



**PROPOSED CHANGE TO BRING GRTGAZ'S
TRANSMISSION SYSTEM BALANCING REGIME IN
LINE WITH THE EUROPEAN NETWORK CODE,
AND ASSOCIATED ROADMAP**

1. Purpose

The purpose of this note is to define the procedures for a change in balancing rules on GRTgaz's transmission system towards the target rules set by the French Energy Regulatory Commission (CRE) in its decisions of September 30, 2010 and December 1, 2011. It amends the roadmap given to CRE in July 2012 to take into account the provisions of the decision of September 20, 2012 and comments by stakeholders expressed at the consultation meetings of October 16 and November 21, 2012.

These procedures are part of the process of implementing the European network code for gas balancing, the draft version of which, prepared by ENTSOG, is currently being checked by ACER for compliance with the framework guidelines. This code is not, at this stage, expected to come into force before the first quarter of 2015.

These procedures also reflect the specificity of the French gas market, together with the physical constraints of GRTgaz's transmission system.

2. Principles used in defining the roadmap to the target balancing system

The new balancing regime that GRTgaz proposes has the following characteristics: fully market-oriented, incentivizing shippers to manage their own imbalances in the market zones (PEG and Gas Exchange). This market orientation will help to make France's status as a gas hub more attractive in Europe;

- GRTgaz will continue to manage residual balancing of the system with a priority on market solutions rather than physical tools (locational products, flexibility services, etc.);
- Daily cash-out of imbalances with no possibility of cumulative imbalances;
- Use of the Marginal Price to cash out imbalances;
- GRTgaz will publish information on each shipper's portfolio, in particular consumption forecasts for their profiled customers and consumption volumes measured during the day for their remote-metered customers;
- GRTgaz will publish information on system stress, essentially a signal to shippers to incentivize them to act before the transmission operator intervenes, which would otherwise lead to in the imposition of a penalty cash-out price for imbalances;
- Possibilities for GRTgaz to intervene in the market at any point in the gas day;
- Maintenance of daily imbalance tolerances for a period of no more than 5 years.

GRTgaz expects to achieve the target balancing regime on **May 1, 2015**, when the European network code is due to come into force.

On that date, as required by the European network code, it is also planned to introduce a new operational system for managing nomination cycles, which essentially involves bringing forward the publication of day-ahead quantity schedules from 6 pm to 4 pm and to harmonise all the renomination cycles from 4 pm the day before (day-ahead) up to 3 am the next day (within-day).

However, implementing this new system will require:

- a significant change in the behaviour of network users,
- the introduction of new tools or procedures essential to the performance of the system (information in particular from distributors, extension of market opening times, etc.).

In order to complete the project on May 1, 2015, and in the light of the above, the new balancing regime procedures will need to be introduced gradually. GRTgaz therefore proposes a change in 2 main phases:

- **April 1, 2013:** GRTgaz interventions become proportional to system imbalances, reduction in the cumulative imbalance mid-ranges to 15% in the North zone and 30% in the South zone;
- **May 1, 2014:** introduction of the Marginal Price for imbalance cash-out combined with a reduction in the total volume of available tolerances (halved overall), increase in the frequency of within-day consumption data, reduction in the cumulative imbalance mid-ranges to 10% in the North zone and 25% in the South zone.

In order to ensure that the change is gradual, the mid-ranges will not be reduced during each of the 2 intermediate winters.

The table below sums up the proposed evolution to GRTgaz's new balancing regime, showing the parallel changes in the 3 linked factors:

- Gradual reduction in mid-ranges and tolerances on shipper imbalances (summary and cash-out procedures in Section 4);
- The best market information on consumption and system balancing (described in Section 3);
- Adjustment of the transmission operator's balancing interventions (Section 5).

		April 1, 2013 ¹ to September 30, 2013	October 1, 2013 to April 30, 2014	May 1, 2014 to September 30, 2014	October 1, 2014 to April 30, 2015	May 1, 2015 to April 30, 2020	From May 1, 2020
Imbalance cash-out (Section 4)	Mid-ranges North Zone	15%	25%	10%	10%	No mid-ranges	No mid-ranges
	Mid-ranges South Zone	30%	30%	25%	25%		
	Daily tolerances			Significant reduction in total tolerance volumes		1. New tolerances in line with the Code	Elimination of tolerances
				P2 replaced by P _{marg} P1 replaced by P _{avg}			Marginal price
		EBC exceeded at P3 = 10% of P1		P3 = 10% of P _{avg}			
Interventions by transmission operator (Section 5)		Interventions proportional to imbalances			Interventions at target system		
			Monthly clearing of financial neutrality account from January 1, 2014				
Information supplied to market players (Section 3)		Publication of the quantitative imbalance indicator					
		Publication of forecasts per customer category (Industrial customers, PITDs, Highly-Modulated Sites)					
		Publication of k0					
			Forecasts per shipper of profiled customers estimates Publication of intraday measurements of remote-metered sites on the distribution network				
		Hourly publication of hourly consumption of sites connected to the transmission system					

Remember that in the current system the daily imbalance is cashed out at price P2 if it exceeds the daily tolerance, and at P1 for the proportion above the mid-range. The "mid-range" portion can be accumulated in the Cumulative Imbalance (EBC) Account. If the allowable EBC is exceeded, it is charged at penalty price P3.

The following sections specify the options chosen for the roadmap towards GRTgaz's new balancing regime.

¹ Usually, changes to mid-ranges and tolerances take place on May 1, because April is a tricky month in terms of the quality of consumption forecasts. An exception is made in 2013 so that the change in mid-ranges coincides with the merger between the North B (L-gas) and North H (H-gas) balancing zones on April 1, 2013.

3. Provision of information for transmission system users

3.1. Provision of “system balance” information

Information published by GRTgaz on SmartGRTgaz:

- since end August 2012, its consumption forecasts for each balancing zone and customer category (industrial customers, Highly-Modulated Sites, Distribution customers) for the current day and the next 5 days;
- since the beginning of October 2012, a quantitative indicator of the end-of-day imbalance for each zone (North and South) for the current day and the next day.

3.2. Provision of information for each shipper on non-profiled² distribution customers

At the beginning of 2012, under the “Concertation Gaz” consultation process GrDF, Régaz and Réseau GDS offered to provide GRTgaz and TIGF with information that would enable them to give shippers twice-daily information about intraday consumption by their non-profiled customers connected to the distribution networks. Today, consumption by these customers on the two balancing zones represents around 10% of total consumption on GRTgaz’s transmission system.

In its decision of June 21, 2012, CRE approved this proposal and asked for the system to be introduced in 2014. GrDF and Réseau GDS plan to introduce it no later than May 1, 2014.

Under the proposed system, the DSOs will send GRTgaz on a daily basis:

- At 12 noon, the consumption readings for non-profiled customers made between 6 am and 10 am,
- At 4 pm, the consumption readings for non-profiled customers made between 6 am and 2 pm,

Provided that it has this information by the above times, GRTgaz will pass it on to their shippers respectively at 1 pm, then at 5 pm.

3.3. Provision of information for each shipper on profiled² distribution customers

In accordance with the provisions of the European network code, GRTgaz plans to send each shipper forecasts for the daily consumption by their profiled distribution customers,³ for each balancing zone. These forecasts will be made available a day in advance (D-1) for the next day D, then updated twice in the course of gas day D, provided that the necessary information is provided by the DSOs and shippers.

To do this, GRTgaz must be able:

² Non-profiled distribution customers refer to daily metered distribution customers. Profiled distribution customers refer to non daily metered distribution customers whose daily consumptions are estimated by means of mathematical models (the profiles).

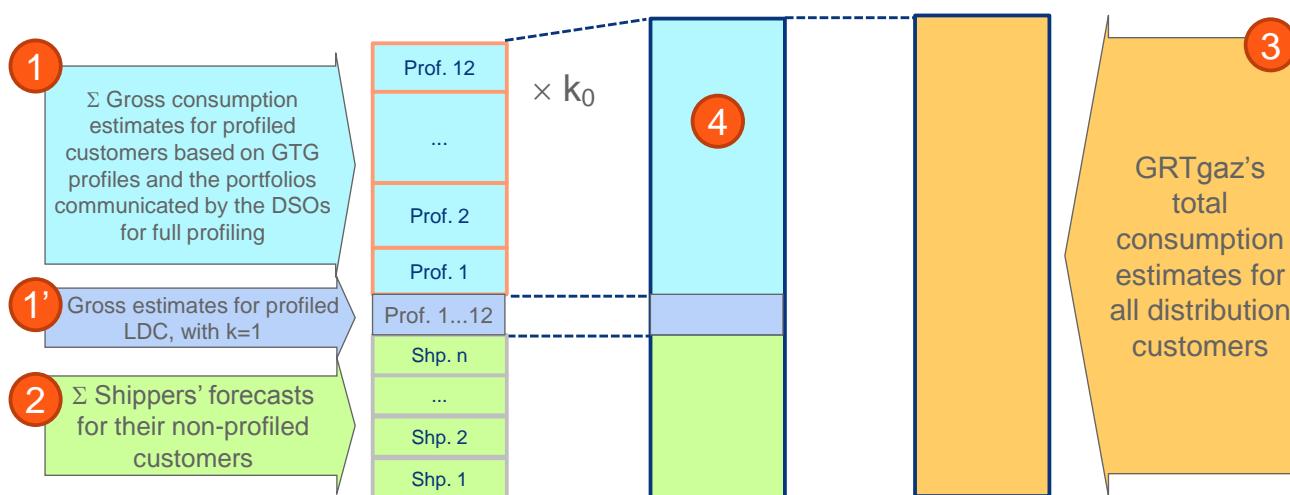
³ In 2011, consumption by these customers accounted for slightly over 50% of total consumption on GRTgaz’s transmission system.

- to deduct the consumption forecasts for non-profiled customers on the distribution networks from GRTgaz's forecasts for consumption at the PITDs⁴,
- to reconcile the total consumption forecasts based on the normative profiles with the consumption forecasts established above,
- to know the portfolio of each shipper present at the PITDs, in order to provide a forecast for each shipper.

The first point requires shippers to specify, in addition to their nominations on the delivery pools, an additional non-binding nomination relating to the forecast consumption level of their non-profiled customers (Term 2 in the equation below). This means that each shipper must provide a nomination for each balancing zone corresponding to its own consumption forecasts for its non-profiled customers connected to the distribution network. This nomination will not be used to assess the shipper's daily imbalance, which will continue to be calculated as at present.

To reconcile GRTgaz's forecast for profiled customers and the forecast based on the profiles developed in the GTG⁵ (combined consumption based on annual reference consumption [CAR] and profiles), GRTgaz will calculate a coefficient k₀ similar to the calculation of the coefficients k₁ and k₂ used in the process of allocation at the PITDs.

The diagram below illustrates the way k₀ will be calculated, for each balancing zone.



$$\text{Forecast PITD} = k_0 \cdot (\text{Profiled_gross_GrDF} + \text{Profiled_gross_LDC}) + \text{NonProfiled} + \text{Profiled_LDC_with_k=1}$$

LDC = Local Distribution Companies (distribution companies other than GrDF)

The total annual reference consumption (CAR) per profile and per balancing zone currently provided every month by the DSOs is sufficient to establish a reliable k₀.

In order to be able to attribute this calculated forecast to each shipper, GRTgaz needs to have the composition of each shipper's portfolio of profiled customers.

⁴ PITD = Transport Distribution Interface Point

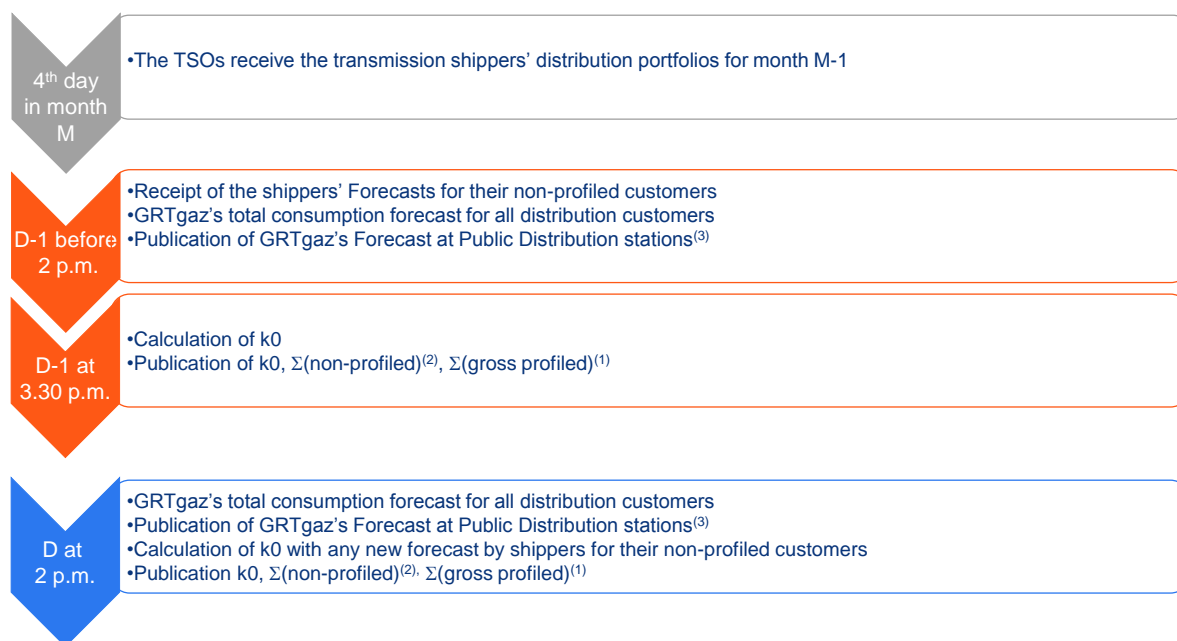
⁵ GTG refers to Groupe de Travail Gas 2007, a gas concertation working group created by French NRA (CRE) to address the market opening to small customers.

Initially, the DSOs will only be able to send this information on a monthly basis. GrDF and Réseau GDS specify that, by no later than May 1, 2014, they will be able to send up-to-date information to GRTgaz on a daily basis.

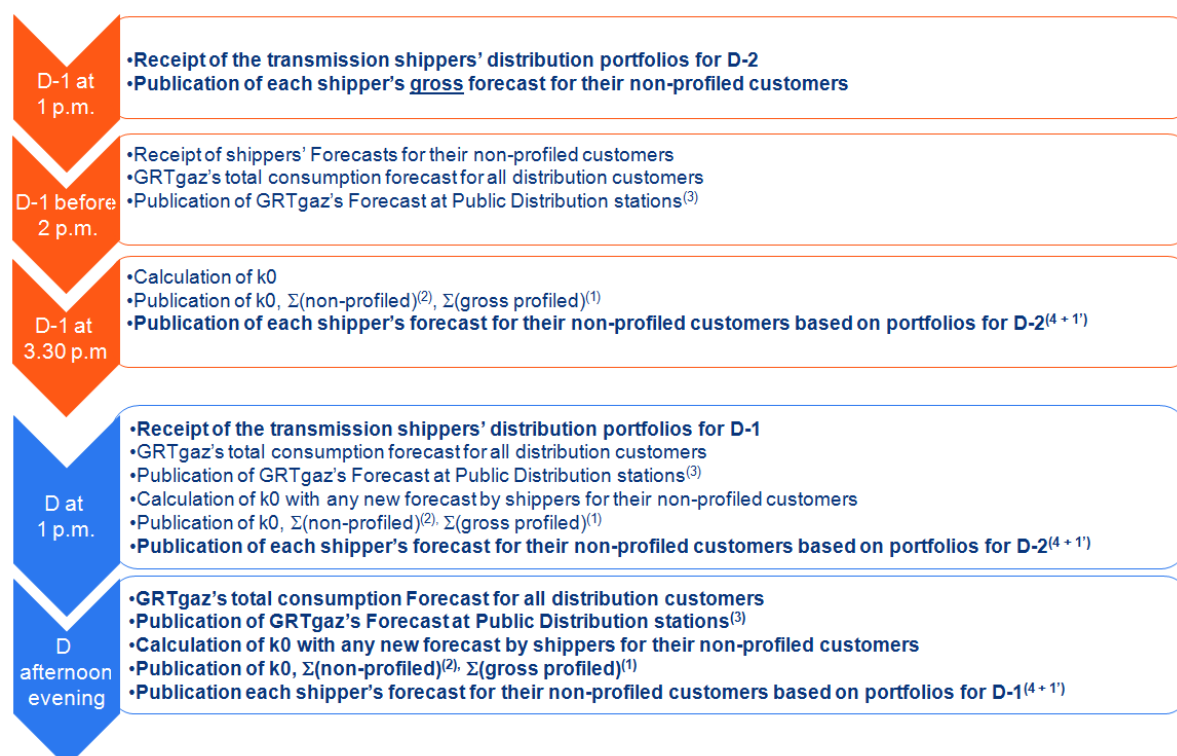
GRTgaz therefore proposes to proceed in two phases:

Phase 1: publication from mid-2013 of the coefficient k_0 alone, subject to shippers nominating the consumption of their non-profiled customers on the distribution networks from no later than June 1, 2013.

Shippers who so wish will be able to do their own calculations of consumption forecasts for their profiled customers using this k_0 and their knowledge of their portfolio.



Phase 2: This phase will begin once the DSOs are able to send GRTgaz the composition of each shipper's profiled portfolios on a daily basis, in principle as of May 1, 2014.



3.4. Provision of shipper information on customers directly connected to the transmission system

At present, GRTgaz publishes 5 times a day the hourly consumption delivered to each industrial customer.

GRTgaz proposes to publish hourly consumption every hour from May 2014, for all industrial customers directly connected to the transmission system. Today, consumption by these customers on the two balancing zones represents slightly less than 40% of total consumption on GRTgaz’s transmission system.

4. Daily imbalance management

4.1. Tolerance changes

4.1.1 Changes to mid-ranges

The roadmap proposed after consultation is as follows:

	April 1, 2013 ⁶ to September 30, 2013	October 1, 2013 to April 30, 2014	May 1, 2014 to September 30, 2014	October 1, 2014 to April 30, 2015	May 1, 2015 to April 30, 2020	From May 1 st , 2020
Mid-ranges North Zone	15%	25%	10%	10%	No mid-ranges	No mid-ranges
Mid-ranges South Zone	30%	30%	25%	25%		

The impact on imbalance cash-outs of this reduction in mid-ranges and of the reduction in tolerances described in the next section, as presented at the consultation meeting of November 21, 2012, is provided in the appendix.

4.1.2 Changes to tolerances

From May 1, 2014, with the introduction of the Marginal Price to replace P2, the total volume of daily tolerances will need to be revised to give shippers a real incentive to reduce their daily imbalances.

On that date, therefore, GRTgaz proposes to reduce the tolerance substantially by around 50% and to consult the market on the concrete procedures for applying this reduction, which will not necessarily be uniform but may reflect the structure and size of portfolios.

⁶ Usually, changes to mid-ranges and tolerances take place on May 1, because April is a tricky month in terms of the quality of consumption forecasts. An exception is made in 2013 so that the change in mid-ranges coincides with the merger between the North B (L-gas) and North H (H-gas) balancing zones on April 1, 2013.

The remaining imbalances, up to the maximum daily tolerances, will be cashed out at the Average Price.

From May 1, 2015, tolerances will be revised each year with the aim of reducing them progressively to zero no later than May 1, 2020, in accordance with the network code then in force.

GRTgaz thus proposes that procedures should be agreed with the market to determine the best possible allocation rules.

4.2. Daily imbalance cash-outs

From May 1, 2014, the proposal is to get rid of the current imbalance cash-out prices P1 and P2, and to introduce the Average Price and the Marginal Price as defined in the European network code:

Marginal Sell Price = min (Weighted Average Price minus a small adjustment; GRTgaz's minimum intervention price on the Gas Exchange)

Marginal Buy Price = max (Weighted Average Price plus a small adjustment; GRTgaz's maximum intervention price on the Gas Exchange)

where Weighted Average Price = average intervention price for all operators on the Powernext exchange on the day and balancing zone in question (weighted for volumes).

The terms "Buy" and "Sell" are taken from the shippers point of view .

The small adjustment is an incentive for shippers to maintain their balance. Under the European network code, it shall not exceed 10%.

The value of the small adjustment applied will be decided in consultation with the market. In the "Concertation Gaz" meeting of November 21, 2012, GRTgaz presented a simulation of the application of Marginal Prices with an adjustment (discount/premium) of 2.5%, rerun over a period covering 2011 and 2012: these simulations showed that implementation of the Marginal Price at the intended time would be acceptable.

4.3. Financial neutrality

The reduction in the mid-ranges will lead to an increase in the quantities of gas bought from and sold to shippers under the transmission contract, and therefore possibly to sharper financial fluctuations in the balancing account.

From January 1, 2014 onwards, GRTgaz therefore wants the balance of this account to be cleared monthly rather than yearly as at present. This will make it easier to ensure that invoicing for neutrality coincides with invoicing for imbalances.

GRTgaz proposes that the rule for distributing the balancing result between shippers remains as it is,⁷ at least until the target system is introduced. The rule may then be adapted to comply with the balancing requirements of the European network code.

⁷ At present, the rule is as specified in Article 18 of Section D2 of the transmission contract. The breakdown is based on the delivery capacity subscribed by or allocated to shippers.

5. Interventions (Balancing actions) by GRTgaz – Residual balancing

5.1. Current market intervention by GRTgaz

The current rules for GRTgaz’s intervention on the Gas Exchange for balancing purposes are agreed with the market players and buying/selling transactions are carried out automatically based on the calculation of need. Each transaction within the trading window is designed to ensure that the algorithm always selects the best prices.

Since August 1, 2012, GRTgaz has intervened in the Within-Day trading window (for same-day delivery) and retains the option of intervening during the Day-Ahead window (for next working-day delivery). Transactions in the Weekend window (for delivery on weekends of 2 days or more) continue.

The intervention volumes in force since August 1, 2012 are as follows:

Balancing zone	Intervention volume		
	Optional Day-Ahead session	Within-Day Session(s)	Weekend session
North Zone	0 (base case), trading up to 2,000 MWh/d if large imbalance expected	from 0 to 7,750 MWh/d	from 0 to 2,000 MWh/d
South Zone	0 (base case), trading up to 1,500 MWh/d if large imbalance expected	from 0 to 5,500 MWh/d	from 0 to 1,500 MWh/d

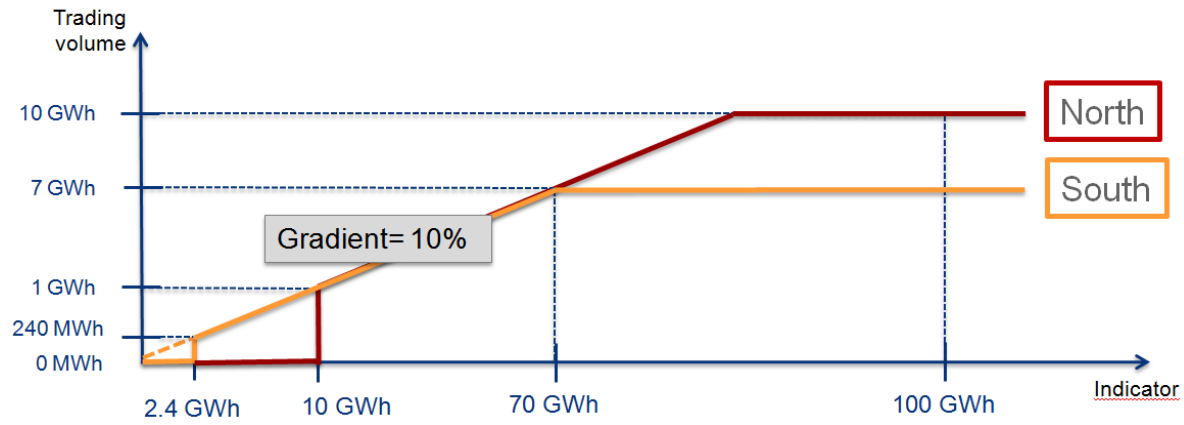
5.2. Proposed change on April 1, 2013

GRTgaz proposes to intervene proportionally with the value of the end-of-day quantitative imbalance indicator, with a minimum and a maximum depending on the zones. The proposed parameters are:

- A proportionality (or gradient) of 10% in the 2 zones: this value is of the same order of magnitude as the proportion of shipper imbalances that are currently settled at the prices P1 or P2 (6 to 8% depending on the zone and season, values presented at the consultation meeting of November 21, 2012);
- A maximum intervention volume in Within-Day sessions of 7 GWh for the South zone and 10 GWh for the North zone;
- A maximum intervention volume in Week-end sessions remaining at 1.5 GWh in the South zone, and 2 GWh in the North zone;
- A lower intervention threshold in Within-Day and Week-end sessions of 10 GWh in the North zone (if the end-of-day imbalance indicator is below this value, GRTgaz does not intervene): this new parameter gives rise to a neutral intervention zone (-10 GWh/+10 GWh of projected imbalance at the time of intervention). With this neutral zone, GRTgaz will no longer intervene if the imbalance is very low.
- There is no bottom intervention threshold in Within-Day and Week-end sessions in the South zone: In other words, GRTgaz will intervene almost always to stimulate the market at PEG South whatever the

value of the end-of-day imbalance indicator (technically, given that the minimum size of a lot on the Powernext exchange is 240 MWh, with a gradient of 10%, GRTgaz will intervene when the imbalance is greater than or equal to 2.4 GWh)

Values of the parametres proposed at April 1, 2013



GRTgaz proposes that these parameters should be revisable based on feedback, and that it should be able to adjust the parameter described above very responsibly, in coordination with CRE and Powernext, but without needing first to consult the market. In addition, GRTgaz will continue to report regularly on the effectiveness of its interventions within Concertation Gaz’s Balancing Working Group.

The “gradient” parameter is likely to increase along with the rise in the proportion of shipper imbalances cashed out at market price. The “lower intervention threshold” parameter is likely to increase in the South zone to come into line with the value in the North zone on the basis of any feedback on the outcome of interventions in these two zones. The “maximum intervention volume” parameter may increase to reflect the results of the balancing neutrality account.

GRTgaz proposes to intervene within a 30 minute window: 3:45 pm - 4:15 pm for the Within-Day session and 5 pm - 5:30 pm for the Week-End session.

5.3. Interventions in target system

Once the target system is achieved, shippers will have a bigger role in balancing the transmission system, by rebalancing themselves on the basis of information made available to the market. GRTgaz will have to manage the residual balancing of the network, which will be done primarily by buying and selling short-term products on the market places.

The trading strategy will be based on the following objectives:

- To incentivize shippers to rebalance themselves and to rebalance the transmission system,
- To obtain an imbalance cash-out price that reflects the actual imbalance of the transmission system.

This strategy will be based in particular on the following principles:

- Each transaction will be proportional to the level of the imbalance measured before the transaction;
- The Marginal Price will be updated and published after each intervention.

GRTgaz proposes that its interventions should, in principle, be less restricted (GRTgaz able to initiate, elimination of intervention ceilings and of price difference criteria) whilst being monitored subsequently with the introduction of tracking indicators.

5.4. Intervention methods and frequency

As regards its methods for intervening in the market, GRTgaz has assessed the advantages and disadvantages of human interventions to replace automatic operations, as currently practised and presented at the Consultation meeting of October 16, 2012. Following these initial reflections and discussions within the Balancing WG, GRTgaz can at this stage see no clear advantage of human intervention in terms of technical effectiveness, whereas its research identifies a major disadvantage of significantly higher costs, because of the human resources needed to make these interventions in a technically and financially secure way.

Similarly, regarding the opening up of a second intervention window, GRTgaz has not for the moment seen any net benefit in terms of balancing management, whereas an additional window would be costly.

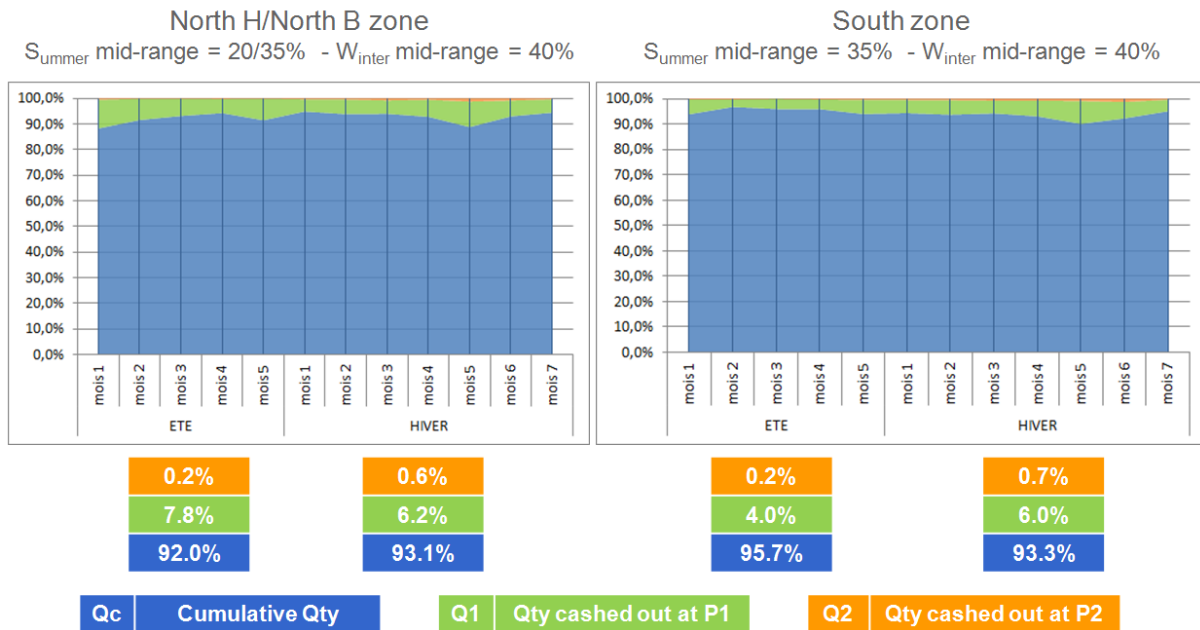
GRTgaz therefore proposes not to take any decisions at this stage about the technical methods and frequency of interventions under target system, or about intermediate changes that may be needed beyond May 1, 2014. GRTgaz proposes to continue exploring this within the “Concertation Gaz” consultation process, on the basis of feedback, and only then to decide on the stages and technical procedures for achieving the target system.

APPENDIX: ILLUSTRATION OF THE IMPACT OF CUTS IN MID-RANGES AND TOLERANCES

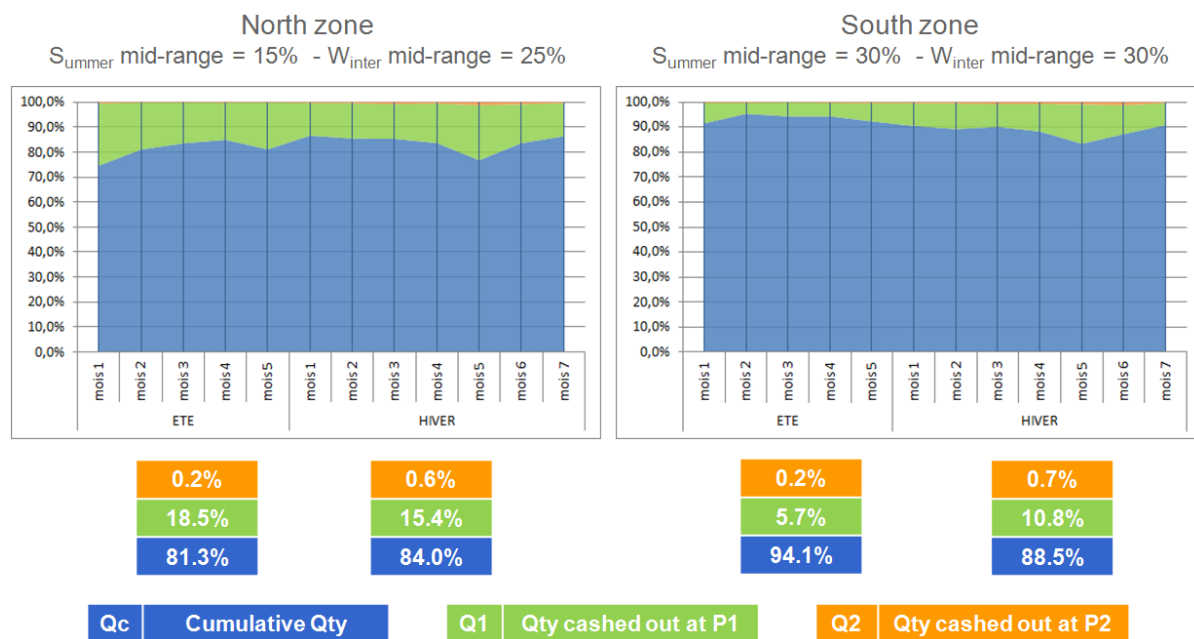
The graphs below, presented in the “Concertation Gaz” meeting on Balancing on November 21, provide a simulation of the impact of mid-range reductions on April 1, 2013 and on May 1, 2014 on the average distribution of shipper imbalances, between the cumulative proportion, the proportion cashed-out at P1 or Average Price, and the proportion cashed-out at P2 or Marginal Price. This simulation is based on the imbalances observed over the period October 1, 2011 to September 30, 2012, assuming that all shippers behave identically. This hypothesis is conservative in so far as shippers will try to reduce their imbalances and will have access to new information to improve their balancing outcomes.

NB: the way that cumulative imbalances are determined will remain the same until they are eliminated: the maximum allowable cumulative imbalance (i.e. not subject to price P3) is a 5 times the mid-range.

Current situation of the reference period:

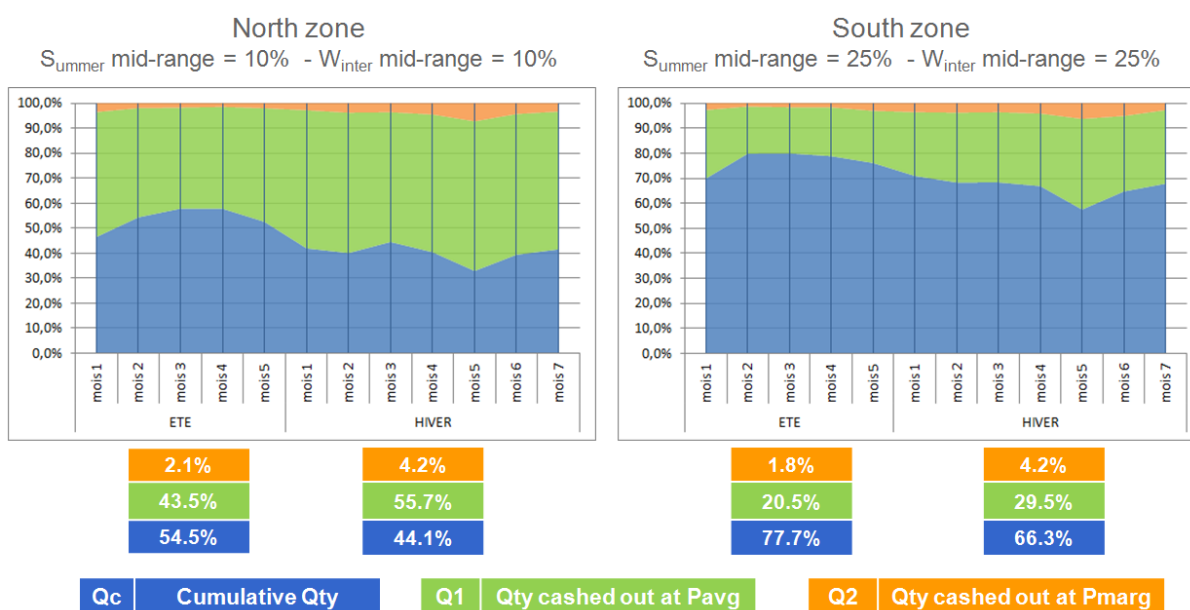


Situation between April 1, 2013 and April 30, 2014:



The reduction in mid-ranges on April 1, 2013 does not affect the quantities cashed out at price P2, since the tolerances do not change. Moreover, on average more than 80% of shippers' imbalances will still be cumulative. The impact is therefore very modest.

Situation between May 1, 2014 and March 31, 2015:



At this stage in the process, more than half the imbalances will still be in the Cumulative Imbalance Accounts (EBC), despite a significant reduction. The proportion of imbalances cashed out at Marginal Price will remain very modest, despite a reduction in the daily imbalance tolerances. Moreover, the quantities shown in green will be cashed out at Average Price (weighted average of all Within-Day transactions by all shippers on the Gas Exchange).