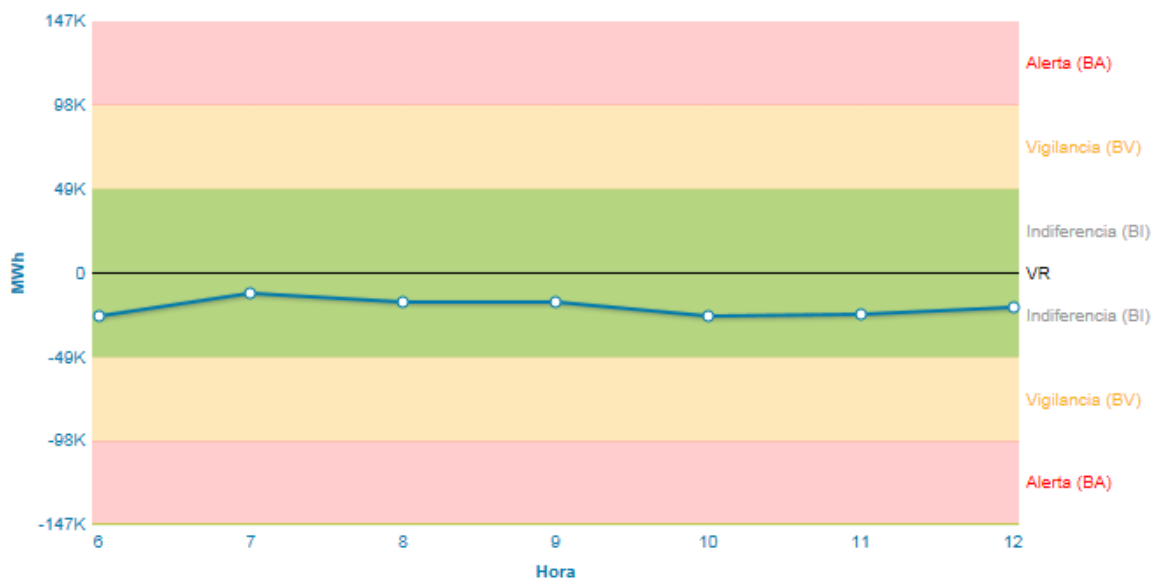


Figure 3. Operating bands (ENAGAS)

When the level of gas stored in the network is situated in the green zone, ENAGÁS GTS must not take balancing actions. ENAGÁS GTS is obliged to take a balancing action when the gas level is in the red zones and the decision is left to ENAGÁS GTS criteria when the level of gas is in the yellow zone. When taking a balancing action ENAGÁS GTS must take into account real demand at the moment and demand forecast for the gas day, users' nominations and re-nominations, measurements of gas flows, network

⁶

http://www.enagas.es/enagas/es/Gestion_Tecnica_Sistema/Consulta_publica/Propuesta_Procedimiento_Calculo_Para_metros_Tecnicos_PD-18



pressures and technical status of infrastructures. Balancing actions must be performed in an efficient, economical and not discriminatory manner.

ENAGAS GTS is responsible for undertaking the balancing actions following the next merit order:

- Within day title products
- Day ahead title products
- Within day locational product
- Day ahead locational product.
- Balancing services

With regard to the locational products, it must be noted that Regulation (EU) n°312/2014 designs locational products in order to allow TSOs to modify the quantity of gas at a specific entry or exit point and consequently, it can be used only when some risk appears at a specific point of the network.

Balancing services (duration no longer than one year) are also a possibility considered in the Spanish legislation when the acquisition of STSPs is not possible or they would not solve the operational risks of the network. ENAGÁS GTS will acquire the balancing services by a public tender mechanism and complying with requirements of the regulation 312/2014. Before its acquisition, ENAGÁS GTS must duly justify its necessity to both the Ministry and CNMC. CNMC is empowered to approve the conditions of the public tender.

FRANCE

With regard to the timing to make balancing actions, GRTgaz has currently 4 trading windows (10.25 am, 15.25 pm, 17.25 pm, 23.25 pm) and is allowed to trade outside these times to optimize the outcomes of its interventions. GRTgaz's trading operations are carried out by an automated system managed by the gas exchange operator, Powernext. TERÉGA uses the same automated system to trade exclusively in the 5.25 pm window every day, including non-working days. Although the TSOs can both purchase or sell in the imbalanced days simultaneously, the way imbalances are allocated between the two balancing zones makes it impossible for a TSO to sell when the other buys.



To better reflect tensions in the network, CRE intends to amend the automated buying and selling parameters, which are currently restricted to avoid excessively high purchasing and low selling prices. Although a limit should be maintained, CRE wants this to be more flexible to enable TSOs to meet their needs in critical imbalanced situations. Sufficient liquidity and improved trading methods allow relaxing price constraints with a limited risk of manipulation or errors.

With regard to the products in use for balancing purposes, it is remarkable that GRTgaz and TERÉGA are allowed to use locational products to balance their network if title products are not enough for fulfilling TSOs' needs. Since then, the TSOs have used these products several times, during winters 2015-2016 and 2016-2017, and in September 2017. Sixteen suppliers are allowed to take part in calls for tenders and several have in fact submitted bids for the aforementioned tenders. While bids were consistent with market prices, this mechanism effectively helped to resolve imbalances.

Hereafter, it is explained in more detail the functioning of the balancing system in each balancing zones.

A) TERÉGA:

As part of its balancing system, TERÉGA sells and buys quantities of gas via Powernext's PEGAS platform. From the 1st of October 2017, transactions are done by a robot in accordance with the intervention arrangements notified to the CRE and presented to the Concertation Gaz group. The price of those transactions is then used as the basis for the settlement of users' imbalances.

TERÉGA has set up a balancing statement, recording what it spends and earns under aforementioned transactions and the balancing rules of the transmission contract. Since 1st of October 2015, the balance is allocated to shippers as a proportion of the quantities delivered, according to the Deliberation of the French Energy Regulatory Commission of 15 January 2015 approving the balancing rules. This balancing statement is published each month.

TERÉGA publishes on DATAGAS the indicator of forecasted Linepack (forecasted SEC) (link below). This indicator is updated on an hourly basis.

<https://tetra.Teréga.fr/SBT/public/StockGazConduite.do?action=listePrev>

TERÉGA intervenes from 5.25 pm to 6.05 pm on PEGAS platform at TRS market place, based on the last level of forecasted SEC.

The level of forecasted SEC is compared to the thresholds of linepack which have been calculated on the basis of the value of measured linepack at 6 am (SEC 6h).

TERÉGA has defined four areas which can be consulted in the following figure:

	area
$SEC_{6h} - 12 \text{ GWh} < SEC_{proj} < SEC_{6h} + 12 \text{ GWh}$	Dark green
$SEC_{6h} + 12 \text{ GWh} \leq SEC_{proj} < SEC_{6h} + 22 \text{ GWh}$ ou $SEC_{6h} - 12 \text{ GWh} \geq SEC_{proj} > SEC_{6h} - 22 \text{ GWh}$	Light green
$SEC_{6h} + 22 \text{ GWh} \leq SEC_{proj} < SEC_{6h} + 42 \text{ GWh}$ ou $SEC_{6h} - 22 \text{ GWh} \geq SEC_{proj} > SEC_{6h} - 42 \text{ GWh}$	Orange
$SEC_{proj} \geq SEC_{6h} + 42 \text{ GWh}$ ou $SEC_{proj} \leq SEC_{6h} - 42 \text{ GWh}$	Red

Figure 4. SEC areas of TERÉGA

The quantities for which TERÉGA intervenes depend on the area on which the level of forecasted SEC is positioned.

The utilisation of a robot allows TERÉGA to intervene 365 days per year. The evolution of the interventions set up is coordinated with Pownext and validated by CRE. On one given gas day D, the eligibility of the transport balancing service (SET, Service Equilibrage Transport or Transport Balancing Service) is now entirely depending on the interventions of TERÉGA. On week-ends and bank holidays, the eligibility of the SET does not depend anymore only on the level of forecasted SEC.

B) GRTgaz:

After the establishment of a need by GRTgaz, the balancing action itself is executed by a computer algorithm. Every operation within the trading window is designed to ensure that the algorithm always selects the best prices. Therefore, the need of GRTgaz may not be fully covered.

GRTgaz can trade seven days a week between 10:25 am and 10:45 am, between 2:25 pm and 2:45 pm, between 5:25 pm and 5:45 pm and between 11:25 pm and

11:45 pm on the Within-Day product. Effective action depends on “Projected Closing Linepack” position and schedule.

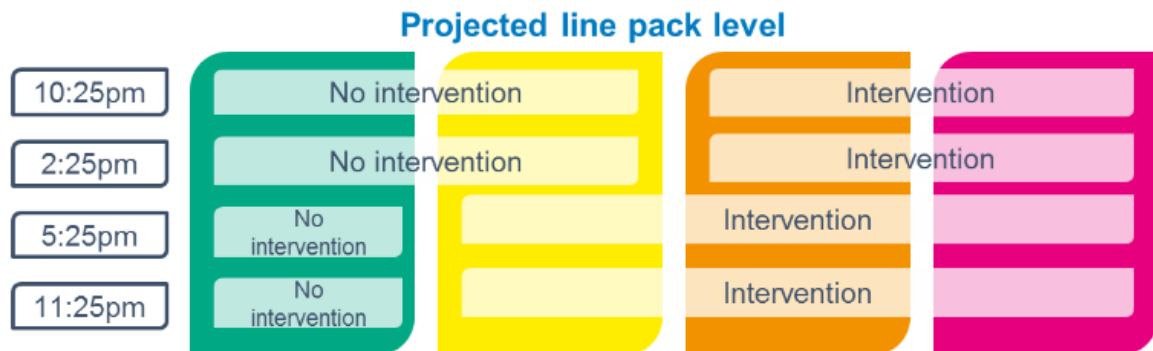


Figure 5. Schedule for GRTgaz intervention.

Within these trading windows, GRTgaz’s purchase or sell orders will take place at arbitrary times. GRTgaz intervenes several times in each trading window to cover its balancing gas needs.

The “Projected Closing Linepack” (PLC) position shows the stress of its transmission network. GRTgaz has defined several modes of balancing actions depending on the PLC position and the schedule.

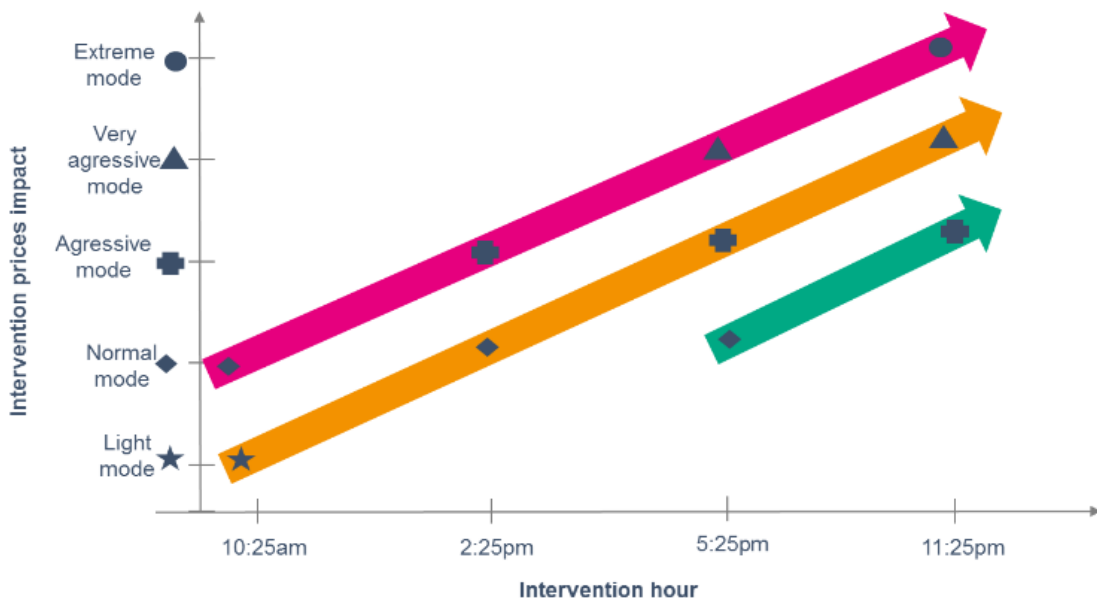


Figure 6. Modes of balancing actions (GRTgaz).

The more aggressive the mode is, the more the price obtained by GRTgaz may move away from the estimated market price during the trading window. In connection with French Regulation Authority (CRE), GRTgaz defined, for each mode, limits to this potential spread.

GRTgaz balancing actions are made primarily through short-term standard products. In case of title products were not sufficient and according to the merit order required by the Balancing network code, GRTgaz may trigger a balancing action via the locational product. The trigger criteria are as follows:

1. As soon as possible at the end of the 3rd stock exchange window
2. If the PCL level planned remains in the orange or red zone.

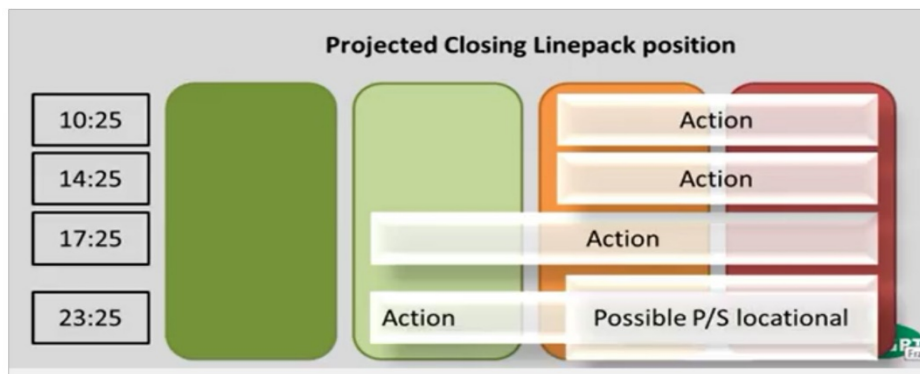


Figure 7. Modes of balancing actions: hours and triggering areas (GRTgaz).

More details regarding locational products can be found at:

<https://www.youtube.com/watch?v=N8yy79ITEz4&feature=youtu.be>

PORTUGAL

The transport network has a linepack capacity that varies between 40 and 60 GWh depending on the operating conditions. In addition to this amount of natural gas, GTG has 60 GWh operational gas inventory in the storage infrastructures that allows him to manage the residual balance of the NSNG.

These quantities of natural gas, although quite limited, represent a 4-hour flexibility in the case of the linepack capacity and, considering the operational gas inventory in the storage facilities, approximately 10 hours considering the historical maximum daily demand [100 GWh represents 44.4% of the maximum daily demand (225GWh/d)].



In average terms, the aggregation of the daily imbalances in the transport network is much lower than the linepack, so the transport network's accumulation capacity allows the GTG to manage the gas operational stock on a weekly basis, resetting the linepack position via natural gas sales or purchases.

GTG buys or sells gas through individual balancing services, each one with individual contract between the GTG and the market agent that provides the service. The quantities of natural gas in each balancing service is limited to 6 GWh (in purchases and sales).

Balancing services are contracted as a result of a market mechanism (auction), approved by ERSE. The GTG (REN Gasodutos) is responsible to conduct the auctions, with OMIP assistance and a dedicated platform.

In year 2018 it is expected that the balancing actions will become mostly based on MIBGAS Portuguese hub trading platform. Likewise, one expects in 2018 a gradual reduction of the operating gas inventory in the system's storage infrastructures.

2.6 Nominations and renominations

In accordance with the Code, rules and timelines of nomination and re-nomination procedures have been developed taking into account the coordination requirements in the interconnection points among the three countries of the Region.

SPAIN

Users may carry out nominations for the gas day D before 14:00 of the day D-1 (the day before the gas day). In the absence of valid nominations sent by the users, the last weekly program will be used as a nomination. ENAGÁS GTS will confirm the nominations no later than 16:00 of the day D-1. Once the nominations have been confirmed, the renominations cycles start. There will be one renomination cycle each hour from 16:00 (first renomination cycle) until three hours before the end of the gas day, namely, at 03:00 (last renomination cycle). Each renomination cycle lasts two hours. At VIPs, ENAGÁS GTS confirmation is provided after the first hour, but the nomination is effective after the second hour. At the rest of the points, ENAGÁS GTS confirmation of the new nominations and its effectiveness occur after the second hour. It means that these new nominations (renominations) will apply once they are confirmed, namely, two hours after the beginning of the renomination cycle, unless the user requests a later time.

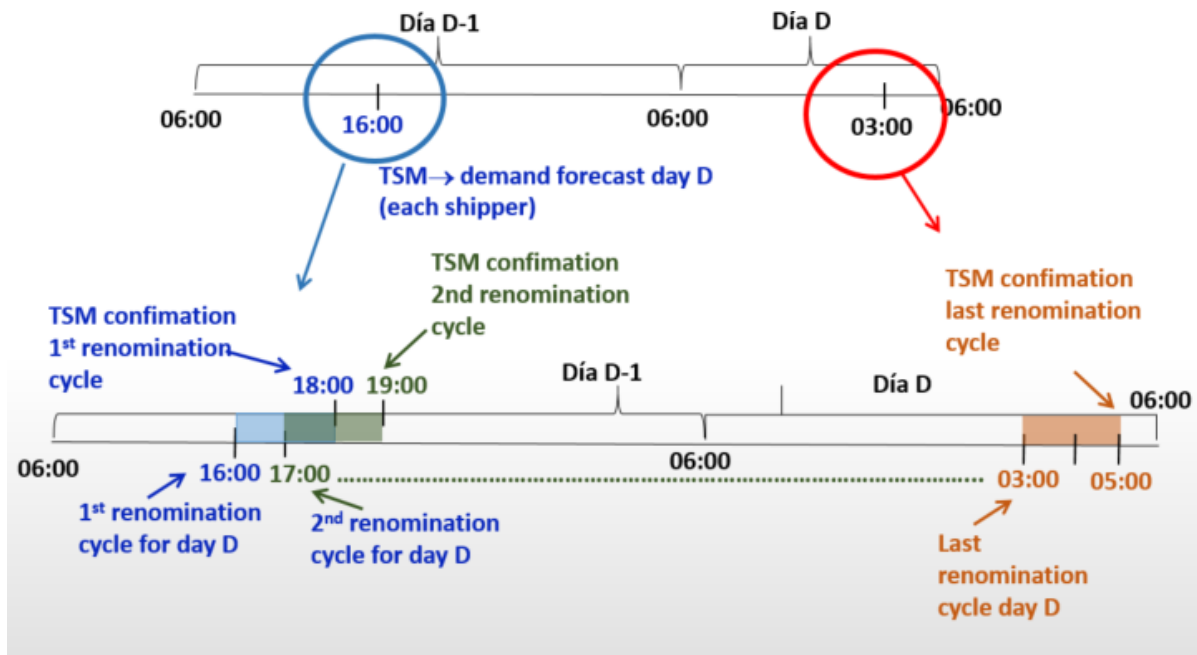


Figure 8: Timeline for nominations/renominations for all point except VIPs (ENAGAS)

Nominations will be referred to entry/exit points to PVB, namely, underground storage facilities, LNG plants and Interconnections Points with other countries. In this sense, it is noteworthy that balancing nominations scheduled have been made compatible with capacity allocation mechanisms in both IPs and other facilities of the Spanish gas system.

The Technical System Manager may only reject a nomination or renomination in the following four cases:

- If it does not comply with the established content
- If it is not sent by an authorized user
- If it leads to a flow that cannot physically take place
- If it surpasses the agent's contracted capacity

ENAGÁS GTS cannot reject a user's nomination because the nomination of inputs does not match with the nomination of offtakes. ENAGÁS GTS may only modify the quantity of nominations/renominations in a justified manner in exceptional situations and, in particular, in emergency situations.

Nomination and renominations are provided via SL-ATR, the IT system for the logistic of the Spanish gas system.

FRANCE

The following figure shows the schedule for nominations and renominations at TERÉGA network.

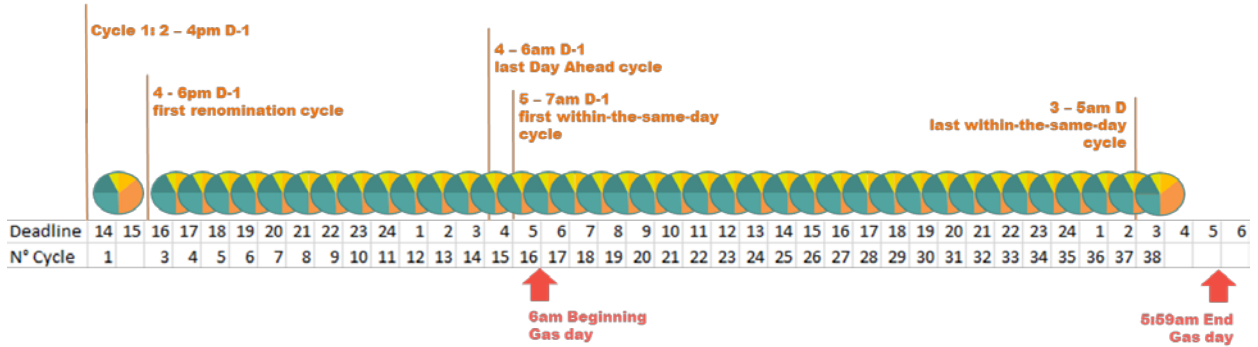


Figure 9: Schedule for nominations/renominations (TERÉGA).

TERÉGA has 37 continuous cycles from 2 pm on the day before the gas day D-1 to 3 am on the gas day D.

First cycle goes from 2pm to 4 pm during the day D-1 (there is no 3-5pm cycle). After 4pm, each hour is a deadline for the beginning of a cycle (overlapping 2-hour cycles).

Nomination is done before each hour H for a quantity applicable at H+2.

The cycles are 2 hours long with a scheduling in 1 hour. There is an agreement with ENAGAS GTS to carry out a matching for a 1-hour cycle at the Interconnection Points.

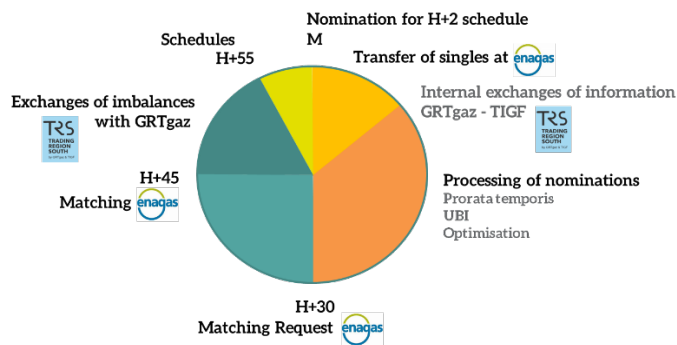


Figure 10: Nominations and renominations at Interconnection Points between France and Spain

Nominations/renominations at TERÉGA's network have an impact in the gas flow between TERÉGA and GRTGaz infrastructure. GRTGaz must communicate TERÉGA the following information:

- Need for transport given the nominations at GRTGaz
- Calculation and dispatch of an “average” flow (Implicit Flow) between the two TSOs

On the other hand, GRTgaz operational procedures pertaining to nominations and renominations fully comply with the provisions of the Balancing network code. This has been the case even before the entry into force of this network code.

PORTUGAL

Commission Regulation (EU) No 312/2014 of 26 March is very prescriptive in these matters, so the regulatory framework adopted in the Portuguese system (MPGTG) implements the schedule and an information exchange procedure as set out in that European Regulation.

The following figure shows schematically the information flows and schedules established in the Portuguese regulatory framework.

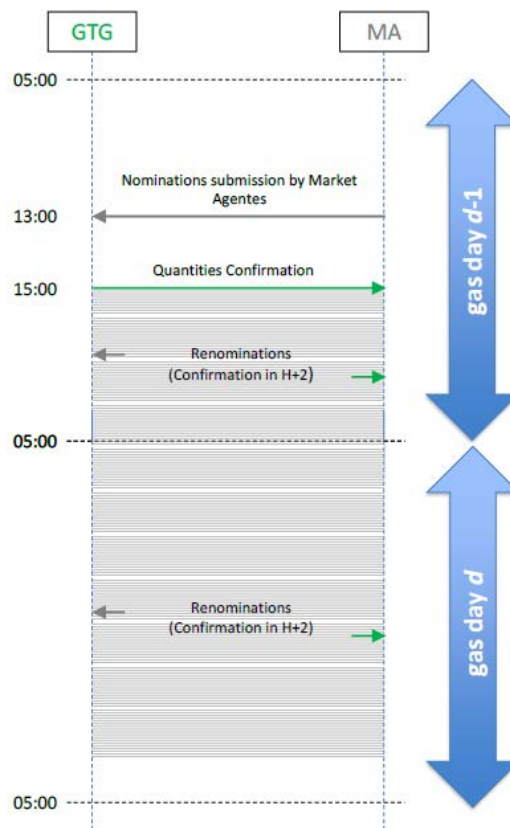


Figure 11: Nominations/renominations schedule in Portugal



Market Agents should submit the nominations for the gas day d to the GTG no later than 13:00 h in the day $d-1$. GTG must provide the confirmed quantities no later than 15:00 h in the day $d-1$.

The renomination period opens at 15:00 h in the day $d-1$ and remains open until 03:00 h in the gas day d . GTG must provide the confirmed quantities in a maximum of 2 hours after receiving renominations from market agents.

Additionally, the criteria for validation of nominations and renominations is almost fully defined in the Commission Regulation (EU) No 312/2014 of 26 March, being the Portuguese regulatory framework consistent with those provisions.

It should be underlined that, under the current Portuguese regulatory framework, nominations and renominations are limited to contracted capacity and may be subject to possible constraints if the capacity is contracted on an interruptible basis or if a congestion management procedure is triggered.

The Portuguese regulatory framework foresees the possibility of implicit capacity allocation by a market operator (MIBGAS) at the Interconnection Points with Spain, referring to a specific procedure in the Portuguese Access Code.

2.7 Information provision

The provision of information allows the users' network to manage exposures and opportunities, which it is crucial in a balancing regime where users have a central role in the balance of the system. The Balancing Network Code offered three possible models for information provision. French and Spanish regulation have implemented the so called "base case" model, where the information on non daily metered off-takes consists of a day ahead and within day forecasts, while Portugal has implemented the "variant 2", where the information on non daily metered off-takes is a day ahead forecast.

SPAIN

In Spain, ENAGÁS GTS provides network users the best available information with regard to their balance the day before (D-1), during the day (D) and the day after (D+1). The day before ENAGÁS GTS publishes the overall system demand forecast together with the hypotheses used for the calculation. Afterwards, the distributors and TSOs submit to ENAGÁS GTS their demand forecast break down by user. With this

information, ENAGÁS GTS recalculates the overall forecast demand for the gas day (D). During the gas day (D), ENAGÁS GTS will provide each network user at least twice (14:00 and 21:00) with information about their inputs and offtakes in both transport and distribution networks, including user's intraday metered demand and an updated estimate of its daily and non-daily metered demand. The day after (D+1) ENAGÁS GTS will calculate a first estimate of the individual imbalance of each network user and will inform them separately. These estimates are updated twice, the first one after the real measures of non-daily metered consumption are available, and the second one after results of meters revisions correct mistakes in the measures due to a malfunction of the meter. Information is provided via SL-ATR, the IT system for the logistic of the Spanish gas system.

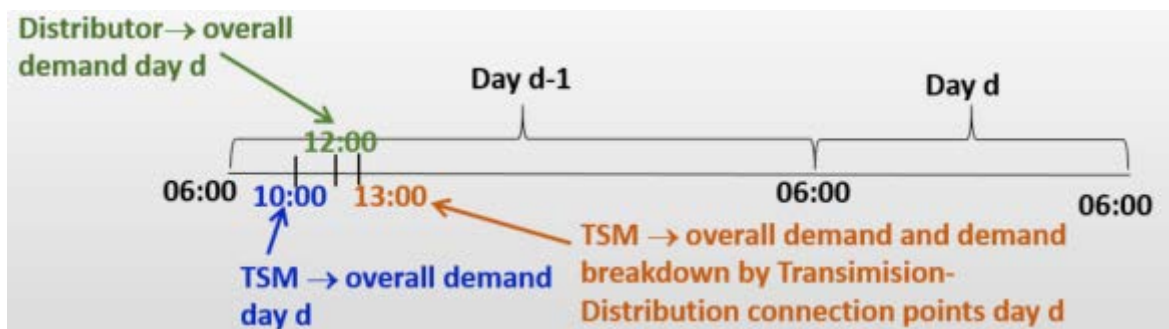


Figure 12: Timeline for information provision (ENAGAS)

FRANCE

In addition to the Linepack indicator which is daily updated on Teréga's portal (<https://tetra.tigf.fr/SBT/public/StockGazConduite.do?action=listeMesure>), and based on the requirements needed for the implementation of the Gas Balancing Network Code, Teréga publishes an individual balancing notice since January 26, 2015 - to every single shipper.

The balancing notice provides to shippers intraday information that will allow them getting a balanced position on Teréga's network, on both the day before and the current gas day, for each program cycle.

Information (metered and non-metered data) is both public (from Teréga's network perimeter) and private (based on every single shipper's portfolio).



Content of balancing notice:

1) Public data from Teréga's network perimeter

- Aggregated consumption forecasts
- K0 (adjustment coefficient)
- Forecasted end-of-day imbalance indicator for Teréga's balancing zone
- Imbalance settlement prices
 - o Average gas Price
 - o Marginal selling price Teréga
 - o Marginal buying price Teréga

2) Private data for each shipper

- Consumption forecasts of distribution portfolio
 - o Non-metered distribution portfolio
 - o Metered distribution portfolio
- Intraday consumptions
 - o Industrials directly connected to the transmission network (PIC)
 - o Metered distribution portfolio

Publication of balancing notice:

For a given gas day, Teréga will publish a balancing notice to every single active shipper, each hour at H+35min, from 2pm on D-1 until 3am on D (depending on the time of the day, the shipper will therefore receive 1 or 2 balancing notices WD and/or DA).

File formats:

Teréga provides 3 different file formats: CSV, XML, EDIG@S V5 : ACCSIT file. The description of those formats and the associated technical elements are available in the « Shipper connection processing » document.

PORTUGAL

The information provision from the GTG to the market agents, regarding the application of Commission Regulation (EU) No 312/2014 of 26 March, in particular concerning the

balancing status on the transmission network, occurs the day before the gas day d (gas day $d-1$), during the gas day d and after the gas day d .

On the gas day $d-1$, the GTG must provide the market agents relevant information concerning forecasts for the non-daily metered portfolio's off-takes, for the gas day d . This process involves the GTG, the Distribution System Operators (DSOs) and the Entity Responsible for Forecasting (ERP). The following figure presents the procedure applicable to the information provision on the gas day $d-1$, concerning the non-daily metered off-takes.

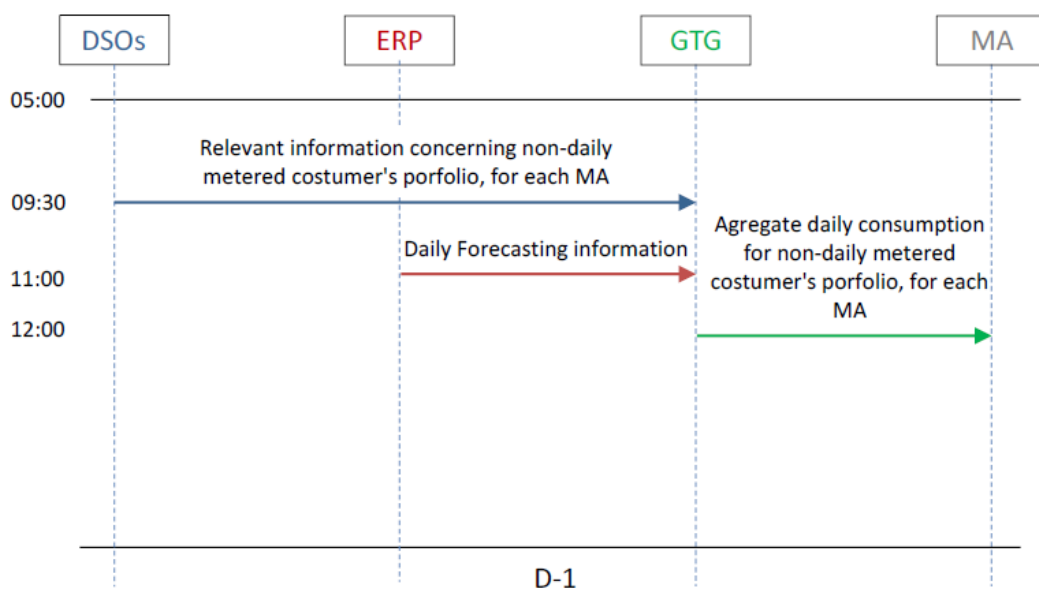


Figure 13: Timeline for information provision in Portugal

The GTG must receive relevant information from the DSOs with the composition of the non-daily metered customer's portfolio of each market agent and, also updates from the forecasting party regarding the daily consumption profiles to be applied on gas day d to non-daily metered consumers.

The DSOs and the forecasting party must submit the information referred in the previous paragraph, during the gas day $d-1$, until 9:30 and 11:00, respectively. If the GTG does not obtain the previously mentioned information from the DSOs and from the forecasting party, it must apply the data available in the last communication.

Once the relevant data is gathered, the GTG must aggregate for each market agent the respective non-daily metered off-take forecast. These forecasts must be provided to the market agents during the gas day $d-1$, until 12:00.

On gas day d , GTG must provide information on intraday metered intakes and off-takes (which, in the Portuguese system, concerns the consumers supplied directly from the transmission network), including a minimum of three updates, namely:

- Until 13:00 h, concerning the period from 05:00h to 10:00h of gas day d ;
- Until 20:00 h, concerning the period from 05:00h to 17:00h of gas day d ;
- Until 01:00 h, concerning the period from 05:00h to 22:00h of gas day d .

The following figure shows schematically the information provision from the GTG to the market agents on gas day d , concerning the intraday metered inputs and off-takes.

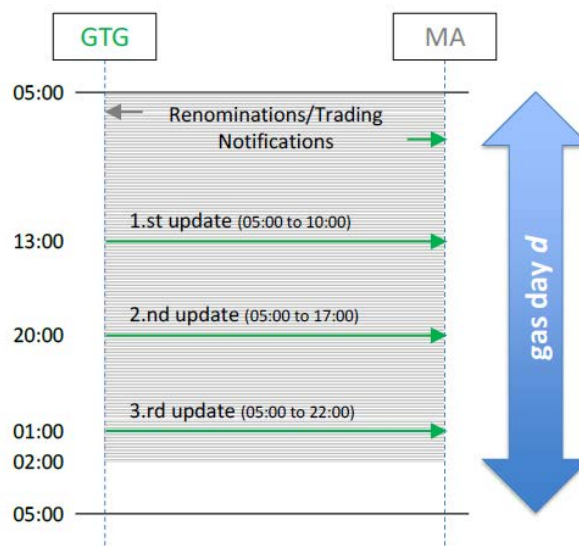


Figure 14: Timeline for information provision on intraday metered consumption

In the day after de gas day, the day $d+1$, the GTG must provide the market agents information on gas day d inputs and off-takes, including the initial allocation for the intraday metered and daily metered (DM) inputs and offtakes as well as a better estimate for the non-daily metered costumers. Also, the GTG must provide information on the initial daily imbalance quantity as well an estimate for the daily imbalance charge.

On the third day of each month, the GTG must provide each market agent the final daily imbalance quantity for each gas day d of the previous month, as well as the respective daily imbalance charges.



2.8 Imbalances charges

SPAIN

All users begin each gas day with zero imbalance in the transmission network. One day after the gas day (D+1), ENAGÁS GTS will calculate each user's provisional imbalance for the gas day. ENAGÁS GTS has developed the corresponding methodology to calculate imbalance charges⁷. According to this methodology, users with a negative imbalance (short of gas) must pay ENAGÁS GTS the result of multiplying their provisional individual imbalance amount by the daily imbalance tariff for that gas day (marginal buy price⁸). On the other hand, users with positive imbalance (long of gas) are entitled to receive from ENAGÁS GTS the result of multiplying their provisional individual imbalance amount by the daily imbalance tariff for that gas day (marginal sell price⁹). The marginal buy and sell prices are calculating according to rules established in the Balancing Network Code, considering 2.5% as the value for the small adjustment.

Cashouts corresponding to users imbalances are invoiced weekly. The invoice can be positive or negative for the user, depending of the sign of its imbalance quantity. Provisional users' imbalances are revised twice, after 3 and 15 months, with the best information available at that moment. Imbalances charges are then recalculated and differences with the previous ones invoiced to users.

7

<http://www.enagas.es/stfls/ENAGAS/Documentos/Metodolog%C3%ADa%20de%20c%C3%A1culo%20de%20tarifas%20de%20desbalance.pdf>

⁸ The higher price of a) the highest price of any purchases of title products in virtual trading point "PVB" in which TSO is involved in respect of the gas day or b) the weighted average price of gas in respect of that gas day, plus an small adjustment (currently 2,5%). To calculate the weighted average price only day ahead and intraday trades in respect of the gas day are considered.

⁹ The lower price of a) the lowest price of any sales of title products in virtual trading point "PVB" in which TSO is involved in respect of the gas day or b) the weighted average price of gas in respect of that gas day, minus an small adjustment (currently 2,5%). To calculate the weighted average price only day ahead and intraday trades in respect of the gas day are considered.

FRANCE

A) TERÉGA

In accordance with current regulatory provisions (European gas networks code and the latest deliberation of the Energy Regulatory Commission approving changes in balancing rules on the TERÉGA transport network at 1st April and 1st October 2015, the imbalance tariffs on a given Day are the following:

a) When TERÉGA has not traded on the market for delivery on day D (withouth balancing actions):

- The Average Price of gas transactions less a 2.5% discount, in the case of positive imbalances;
- The Average Price of gas transactions plus a 2.5% premium, in the case of negative imbalances.

For each day D, the Average Price of gas is the weighted average price of Within-Day transactions of all traders on the Powernext Gas Spot's TRS (Trading Region South) for delivery on day D, as calculated by Powernext.

If Day D falls on a weekend and there are no Within-Day transactions for delivery on day D in the TRS, the Average Price is the weighted average of transactions made in the TRS by all traders on Powernext for the weekend maturity date that includes day D, as calculated by Powernext.

If Day D is a Bank holiday in the sense of the Powernext calendar, and there are no WithinDay transactions for delivery on Day D in the TRS, the Average Price is the weighted average of Bank Holiday product transactions made in the TRS for the maturity date of Day D.

b) When TERÉGA and/or GRTgaz have traded on the market for delivery on day D (with balancing actions):

- If the Transmission System Operator purchases gas from the users, the imbalance tariff for negative imbalances is the highe of the following two prices:



- the highest of all the purchases of gas by TERÉGA and/or GRTgaz on the Powernext trading platform in respect of balancing for the gas day in question
- the Average Price of gas transactions for the gas day in question, plus a 2.5% premium.

For positive imbalances then, the imbalance tariff is the the Average Price of gas transactions less a 2.5% discount.

- If the Transmission System Operator sells to the user at the Marginal Purchase Price, the imbalance tariff for positive imbalances is the lowest of the following two prices:
 - the lowest of all the sales of gas of Teréga and/or GRTgaz on the Powernext trading platform in respect of balancing for the gas day in question
 - the Average Price of gas transactions for the gas day in question, less a 2.5% discount

B) GRTgaz :

Marginal Price of purchase for the South Balancing area is the highest of the two following prices:

- the highest of all buying prices offered by GRTgaz and/or TERÉGA and concerning the TRS perimeter on the Balancing Gas Exchange for the gas day concerned;
- the Average Price for the TRS perimeter and the gas day in question plus a 2.5% small adujstment.

Marginal Price of sale for the South Balancing area is the lowest of the two following prices:

- the lowest of all selling prices offered by GRTgaz and/or TERÉGA for the TRS Perimeter on the Balancing Gas Exchange for the gas day concerned;
- the Average Price for the TRS perimeter and the gas day concerned minus a 2.5% small adjustment.



Distribution of TRS imbalance quantities to be cashed out by GRTgaz : these quantities are the TRS daily imbalance multiplied by the ratio between the total quantities delivered to the consumer delivery points connected to the South Balancing area and the total quantities delivered to the consumer delivery points connected to the GRTgaz south balancing area and to the TERÉGA balancing area.

PORTUGAL

The daily imbalance charges are determined taking into account the final daily imbalance quantities, determined by the real flows from intraday metered inputs and off-takes and daily metered off-takes and also the forecasts of the non-daily metered off-takes provided by the GTG to the market agents on gas day $d-1$. The determination of the final daily imbalances also considers the linepack flexibility service.

The daily imbalance charges results from the application of the average prices from MIBGAS, the Spanish trading platform, to the final daily imbalance quantities, for each gas day d . The daily imbalance charges are positive or negative in case of excess or default of gas in the balance area (transport network), respectively.

The price considered in the determination of network users' imbalance charges for each gas day correspond to the weighted average price of gas traded at MIBGAS in the same gas day, with a penalty of 2.5%. The daily imbalance charges also includes interconnection tariffs in the direction of Spain-Portugal (in the case of an imbalance by default) or Portugal-Spain (in case of an imbalance due to excess of gas in the transport network).

The application of daily imbalance charges reconciles the market agent position in the transmission network at the end of each gas day d .

2.9 Financial neutrality of the Transmission System Manager: allocation of balancing actions costs

The balancing actions are performed by the Technical System Manager without any benefit or cost, provided that these are performed efficiently. Impact of users' imbalance charges are also neutral to the Technical System manager.



SPAIN

The balancing actions of sales/purchases of title products in the virtual trading point “PVB” performed by ENAGÁS GTS are settled monthly. ENAGÁS GTS calculates the overall net financial result of the settlement of users’ imbalances for the month M and the balancing actions performed by ENAGÁS GTS (sales/purchases of title products in the virtual trading point “PVB”) during that month. Additionally, for each user ENAGÁS GTS calculates the sum of their absolute values of imbalance quantities accumulated during the month. Where the net financial result (as calculated in the paragraph above) is negative for ENAGÁS GTS, the network users with an accumulated monthly imbalance will pay ENAGÁS GTS proportionally to their accumulated monthly imbalance. On the contrary, if the result is positive, the result is considered as an income for the gas system and used to reduce system’s costs and Third Party Access tariffs in the future.

FRANCE

A) TERÉGA

An overall calculation is made for each user’s contractual imbalance in the Trading South Region (TRS). To determine the contractual imbalance, the TSOs distribute each user’s imbalance between the two balancing zones (TERÉGA and GRTgaz) using a specific code for each user depending on the total amount of its capacity allocations at exit points (delivery points, PIR, PITS) in each balancing zone.

This code takes into account the segmentation of users into 4 categories, on a monthly basis, depending on their portfolio capacities:

- users with delivery capacities to end users or to the PITDs make up segment 1;
- users with transport capacity but no delivery capacity to end users or to PITDs make up segment 2;
- users with no transport capacity (pure traders) make up segment 3;
- inactive users make up segment 4.

Each day, the procedure is applied as follows:



- a user's imbalance after delivery to end users is distributed pro-rata between the two balancing zones (TRS TERÉGA, TRS GRTgaz) to the allocations at delivery points, using a segment-specific formula;
- a user's imbalance with only volume allocations at the entry and exit of the TRS, is distributed pro-rata to allocations at the entry and exit of the TRS (PIR, PITTM, PITS), using a segment-specific formula;
- a user's imbalance, after having exclusively conducted transactions within the TRS, is entirely allocated to GRTgaz South zone;
- for reasons of practicality and simplicity in IT implementation, TERÉGA and GRTgaz agree to join forces for the operational management under the "traders" and "inactive shippers" categories.

B) GRTgaz:

The balancing result for a given month is equal to the difference between, on the one hand:

- the amount of natural gas sold by GRTgaz on the Balancing Gas Exchange deducting the variable proportion of transaction costs on the Balancing Gas Exchange with some users delivered between the first and the last day of the month,
 - the amount of natural gas sold by GRTgaz to the users under the transmission contracts for each day of the month,
 - the sale by GRTgaz of the difference between the quantities purchased and the quantities sold by the latter via the Balancing Gas Exchange under the transmission contracts, should this difference be positive,
- and, on the other hand,
- the amount of natural gas purchased by GRTgaz on the Balancing Gas Exchange including the variable proportion of transaction costs on the Balancing Gas Exchange with some users delivered between the first and the last day of the month,
 - the amount of natural gas purchased by GRTgaz from the users under the transmission contracts for each day of the month,



- the purchase by GRTgaz of the difference between the quantities purchased and the quantities sold by the latter via the Balancing Gas Exchange under the transmission contracts, should this difference be positive.

The balancing result for the month is broken down between the users holding a valid transmission contract with GRTgaz during the month, in proportion to the quantities delivered to the consumer delivery points that they have been allocated for each day of the month.

If the balancing result is greater than zero (0), GRTgaz shall pay to the user the portion the user is entitled to of the balancing result as defined above.

Otherwise, if the balancing result is lower than zero (0), the shipper shall pay to GRTgaz the said portion of the balancing result as defined above.

PORTUGAL

The regulatory framework (MPGTG) contains the rules and methodology for allocating costs and revenues related to the payment (or receipt) of daily imbalance charges, balancing actions and revenues from the linepack flexibility service, assuring the neutrality of revenues (and costs) of the GTG.

The costs and revenues taken into account for establishing a neutrality methodology purposes are the following:

- The daily imbalance charges.
- Balancing actions, via purchase and/or sale of natural gas in short-term markets or through balancing services (currently the only option).
- The revenues related to the linepack flexibility service.
- Other variable costs, such as the cost of access to trading platforms for the purchase and sale of gas.

With regard to the cost-sharing methodology, the GTG should assess the neutrality charges by adding, for each month, the costs and revenues associated with the balancing activity of the transmission network, considering the referred costs/revenues.



The model for allocating the neutrality charges by market agent is proportional to the sum of inputs and off-takes of natural gas in the balancing area (transmission network) over the course of each month.

As regards to transparency obligations, the GTG's should publish on his website the neutrality charges, sending monthly detailed invoices to the market agents, and relevant information to ERSE, on a quarterly basis.

2.10 Transmission System Manager incentives

SPAIN

Enagas GTS has already submitted for approval to CNMC a proposal of incentives mechanism that is currently in CNMC under review. The mechanism has been recently approved and will apply as from the next gas year, starting on 1 October 2018.

PORTUGAL

According Regulation for Operation of Infrastructures (ROI), published in April 2016, ERSE can approve incentives to NSNG's Global Technical Manager (GTG). The aim of this incentive is to GTG efficiently carry out compensation actions or to maximize the performance of compensation actions using standardized short-term products.

The granting of an incentive scheme shall be preceded by prior consultation with the interested parties, promoted by the ERSE. So far, ERSE was not been asked to implement any incentive mechanisms by the GTG.

3. Functioning of the balancing schemes since its application

(1st October 2015 in France and 1st October 2016 in Portugal and Spain to 30th September 2017)

3.1 Operational balancing

SPAIN

From 1st October 2016 to 30th September 2017, 80 balancing action were taken through Day Ahead (DA) and Within Day (WD) products traded on MIBGAS broken down as follow:

- Product DA:
 - o Sell balancing actions: 4
 - o Buy balancing actions: 17

- Product WD:
 - o Sell balancing actions: 13
 - o Buy balancing actions: 46

These balancing actions were mainly concentrated in the first months after the entry into force of the NC BAL provisions.

The next two figures shows the daily volumes of the balancing actions procured by Technical System Manager (buys and sells)

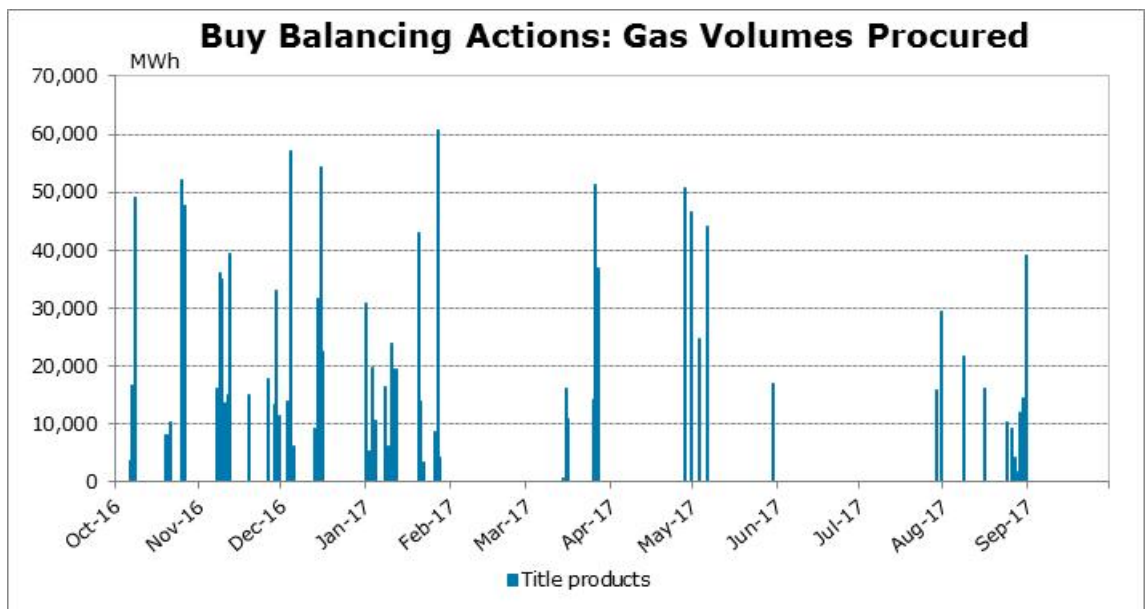


Figure 15. Buy balancing actions: gas volumes procured (ENAGAS)

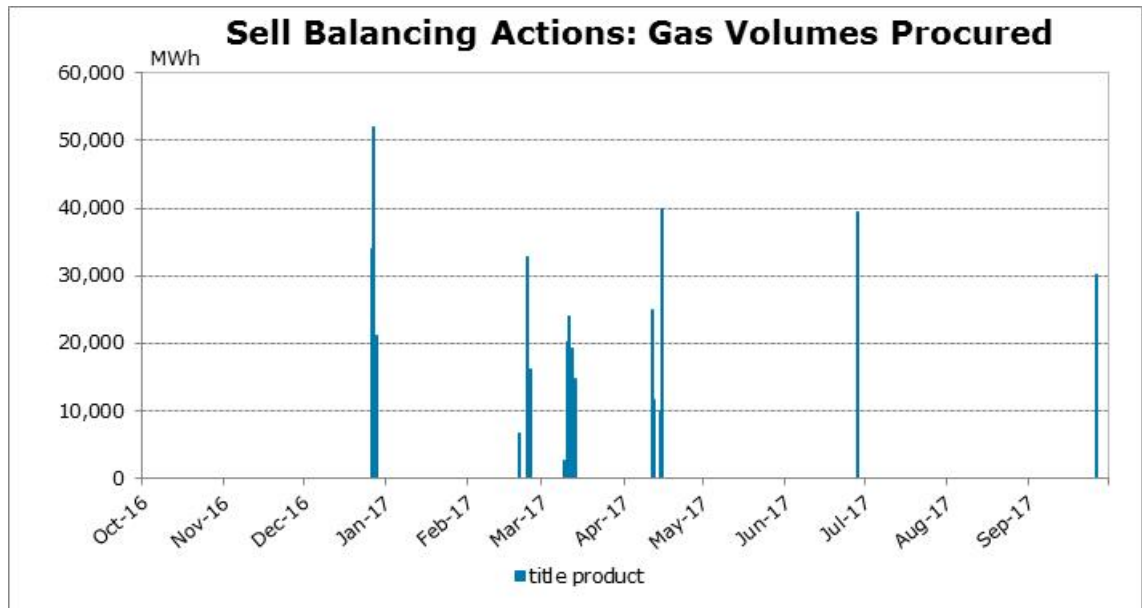


Figure 16. Sell balancing actions: gas volumes procured (ENAGAS)

These balancing actions produce the following general figures regarding the maximum, minimum and average sell/buy quantities and costs and revenues (MWh and € namely):

Purchase Balancing Actions				
Value	Within-Day		Day-Ahead	
	Volume	Expenditure	Volume	Expenditure
Maximum	52,018	1,632,776.80	49,088	1,593,911.25
Minimum	480	7,872.00	3,500	85,088
Average	17,728	401,352.97	19,751.53	511,415.18

Table 1: Purchase balancing actions WD/DA: volume and expenditure (ENAGAS)

Sell Balancing Actions				
Value	Within-Day		Day-Ahead	
	Volume	Income	Volume	Income
Maximum	40,000	658,744	49,000	863,600
Minimum	2,500	41,030	10,000	158,250
Average	20,416.85	350,309.27	19,056.14	341,606.97

Table 2: Sell balancing actions WD/DA: volume and expenditure (ENAGAS)



Additionally, the Technical System Manager buy balancing actions defined the marginal price 21 days whilst the numbers of days the Technical System Manager sell balancing actions defined the marginal price were only 3.

According to the provisions of the Protocolo de Detalle PD-18 “Parámetros técnicos que determinan la operación normal de la red de transporte y la realización de acciones de balance en el Punto Virtual de Balance (PVB) por el Gestor Técnico del Sistema”, the balancing actions were taken when the transmission network aggregated imbalance (DQA), that is calculated according to users’ nominations for the gas day, at the beginning of the gas day was located into the Monitoring or the Alert Band.

Into the Monitoring Band, the balancing action execution has taken into account the linepack, the forecast of future evolution of linepack and the liquidity and the gas prices at the organised gas market.

Since the Short Term Standardized Products provided the expected results, balancing services were not necessary and therefore, not provided.

The Information provided to users regarding operational balancing was:

- - Network Imbalance Index (IDQ): Network’s aggregated imbalance forecast at the end of the current gas day.
- - Daily Projected Closing Imbalance (DBP): Network users’ daily imbalance forecast at the end of the current gas day.
- - Network’s Estimated Aggregated Imbalance (DQA): Last update of the network’s aggregated imbalance previous to the beginning of the current gas day.
- - Information about the Technical Manager of the Gas System taken balancing actions: Quantity, Cost, Average Price, Min. Price, Max. Price, Justification
- It seems that the system is working well to ensure that users keep in balance taking into account that the Technical System Manager intervention (balancing actions) represents only an 22% of the total period.

FRANCE

Period from October 2015 to October 2017:

A) TERÉGA

- Sum up of the 23 buying interventions on PEGAS platform;

Oct2015-Oct2016	19,500	MWh 25°C
Oct2016-Oct2017	17,930	MWh 25°C
Total	37,430	MWh 25°C

Table 3. Buying interventions on PEGAS platform (TEREGA)

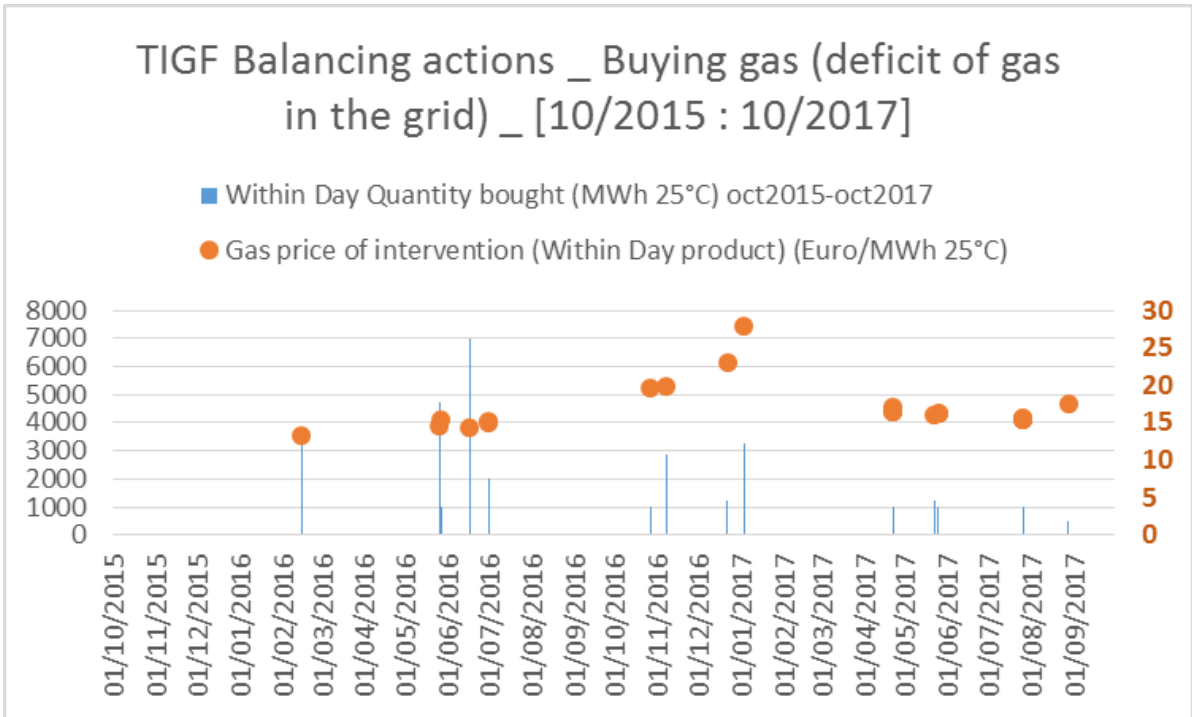


Figure 17. Buy balancing actions: gas volumes procured and prices (TEREGA)

- Sum up of the 116 selling interventions on PEGAS platform;

Oct2015-Oct2016	149,940.4	MWh 25°C
Oct2016-Oct2017	61,730	MWh 25°C
Total	211,670.4	MWh 25°C

Table 4. Selling interventions on PEGAS platform (TEREGA)

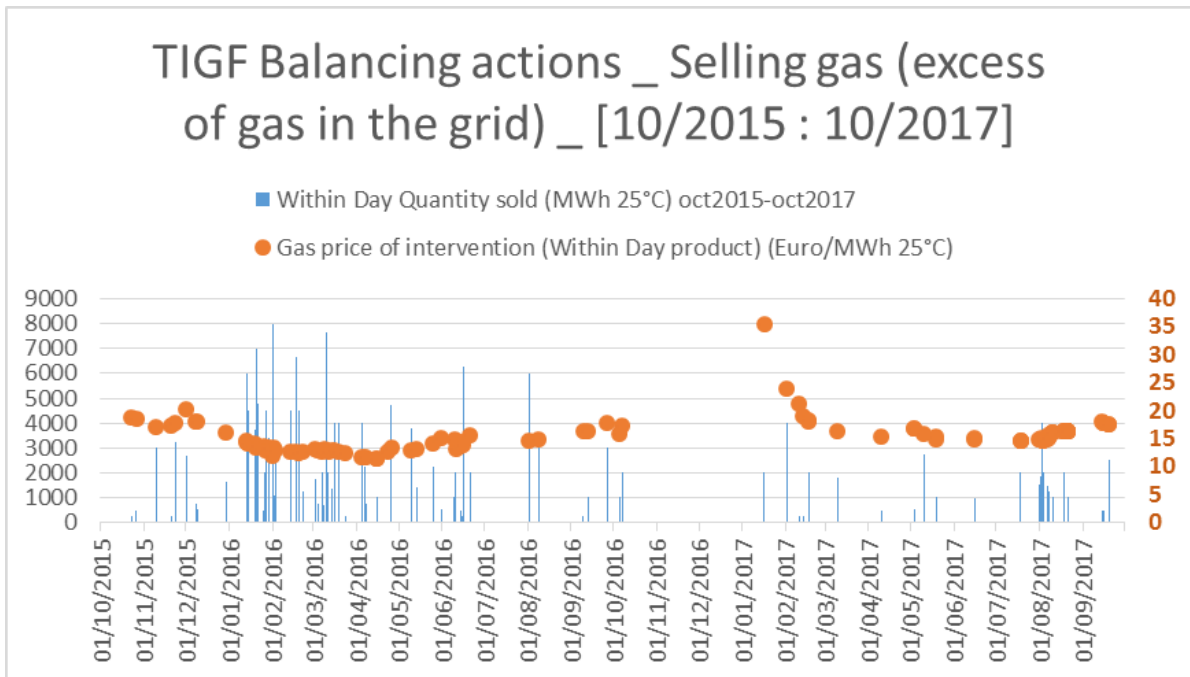


Figure 18. Sell balancing actions: gas volumes procured and prices (TERÉGA)

B) GRTgaz

Thanks to the Concertation Gaz group gathering users, clients and the French NRA, a continuous assessment of the balancing regime of GRTgaz is in place. Permanent interactions with the market enable improvements of the balancing regime as required by the participants, taking duly into account the feedback from the stakeholders.

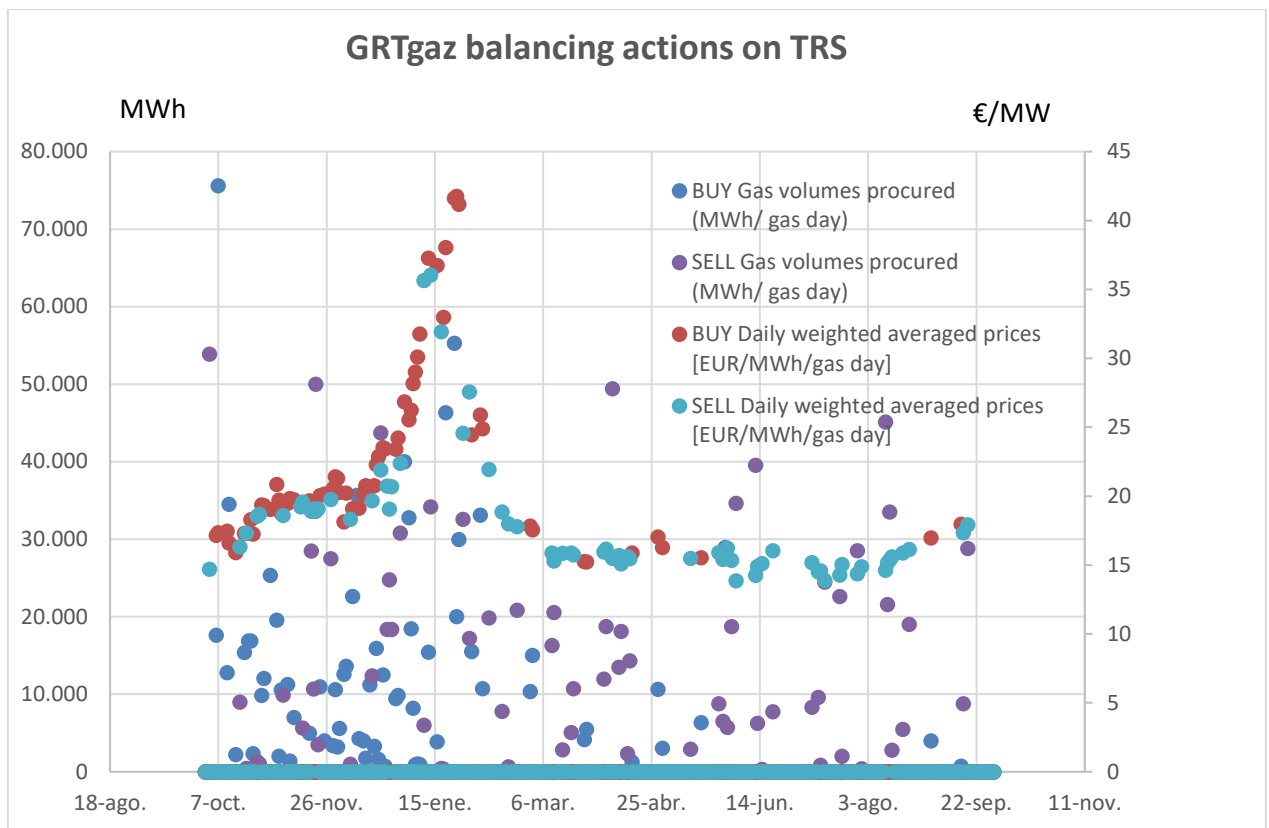


Figure 19. Buy and sell balancing actions: gas volumes procured and prices (GRTgaz)

From October 2016 to October 2017, GRTgaz did 132 balancing actions corresponding to TRS zone, with almost a perfect balance between buy and sell actions. These actions were performed on PEGAS except on 2 days where locational products were used.

It appears that the system worked well to ensure that users are balanced. The balancing actions of GRTgaz sent an effective signal to encourage users to be balanced.

PORTUGAL

MWh	Annual Quantity	% of annual entries	Number of days	Average daily Quantity	Max Daily Quantity	Min Daily Quantity	Max price (€/MWh)	Min price (€/MWh)	Average Price (€/MWh)
System Buys	42 000	-	7	6 000	6 000	6 000	19,57	18,51	19,13
System Sells	0	-	0	-	-	-	-	-	-

Table 5. Buying/selling: number of days, quantities and prices (REN)

According to the national methodology for the determination of the quantities due to be bought/sold for balancing actions by the TSO as a means of repositioning of the conditions for operating the network, and considering there is no trading platform available, all the balancing actions were made through balancing services by auctions.

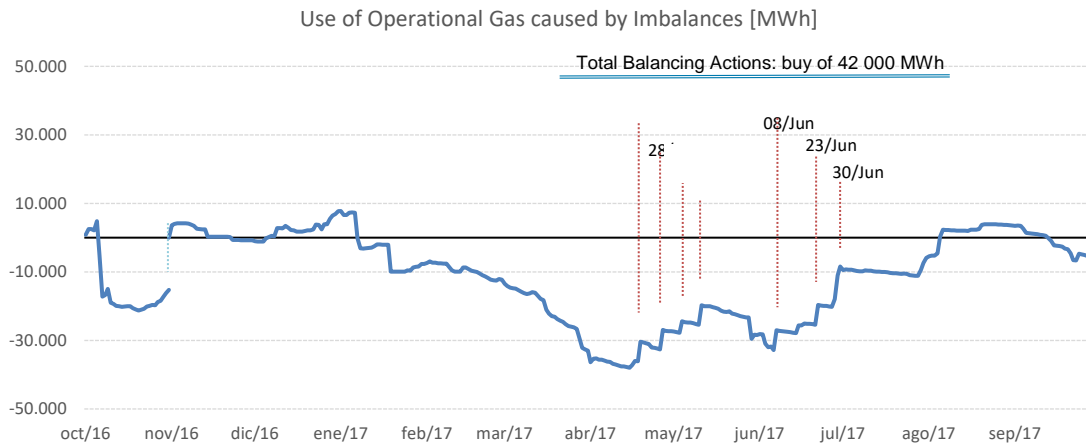


Figure 20. Use of operational gas caused by imbalances (REN)

After an initial period of adaptation of the overall stakeholders to the new balancing scheme, there was an improvement on the behavior of the system. The first winter period and the lack of gas that affected some of the users at Iberian Peninsula caused an accumulated imbalance that took an amount of operational gas to be compensated by balancing services.

The total amount of balancing actions taken on this first year totaled a purchase of 42,000 MWh. This amount of gas was acquired through seven auctions performed over the first year of implementation of the network code, which were triggered when the accumulated deviations were affecting the operational gas available at the TSO disposal.

	Quantity [MWh]	Auction Price [€]	Expenditure [k€]
20/04	6 000	19,00 €	114,00 k€
28/04	6 000	19,55 €	117,30 k€
05/05	6 000	19,57 €	117,42 k€
12/05	6 000	19,15 €	114,90 k€
08/06	6 000	18,51 €	111,06 k€
23/06	6 000	19,15 €	114,90 k€
30/06	6 000	18,99 €	113,94 k€
TOTAL	42 000		803,52 k€

Table 6. Balancing actions: quantity, price and expenditure (REN)

No sell balancing actions were made since it was not considered necessary for the purpose of reestablishment of the operational gas amount.

All information concerning the auctions was made available to the users. In the following internet site it was published the methodology and all the technical rules applicable and commercial information regarding the process of applying to the auction:

<https://www.ign.ren.pt/web/quest/gestao-comercial1>.

In the following internet site, users and public in general could find the results of each auction that took place, including each one of the calls and the respective results:

https://www.ign.ren.pt/acoas-de-compensacao-do-gtq?p_p_id=listAllocationYear_WAR_renatrportlet&p_p_lifecycle=0&listAllocationYear_WAR_renatrportlet_implicitModel=true

3.2 Imbalances charges

SPAIN

The daily imbalance cashout quantities of shippers that are long (entries higher than exits) and the daily imbalance cashout quantities of shippers that are short (entries lower than exits) are both directly correlated with the gas price and seasonality. As gas price rises on winter approaching, the imbalance cashout quantities increase in absolute values.

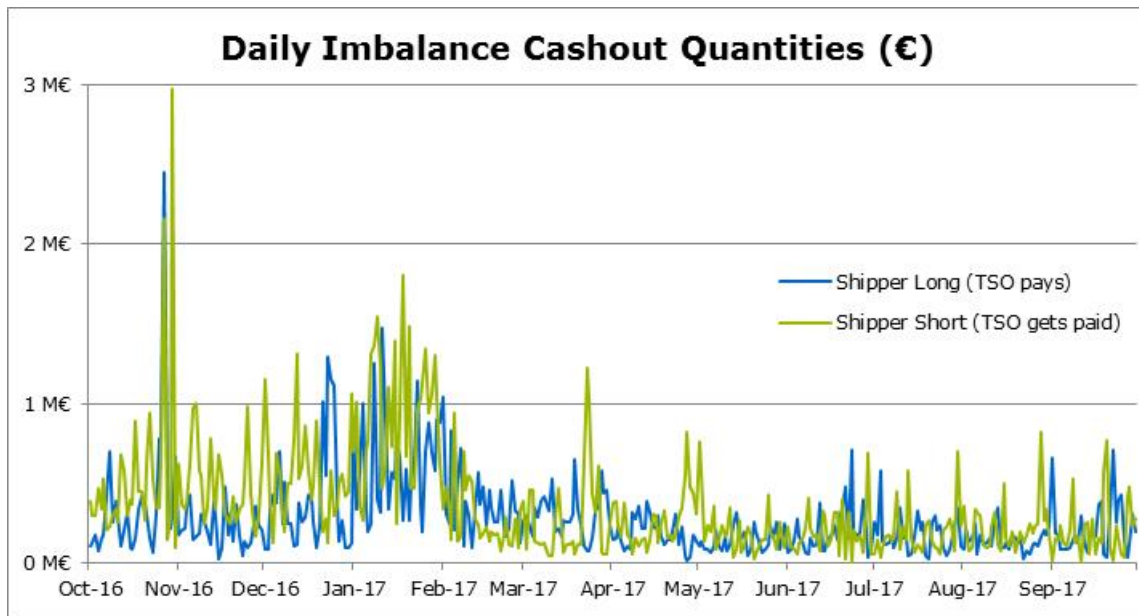


Figure 21. Daily imbalance cashout quantities (€) (ENAGAS)

The maximum and minimum imbalance quantities were:

	Imbalance Quantities
Maximum	469.57
Minimum	144,023.49

Table 7. Maximum/minimum imbalance quantities (ENAGAS)

MWh	Annual Quantity	% of annual entries	Min Daily Quantity	Average daily Quantity	Max Daily Quantity	Min price (€/MWh)	Max price (€/MWh)	Average Price (€/MWh)
Shipper Long	4,962,235.44	1.43%	879.83	13,595.17	115,097.40	15.18	40.66	19.92
Shipper Short	6,017,470.04	2.34%	469.57	16,486.22	144,023.49	15.96	42.74	20.97
Total	10,979,705.49	1.82%	469.57	15,040.69 €	144,023.49	15.18	42.74	20.45

Table 8. Imbalance quantities and prices by short/long positions (ENAGAS)

Generally, users ended up with a short gas position rather than long, meaning that the Technical System Manager had to take more buy balancing actions than sells. In comparison with their total entries the imbalance quantities are very small.

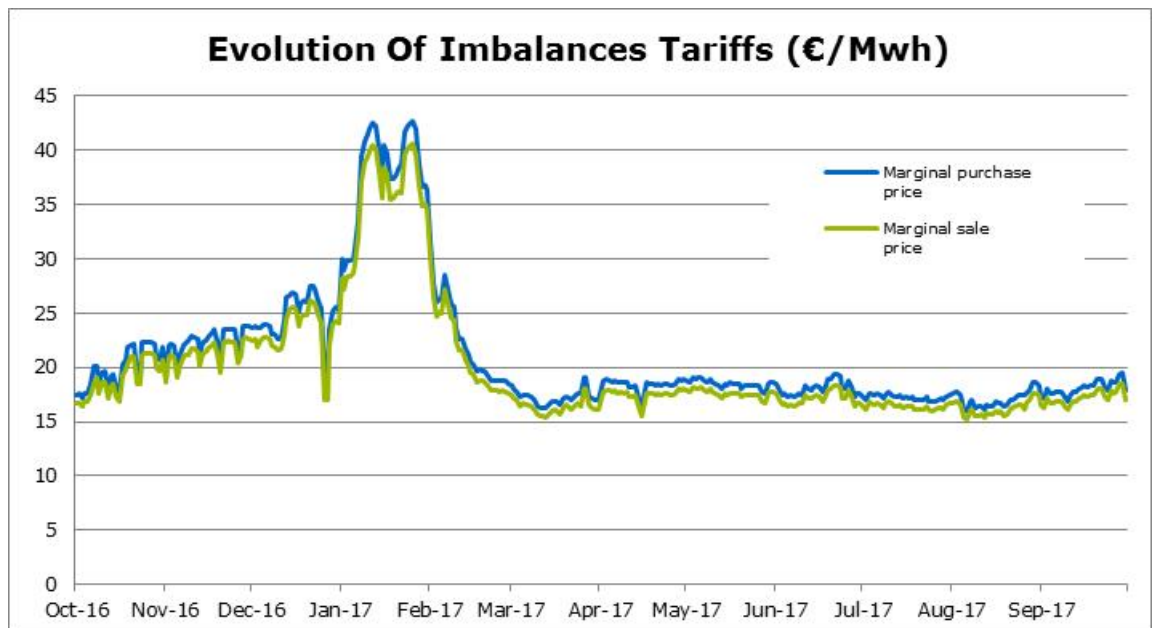


Figure 22. Evolution of imbalance tariffs (€/MWh) (ENAGAS)

The Purchase Marginal Price is calculated as the highest between:

- The highest price of purchases of title products by the Technical System Manager in the virtual trading point “PVB” for the day of gas.
- The weighted average price for that gas day plus a 2.5% small adjustment.

The Sale Marginal Price is calculated as the lowest between:

- The lowest price of the transactions of the sales of title products by the Technical System Manager in the virtual trading point “PVB” for the day of gas.
- The weighted average price for that gas day less a 2.5% small adjustment.

Throughout the analyzed period, the marginal purchase price has been calculated as the highest price of the purchases of the Technical System Manager in the virtual trading point “PVB” 21 times. However, the marginal sale price has only been calculated as the lowest price of the sales of the Technical System Manager in the virtual trading point “PVB” only 3 times.

FRANCE

A) TERÉGA

See section 2.8 and 2.9 for settlement price and TSO neutrality.

The quantities and induced costs for balancing actions are as follows:

Balancing statement 01/10/2015 to 31/12/2015

Date de mise à jour / Updated on : 10/07/2018

Dépenses de Teréga Costs of Teréga	MWh à 25°C MWh at 25°C	Euros	Recettes de Teréga Revenues of Teréga	MWh à 25°C MWh at 25°C	Euros
Achats sur Powernext Purchases on Powernext	-	-	Ventes sur Powernext Sales on Powernext	12 830	231 613
Achats auprès des expéditeurs Purchases from shippers	201 045	3 442 738	Ventes auprès des expéditeurs Sales to shippers	180 586	3 298 295
Déficit de gaz * Lack of gas *	33 060	603 522	Excédent de gaz * Surplus of gas *	40 689	529 231
Somme / Sum	234 105	4 046 259		234 105	4 059 139
Solde / Balance		-			12 880

Table 9. Balancing statement from 01/10/2015 to 31/12/2015 (TERÉGA)

Balancing statement 01/01/2016 to 31/12/2016

Date de mise à jour / Updated on : 10/07/2018

Dépenses de Teréga Costs of Teréga	MWh à 25°C MWh at 25°C	Euros	Recettes de Teréga Revenues of Teréga	MWh à 25°C MWh at 25°C	Euros
Achats sur Powernext Purchases on Powernext	24 590	385 882	Ventes sur Powernext Sales on Powernext	140 510	1 892 973
Achats auprès des expéditeurs Purchases from shippers	551 844	8 336 130	Ventes auprès des expéditeurs Sales to shippers	650 095	10 146 920
Déficit de gaz * Lack of gas *	264 679	3 828 483	Excédent de gaz * Surplus of gas *	50 508	1 305 679
Somme / Sum	841 113	12 550 494		841 113	13 345 573
Solde / Balance		-			795 078

Table 10. Balancing statement from 01/01/2016 to 31/12/2016 (TERÉGA)

Balancing statement 01/01/2017 to 30/09/2017

Date de mise à jour / Updated on : **10/07/2018**

Dépenses de Teréga Costs of Teréga	MWh à 25°C MWh at 25°C	Euros	Recettes de Teréga Revenues of Teréga	MWh à 25°C MWh at 25°C	Euros
Achats sur Powernext <i>Purchases on Powernext</i>	12 840	247 154	Ventes sur Powernext <i>Sales on Powernext</i>	58 730	1 003 021
Achats auprès des expéditeurs <i>Purchases from shippers</i>	421 445	7 839 375	Ventes auprès des expéditeurs <i>Sales to shippers</i>	454 152	9 613 753
Déficit de gaz * <i>Lack of gas *</i>	116 789	2 126 845	Excédent de gaz * <i>Surplus of gas *</i>	38 191	618 857
Somme / Sum	551 074	10 213 373		551 074	11 235 630
Solde / Balance		-			1 022 257

Table 11. Balancing statement from 01/01/2017 to 30/09/2017 (TERÉGA)

PORTUGAL

In the beginning of the gas year 2016/2017, some imbalances, short and long, occurred due to the lack of experience of stakeholders with the new balancing scheme. Considering the high impact of this implementation, it was decided by the NRA, after proposal of the system operators, that the total imbalances accumulated in the first month of implementation should not be charged. Instead, the amounts incurred by each user were compensated by operational gas that was resealed at that time.

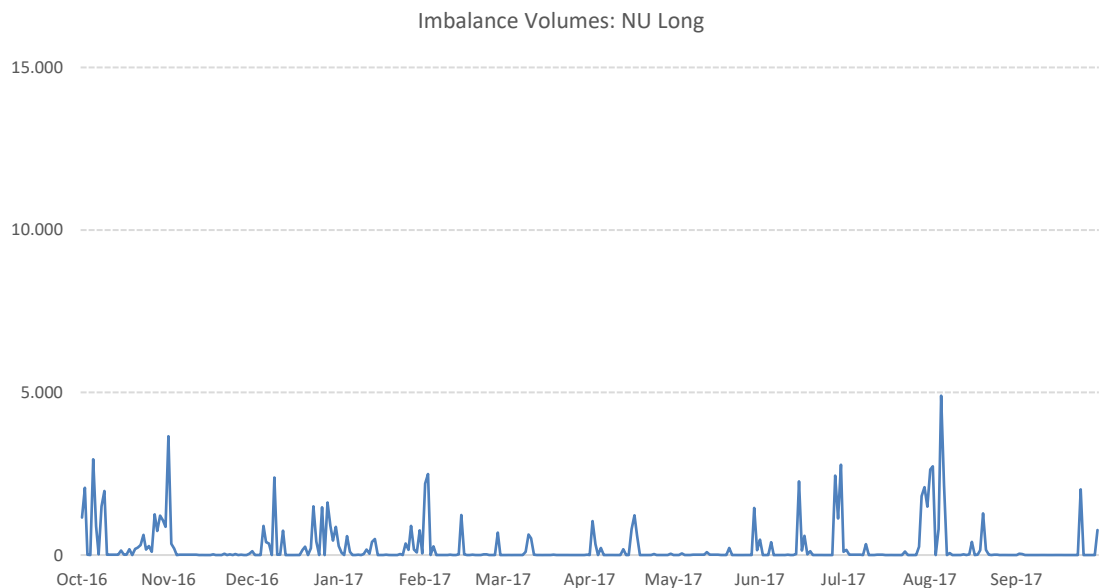


Figure 23. Imbalance volumes: long position (REN)

NU Long	Energy [MWh]	€	Date
Highest	4 902	71 738	05/08/2017
Average	246	4 678	(-)

Table 12. Imbalances (long): highest and average quantity and cashout (REN)

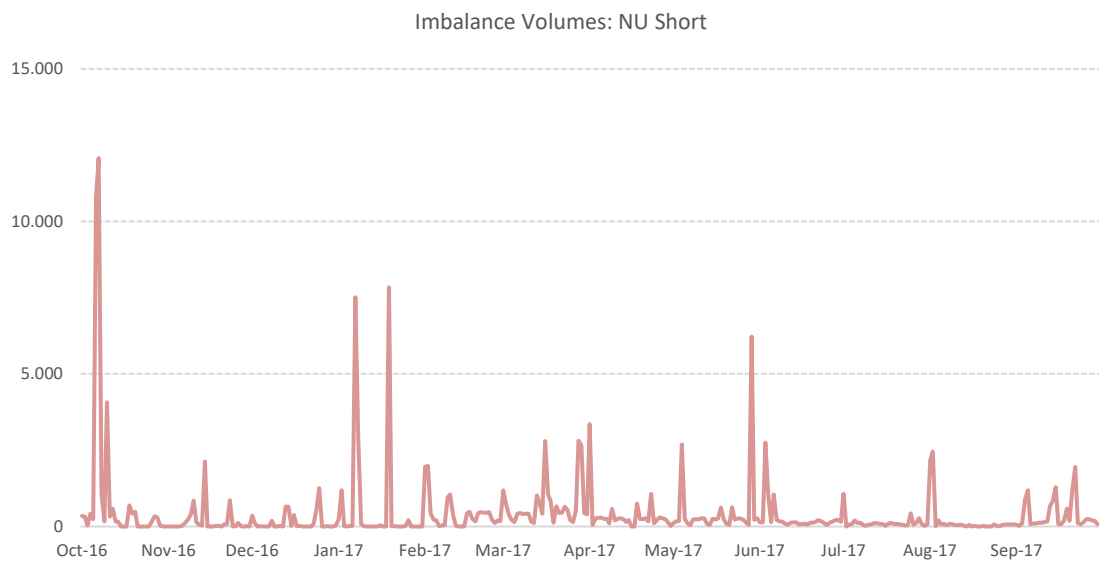


Figure 24. Imbalance volumes: short position (REN)

NU Short	Energy [MWh]	€	Date
Highest	7 840	322 243	19/01/2017
Average	417	9 890	(-)

Table 13. Imbalances (short): highest and average quantity and cashout (REN)

	Annual Quantity	% of Annual Entries	Min Daily Quantity	Average Daily Quantity	Max Daily Quantity	Min Price (€/MWh)	Max Price (€/MWh)	Average Price (€/MWh)
Long	70 639	0,1%	8	304 481	4 902 028	14,07	39,17	19,02
Short	119 680	0,2%	-322 243	9 164	0	17,99	46,51	23,73

Table 14. Imbalances (short/long): quantities and prices (REN)

By January 2017, there were difficulties for some of the users to purchase gas, which led them to be short on the system for several times. Another consequence of this occurrence was an increase of the prices at MIBGAS. This situation lasted until the following month.

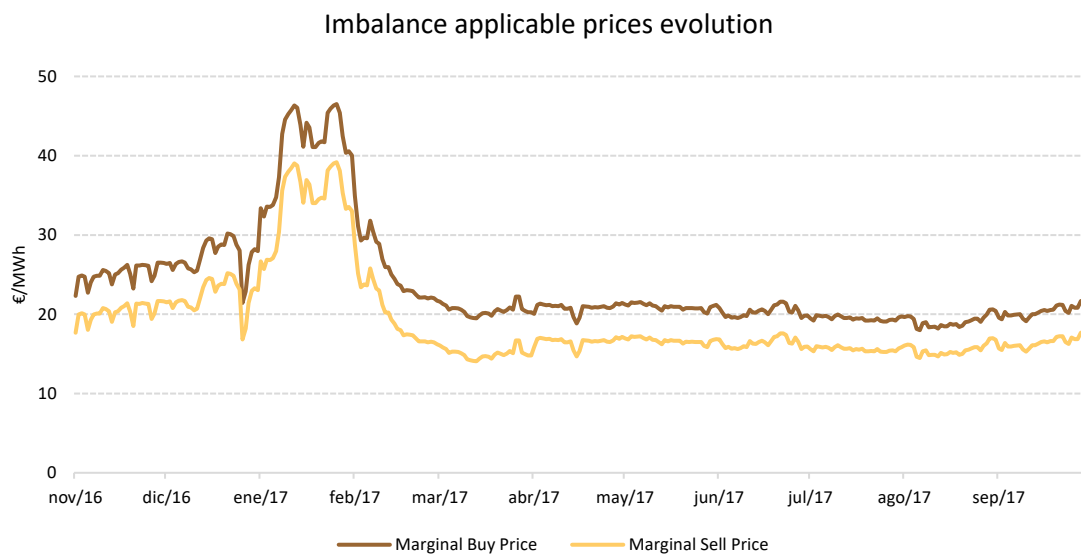


Figure 25. Evolution of applicable prices (REN)

The rules defined to the determination of the applicable prices to imbalances were the following:

- Marginal sell price: determined by the minimum between the lowest sell price of any title product traded by the TSO and the weighted average price multiplied by 0,975;

- Marginal buy price: determined by the maximum between the highest buy price of any title product traded by the TSO and the weighted average price multiplied by 1,025.

Meanwhile, since there is no trading platform available for the Portuguese system, the weighted average price was determined considering the weighted average price at the Spanish VTP “PVB” affected by the corresponding transport tariffs at VIP Ibérico.

3.3 TSOs’ neutrality

SPAIN

The following table shows the evolution of incomes and expenditures of the Technical System Manager during the gas year, distinguishing each economic flow that affect neutrality: Short Term Standardised product (STSP) (buy and sell), shippers’ imbalances cashout (long and short positions) and use of balancing services.

Incomes and expenditures of the TSO during the year							
	TSO System Buys	TSO System Sells	Incomes from shippers short	Expenditures to shippers long	Use of balancing services	Total (incomes-expenditures)	Total after neutrality *
oct-16	-4,102,298	0	17,204,742	-11,551,160	0	1,551,283.57	1,551,283.57
nov-16	-5,454,768	0	14,302,521	-6,698,324	0	2,149,428.85	2,149,428.85
dic-16	-4,889,072	1,996,200	16,885,162	-12,096,063	0	1,896,226.72	1,896,226.72
ene-17	-10,608,210	0	33,446,108	-23,575,520	0	-737,621.73	0.00
feb-17	0	1,025,268	8,049,841	-10,482,261	0	-1,407,151.42	0.00
mar-17	-2,351,355	1,274,518	8,497,727	-9,393,433	0	-1,972,543.58	0.00
abr-17	-1,799,564	1,446,645	7,945,775	-5,682,739	0	1,910,117.28	1,910,117.28
may-17	-1,593,373	0	6,294,121	-4,626,627	0	74,121.44	74,121.44
jun-17	0	658,744	6,096,302	-5,908,034	0	847,012.33	847,012.33
jul-17	-762,681	0	5,885,496	-5,708,030	0	-585,215.01	0.00
ago-17	-2,243,372	0	7,017,605	-4,574,439	0	199,794.82	199,794.82
sep-17	0	543,895	6,409,968	-6,649,290	0	304,573.12	304,573.12
TOTAL	-33,804,692	6,945,269	138,035,368	-106,945,918	0	4,230,026	8,932,558

Table 15. Incomes and expenditures of the TSO October 16-September 17 (ENAGAS)

The incomes or expenditures from users’ imbalances have been calculated with the best information available on the balance in each month.

(*) According to Spanish regulation, when the result of incomes-expenditures for one month is negative, the Technical System Manager distributes the resultant quantity between all the users that have operated that month.

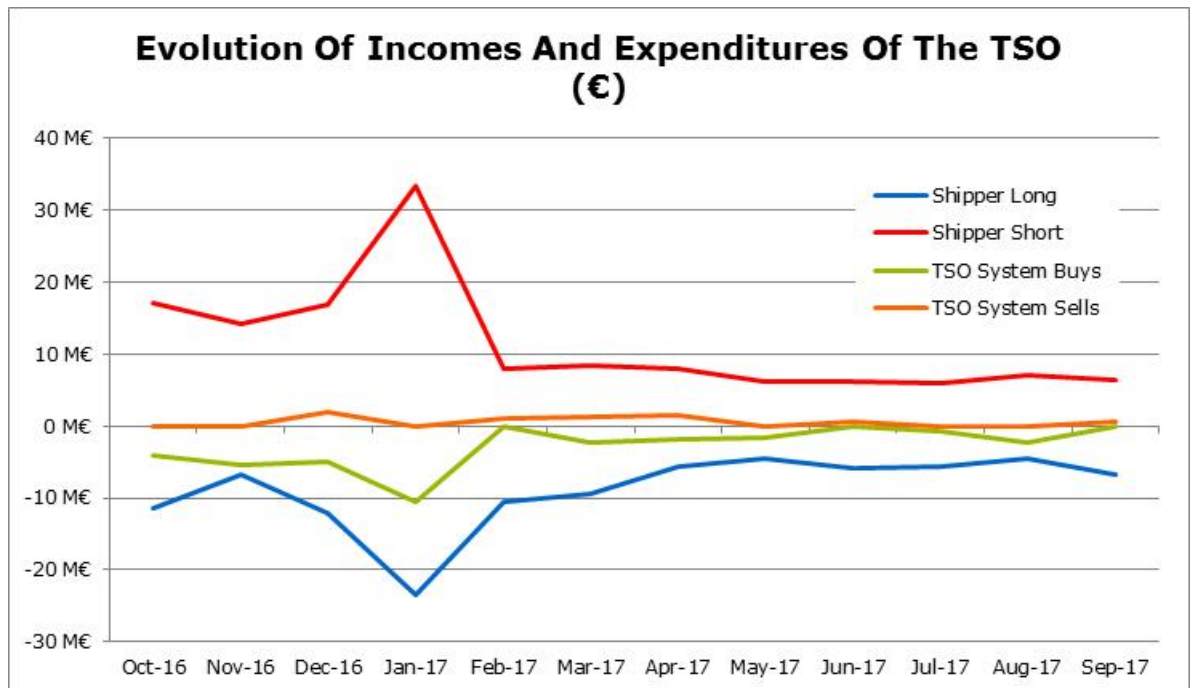


Figure 26. Evolution of incomes/expenditure of TSO (ENAGAS)

The maximum, minimum and average cumulative neutrality (unadjusted financial position) values during the year were:

Maximum	2,149,429 €
Minimum	-1,972,544 €
Average	352,502 €

Table 16. Maximum, minimum and average cumulative neutrality (ENAGAS)

The average is calculated with total incomes minus total expenditures.

The net financial position defined as the difference between incomes and expenditures during the year amounted to 4.230.026 euros.

According to Spanish regulation, when the result of incomes minus expenditures calculation for one month is negative, the Technical System Manager distributes the resultant quantity between all the users that have operated that month. Therefore, the quantity after neutrality is zero. It took place four times in the analyzed period. Considering such application of neutrality, the net financial position after recovering the negative quantities from users is 8.932.558 €

	Quantities (MWh)	Cashflows (€)
Financial credits to neutrality		
TSO System Sells	398.81	6,945,269.31
Shipper Imbalance shorts	-6,123.64	138,035,367.55
Sub-total	-5,724.83	144,980,636.86
Financial debits to neutrality		
TSO System Buys	1,408.04	-33,804,692.12
Shipper Imbalance longs	5,068.41	-106,945,918.35
Sub-total	6,476.45	-140,750,610.47
Net neutrality per unit of market volume (entries)	751.62	4,230,026.39

Table 17. Financial credits/debits to neutrality (ENAGAS)

PORTUGAL

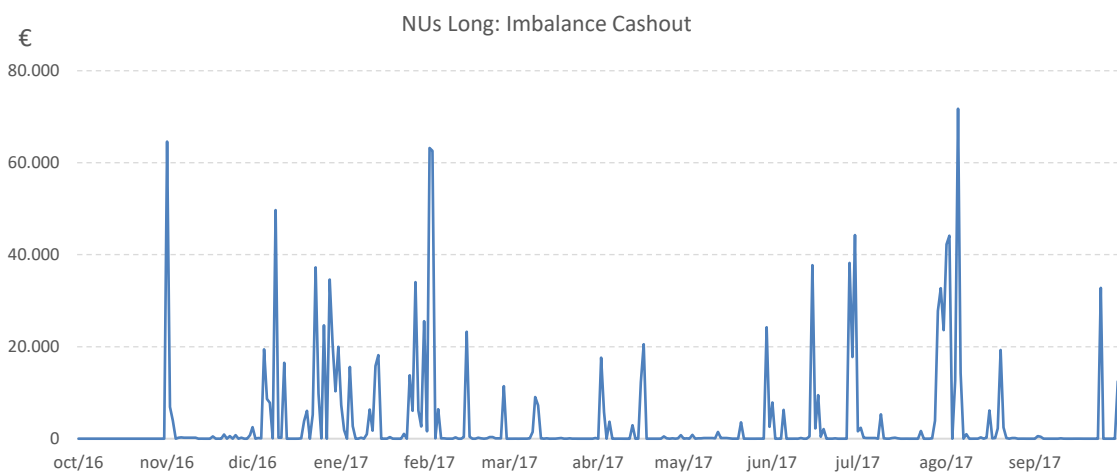


Figure 27. Imbalance cashout long positions (REN)

Cashout	€	Date
Highest	71 738	05/08/2017
Average	3 667	(-)

Table 18. Imbalance cashout: long positions (REN)

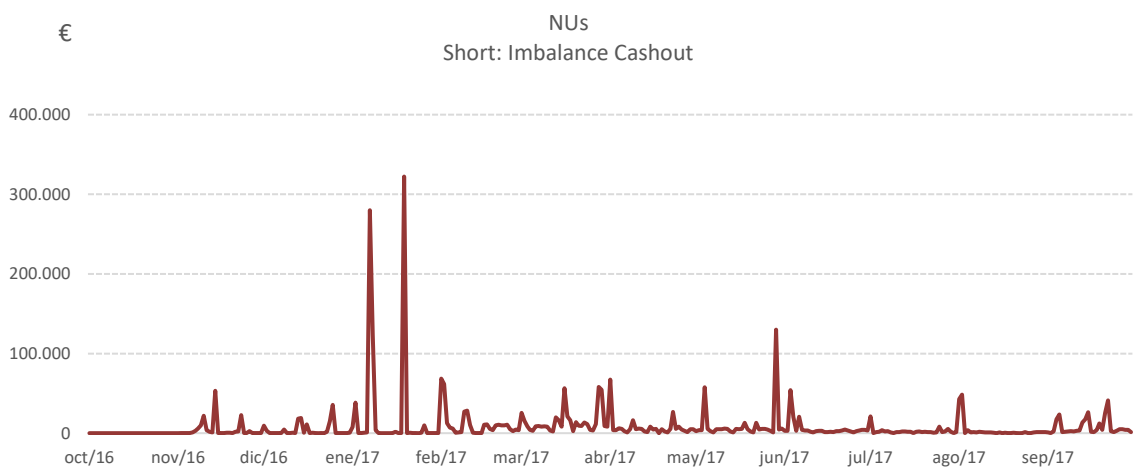


Figure 28. Imbalance cashout short positions (REN)

Cashout	€	Date
Highest	322 243	19/01/2017
Average	8 084	(-)

Table 19. Imbalance cashout: short positions (REN)

Balancing services that took place in the first gas year.

	Quantity [MWh]	Auction Price [€]	Expenditure [k€]
20/04	6 000	19,00 €	114,00 k€
28/04	6 000	19,55 €	117,30 k€
05/05	6 000	19,57 €	117,42 k€
12/05	6 000	19,15 €	114,90 k€
08/06	6 000	18,51 €	111,06 k€
23/06	6 000	19,15 €	114,90 k€
30/06	6 000	18,99 €	113,94 k€
TOTAL	42 000		803,52 k€

Table 20. Balancing actions: quantity, price and expenditure (REN)

By the end of the gas year, the global financial credits to neutrality were 119,680 MWh while the global financial debts to neutrality were 112,639 MWh. The final difference of 7,041 MWh was still considered within the margins of operational gas available to the Technical System Manager.

As the Technical System Manager's neutrality is calculated every month taking into account the expenditures and incomes in the same period, the eligible costs and revenues to neutrality are sum up and proportionately imposed to the users according to the extent the users makes use of the relevant entry and exit points to/from the network.

	Quantities [MWh]	Quantities [€]
Financial Credits to neutrality		
TSO System Sells	0	0
Shipper Imbalance Short	119 680	2 950 804
Sub-total	119 680	2 950 804
Financial Debits to neutrality		
TSO System Buys	42 000	803 520
Shipper Imbalance Long	70 639	1 338 549
Sub-total	112 639	2 142 069

Table 21. Financial credits/debits to neutrality (REN)

3.4 Information provision

SPAIN

Information Provision process came into force in Spain in June 2016. There have not been significant incidents since the implementation of the process. The communication of the required information has been available for users in 100% of landmarks.

As it is established in the *Resolución de 23 de Diciembre de 2015 de la DGPEyM por la que se aprueba el Protocolo de Detalle PD-17 “Provisión de Información sobre el balance del gas en las redes de transporte”*, indicators for the measure of quality and compliance of the timetables by operators and Enagas GTS must be proposed by the Spanish Working Group for updating, modification and review of the Spanish Gas Code (NGTS) before June 2016. Those indicators have been recently approved and published by the Spanish Regulator and will be included in the detail Protocol PD-17 as an annex. Further information about quality of information provided will be available once these indicators come into force.



Regarding Cost Benefit Analysis, it is necessary enough background and historical data before developing the CBA. As it is established in *Circular de Balance 2/2015 (Chapter 16.5)*, an Information Provision analysis will be carry out by Enagás GTS in coordination with transmission system operators (TSOs) and distribution system operators (DSOs) before the 30th of September 2018.

FRANCE

A) TERÉGA

The information is accessible through different ways:

- Individual balancing notice to customers in line with Balancing network code.
- Customer portal: the Forecasted linepack is published on an hourly basis on the TETRA portal. In addition, the detail of interventions (sell/buy | quantity | price) is available. The information is public.
- Sum-up of cost of interventions are published on Teréga website.
- Direct contact with Teréga's Back-Office.

B) GRTgaz:

Information is displayed on the TRANS@ctions customer IT system: information is provided for the status of the system, as well as for the individual portfolio of the network users.

PORTUGAL

The quality of the information provided was generally good. However, there were some incidents that caused unavailability of correct information in the appropriate time which occurred with greater incidence in the initial period. Following each incident, an assessment was made in order to identify and correct the anomalies and to avoid future incidents motivated by the same reasons.

- We can group the causes of the incidents into three groups:
- Incidents occurring due to the immaturity of the BAL implementation processes mainly because of computer bugs and inexperience of stakeholders;
- Unavailability of input data at the appropriate time by DSOs. For the purpose of handling with this matter, there were promoted meetings with concerned parties

in order to improve the processes, in particular, by requesting the automation of communication and backup processes implementation.

- Technological issues that were solved at each time occurred.

The unavailability periods registered are presented in the table below.

	out/16	nov/16	dez/16	jan/17	fev/17	mar/17	abr/17	mai/17	jun/17	jul/17	ago/17	set/17
Nº of Days	0,97	0,00	0,25	0,04	0,00	0,03	0,00	0,07	0,11	0,00	0,08	0,15

Table 22. Unavailability of correct information: number of days (REN)

3.5 System status

SPAIN

The following figure shows the highest, lowest and average opening linepack level

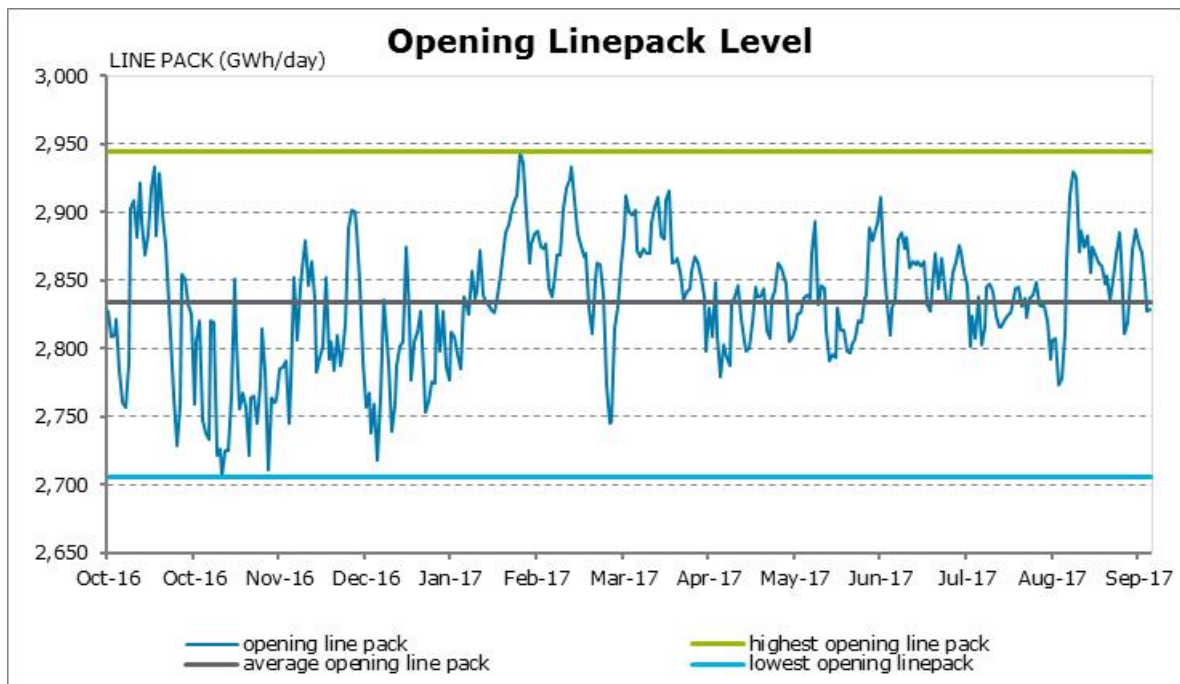


Figure 29. Opening linepack level (ENAGAS)

Particularly and regarding the maximum and minimum variation in cumulative physical linepack and commercial position, the approximation in average of both values are very close to zero.

	GWh/d		
	Maximum	Minimum	Average
Variations in cumulative physical linepack	111.93	-96.71	0.02
Variations in cumulative commercial position	46.87	-128.96	-2.20

Table 23. Variation in cumulative physical linepack and cumulative commercial position (ENAGAS)

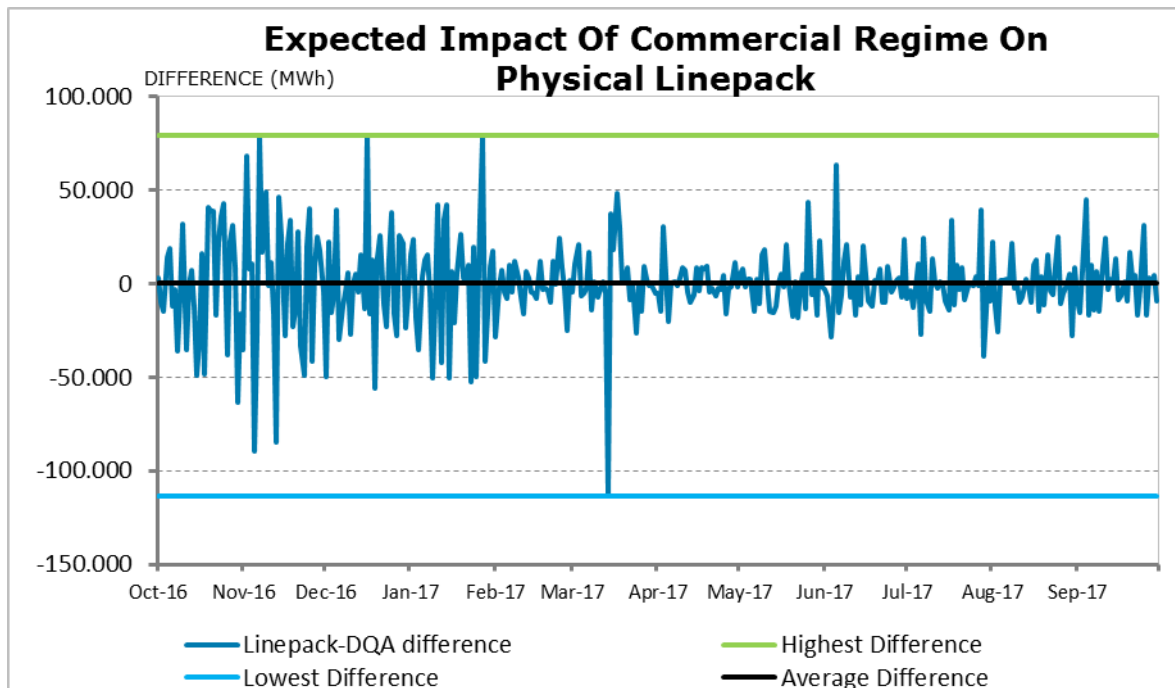


Figure 30. Expected impact of commercial regime on physical linepack (ENAGAS)

The impact of other aspects apart from commercial imbalances on the linepack is residual except for the new cushion gas that it is punctual and it lasts the time that goes from the purchase on the market to its subsequent injection.

The oscillations shown at the impact of commercial regime on physical linepack during the first months are compensated between the different infrastructures, since operation was managed by OBA=0 at infrastructure level. Since February 2017, the management changed to global OBA=0 resulting in less oscillations.

FRANCE

A) TERÉGA:

TERÉGA has set up a balancing statement, recording what it spends and earns under aforementioned transactions and the balancing rules of the transmission contract. Since the 1st of october 2015, the balance is allocated to users as a proportion of the quantities delivered, according to the Deliberation of the French Energy Regulatory Commission of 15 January 2015 approving the balancing rules.

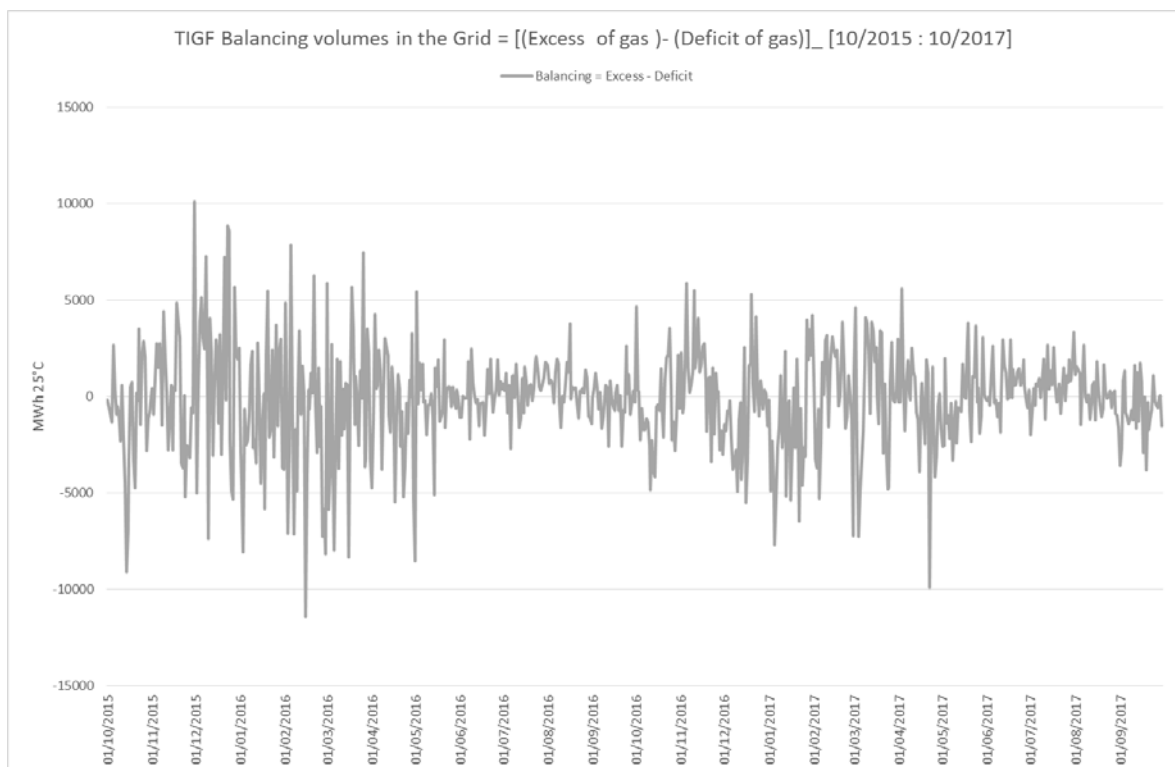


Figure 31. Balancing volumes in the grid (excess-deficit) (TEREGA)

The graph here above shows the net balance of gas volumes (Excess of gas – Deficit of gas in the grid) from users.

A positive position on the graph indicates that users are long, and a negative position indicates that users are short. We can notice a seasonal envelope where users are better balanced during the summer than in the winter.

According to this net balance compared to TERÉGA linepack flexibility detailed in part 2.5, interventions on PEGAS platform may occur. The full balancing debt is then repaid/refund by the billing done in M+2 for M with the pricing described in part 2.8.

A) GRTgaz

The information of status of the system is primarily based on the End of Day projected linepack. Depending of the level of the acceptable daily linepack value compatible with the operation limits of the system, the network user can see continuously during the day the status of the system through a color indicator (dark green, light green, orange, red) giving a clear signal of the tension of the system and a possible balancing action to be taken by GRTgaz.

PORTUGAL

Although the picture shows a very high frequency of variation for the Opening Linepack it is found an average of around the reference value.

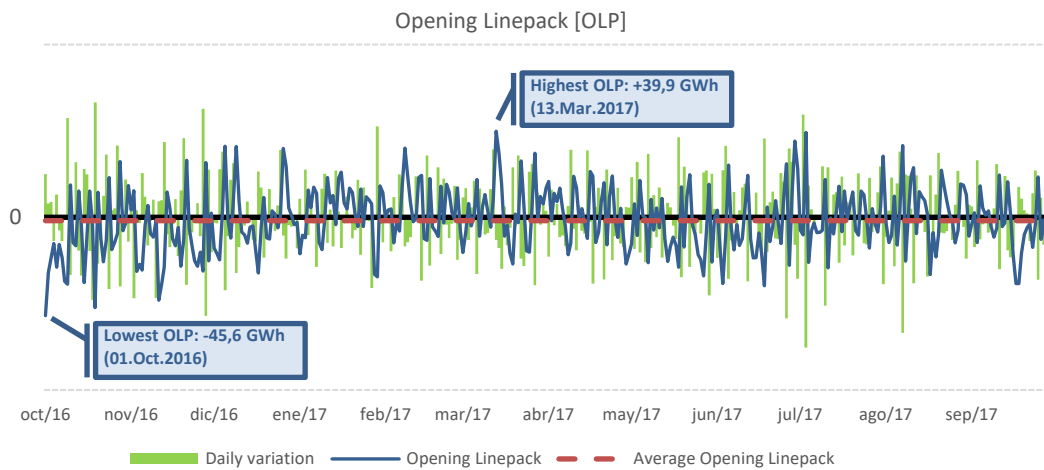


Figure 32. Opening linepack (REN)

	Daily Variation
Reduction	-60 311
Increase	53 300

Table 24. Linepack daily variation (REN)

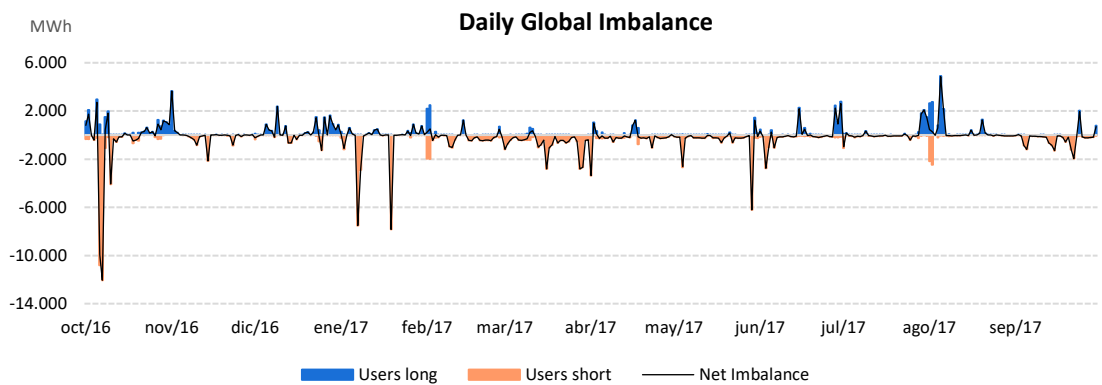


Figure 33. Daily global imbalance (REN)

Data Analysis	Agents Short	Agents Long	Daily
Lowest	-12 071	0	-12 048
Highest	0	4 902	4 843

Table 25. Lowest/highest daily global imbalance (short/long) (REN)

3.6 Linepack flexibility.

SPAIN

Linepack flexibility is not currently marketed in Spain.

FRANCE

See point 2.5.

PORTUGAL

In the period under analysis, users were entitled to an amount of linepack flexibility service determined considering a portion of the available flexibility of the transmission system.

The highest value verified of global utilization by the users in module was 13,306 MWh on 17th of April 2017.

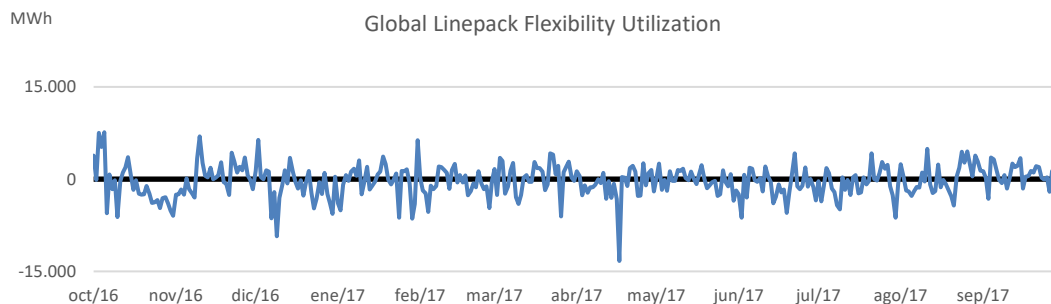


Figure 34. Global linepack flexibility utilization (REN)

4. Potential for application of cross-border balancing

In order to move towards greater market integration, SGRI could explore the potential for application of cross-border balancing. The balancing NC establishes that the balancing actions must be undertaken in a market-based manner through short term standardized products on a trading platform or using balancing services through public tender procedures. Opening up the possibility for TSOs to use trading platforms in neighboring countries can contribute to operate the network in most efficient and cost-effective way as well as to foster competition in gas markets.



SGRI may explore different regulatory developments to allow TSOs for undertaking balancing actions in different trading platforms such as:

- Registration of TSOs as agent in other organized markets to buy/sell gas following price signals.
- Assessing the possibility for the TSOs to use savailable cross-border capacity for free or nearly free cost.

5. Conclusions and recommendations

Currently there are five balancing areas in the South Gas Region: three in France (GRTgaz Nord, GRTgaz Sud and TERÉGA), one in Spain and one in Portugal managed by the corresponding TSOs, namely, GRTgaz, TERÉGA, Enagás and REN respectively.

The Spanish gas balancing zone comprises all the transmission gas network. The PVB is the virtual trading point and the trading platform for balancing actions is MIBGAS.

With the creation of the single market place in France, which will be implemented as from 1st November 2018, only two balancing areas will remain: one for GRTgaz and another one for TERÉGA. The distribution of imbalances between the two balancing areas will remain unchanged.

The new French market place will work as a single entry/exit system from the network user's point of view. Accordingly, users' imbalances will be calculated on the scale of the whole trading region as a single balancing area. Daily imbalances will then be distributed among the balancing areas of the TSOs, depending on the type of shipper: end client supplier, importer/exporter, trader, etc.

As from 1st of November 2018, the entry-exit system for France will be called TRF (Trading Region France), resulting from the merger of the current market places PEG Nord and TRS. At this date, the virtual trading point connected to the TRF entry/exit system will be called PEG.

As part of its balancing system, both TERÉGA and GRTgaz sell and buy quantities of gas via Powernext's PEGAS platform.



The portuguese gas balancing zone comprises all the Portuguese transmission gas network. Market agents adjust their positions in the transmission network by modifying their inputs and offtakes or trading natural gas in the VTP.

In Portugal, a trading platform with adequate characteristics to support the balancing actions of the system's Global Technical Manager (GTG) has not been implemented yet. However, it is expected that MIBGAS Portuguese hub will be functional, allowing balancing actions to take place, as well as the application of prices in the determination of daily imbalance charges.

Balancing actions in Portugal are provided through auctions. REN Gasodutos is responsible for conducting the auctions by means of OMIP's dedicated platform (electricity derivatives market operator).

Technical System Managers of Portugal continuously evaluate if the global position (total inputs-total offtakes) puts the system integrity at risk. The Technical System Manager may carry out balancing actions with the aim of keeping the transmission network within normal operating conditions.

System flexibility conditions vary between balancing zones.

Spain has three operating bands: indifference, monitoring and alert. The indifference band, inside which there is no balancing actions, is 98 GWh wide, around 10% of the daily gas demand on average.

In France, GRTgaz and TERÉGA have four operating bands: dark green, light green, orange and red.

Regarding TERÉGA, the dark green band, inside which there is no balancing actions, is 24 GWh wide, around 2% of the daily gas demand on average. This dark green plus light green band is 44 GWh/d wide, around 4% of the daily gas demand on average.

In Portugal, the transport network has a linepack capacity that varies between 40 and 60 GWh, depending on the operating conditions. These bands represent between 30% and 44% of the daily gas demand on average.

Hence, TERÉGA has the smallest band of tolerated variability in linepack, followed by ENAGAS, REN and GRTgaz. REN has the laxest tolerance in its linepack variation.



With regard about rules and timelines on nomination and re-nomination procedures, the three countries of the region follow the same pattern. Users can carry out nominations before 14:00 h (13:00h for Portugal because of the time difference with respect to UTC) of the day D-1, with a period of two hours for the confirmation.

The re-nomination cycle starts at 16:00 h of the day D-1 (15:00h for Portugal because of the time difference with respect to UTC) until three hours before the end of the gas day D, namely, at 3:00 h (last re-nomination cycle). Each re-nomination cycles lasts two hours.

With regard to the information provision French and Spanish regulation have implemented the so called “base case” model, where the information on non-daily metered off-takes consists of a day ahead and within day forecasts, while Portugal has implemented the “variant 2” where the information on non-daily metered off-takes is a day ahead forecast.

With regard to imbalance charges, in France and Spain, when TSOs do not make any balancing actions, users are paid (or charged) for their daily imbalance the weighted average gas price of their respective markets (TRS and PEG Nord for France and MIBGAS for Spain) minus the same minor adjustment 2.5% (or plus 2.5% respectively).

In Portugal, imbalance prices corresponds to the weighted average gas price in MIBGAS, also adjusted by the same percentage plus/less 2.5% applied to negative/positive imbalances respectively. But, Portuguese daily imbalance charges also includes interconnection tariffs in the direction from Spain to Portugal (in the case of a default imbalance) or from Portugal to Spain (in case of an excess imbalance).

In the case TSOs have done balancing actions (gas traded in the market to keep the system balanced) Spanish and French TSOs charge network users with the marginal price of their respective markets (higher price of the daily weighted average price plus the adjustment and the purchase price of the gas traded by the TSO). Portuguese TSO develops its balancing actions through an auction mechanism performed by OMIP (the electricity derivatives market operator) on a dedicated platform. It is foreseen that these balancing actions will become based on MIBGAS in the near future.

With regard to the financial neutrality of TSOs, balancing settlements (imbalance charges and balancing actions) are performed by TSOs without any benefit or cost, apart from



possible incentives to TSOs' efficiency.¹⁰ In the light of the evidence, the incentive scheme will be followed, periodically assessed and it will be updated if needed.

TERÉGA and GRTgaz make their balancing actions through a computer algorithm (robot). ENAGAS GTS and REN through a manual surveillance.

In order to move towards greater market integration, SGRI could explore the potential for application of cross-border balancing. The balancing NC establishes that the balancing actions must be undertaken in a market-based manner through short term standardized products on a trading platform or using balancing services through public tender procedures. Opening up the possibility for TSOs to use trading platforms in neighboring countries can contribute to operate the network in most efficient and cost-effective way as well as to foster competition in gas markets.

With regard to the implicit allocation of capacity method that is approved in both the Spanish and the Portuguese Regulation, since MIBGAS is not serving both balancing zones, it is still to be assessed as to its effectiveness, efficiency and correct calibration. Other alternative methodologies that combine the explicit and the implicit allocation in a single algorithm and thus reduce the potential for congestion and consequent unused capacity at the interconnection could be also studied and envisaged in the future. NRAs and TSOs will keep on working in monitoring and gathering data to gain knowledge from practical experience in order to identify those areas where there is room for improvement.

¹⁰ In May 2018, CNMC has approved an incentive scheme to TSO's efficiency in the use of balancing actions.



LIST OF ACRONYMS AND SHORT DESCRIPTIONS

AOC – Almacenamiento Operativo Comercial (former Spanish VTP)

CNMC - Spanish NRA

CRE - French NRA

DA – Day Ahead

DBP – Daily Projected Closing Imbalance per user (Spain)

DM – Daily metered

DQA – Transmission network estimated aggregated imbalance Index (Spain)

DSO – Distribution System Operator

ENAGAS - Spanish TSO that is the owner of the biggest transmission network.

ENAGAS GTS – Spanish Technical Manager System. This entity is responsible for the technical management of transmission network in Spain regardless of who owns the network. ENAGAS GTS do not own transmission network assets and it only develop management activities.

ERP – Entity responsible for forecasting

ERSE - Portuguese NRA

GRTgaz - French TSO

GTG – Global Technical Manager (Portugal)

IDQ – Network Imbalance Index (Spain)

IM – Intraday metered

IMR - Implementation Monitoring Report

LNG - Liquefied Natural Gas

MA - Market agent

MIBGAS – Mercado Ibérico de Gas (Gas exchange)

MPGTG – Manual of Global Technical Management Procedures (Portugal)

MS – ATR – IT platform for secondary market

NC - Network Code



NDM – Non-daily metered

NRA - National Regulatory Authority

NSNG – National System of Natural Gas (Portugal)

NU – Network user

OMIP – Iberian Power Derivatives Exchange

OBA – Operating Balancing Agreement

OTC – Over the Counter (off-exchange trading)

PEG Nord - Point d'échange de gaz – Nord (Gas exchange, France)

PIR – Crossborder Interface point (France)

PITD – Interface points transmission-distribution (France)

PITS – Interface points with storage (France)

PITTM – Interface Point with LNG terminal (France)

PLC – Projected Closing Linepack (France)

PMargV – Marginal Price of sale

Powernext's PEGAS platform – Balancing platform (France)

PVB – Punto Virtual de Balance (Name of Spanish VTP)

REN - Portuguese TSO

SEC – Indicator of forecasted linepack (France)

SET – Transport balancing service (France)

SGRI - South Gas Regional Initiative

SL-ATR – Sistema Logístico de Acceso de Terceros a Redes (Spain) IT system for the logistic of the Spanish gas system.

STSP – Short Term Standardised Products

TERÉGA - French TSO

TPA – Third Party Access

TRF – Trading Region France (Gas exchange)

TSO - Transmission System Operator



TRS - Trading Region South (Gas exchange)

TSM - Technical System Manager

UGS – Underground Storage

VIP – Virtual Interconnection Point

VTP - Virtual Trading Point

WD – Within Day



REGULATION ON BALANCING OF TRANSMISSION NETWORKS

European Union

Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks¹¹.

France

CRE deliberation of 10 September 2015 “Deliberation of the Regulatory Commission of Energy of 10th September 2015 relating to developments of the balancing rules on gas transport networks on 1st October 2015”¹².

CRE deliberation of 15 September 2016 “Deliberation of the French Energy Regulatory Commission of 15 September 2016 relating to changes in the balancing rules of gas transmission networks on 1 October 2016”¹³.

CRE deliberation 2017-246 of 26 October 2017. “Deliberation of the Energy Regulatory Commission of 26 October 2017 on the creation of a single gas market area in France on 1st November 2018”¹⁴.

Spain

Circular 2/2015¹⁵, of 22 July, by Spain’s National Authority for Markets and Competition (CNMC) establishing the regulation on gas balancing of transmission networks¹⁶.

Portugal

¹¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R0312>

¹² [http://www.cre.fr/en/documents/deliberations/\(annee\)/2015](http://www.cre.fr/en/documents/deliberations/(annee)/2015)

¹³ [http://www.cre.fr/en/documents/deliberations/\(annee\)/2016](http://www.cre.fr/en/documents/deliberations/(annee)/2016)

¹⁴ [http://www.cre.fr/en/documents/deliberations/\(annee\)/2018](http://www.cre.fr/en/documents/deliberations/(annee)/2018)

¹⁵ https://www.cnmc.es/sites/default/files/1568003_3.pdf

¹⁶ <https://www.cnmc.es/expedientes/cirde00215>



ROI- Regulation for Operation of Infrastructures (Portugal). Regulation No.417/2016, of the 29th of April, approving the Regulation for Operation of Infrastructures in the natural gas sector¹⁷.

¹⁷ <https://dre.pt/application/file/74305613>