Procedure for the implementation of the oversubscription and buy-back scheme

Implementation of Annex I of Regulation 715/2009

Version October 2017

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1   Introduction

The [Regulation (EC) 715/2009](#) of the European Parliament and the Council of 13 July 2009 on conditions for access to the natural gas transmission networks regulated the main principles to allocate the capacity and to handle the different congestion situations, among others. Thus, in the Annex 1 of the aforementioned Regulation, the general principles to manage the contractual congestion are assessed by developing 4 different procedures to be implemented at the IPs shared between adjacent entry-exit systems. The four procedures are, as follows: Oversubscription and Buyback, Firm day ahead use it or lose it, Surrender of contracted capacity and Long term use it or lose it mechanism.

The South Gas Regional Initiative (SGRI) coordinated by the Agency for the Cooperation of Energy Regulators (ACER) has the main goal of developing a natural gas regional market. Within this context Enagás and TIGF have been asked to establish a joint and coordinated oversubscription and buy-back scheme.

The French Regulator (Commission de Régulation de l'Énergie - CRE) has already issued a [Deliberation](#) with the high level principles of the OSBB

The Spanish Regulator (Comisión Nacional de los Mercados y La Competencia – CNMC) has also published a [Circular](#) with the basics of the OSBB.

Without prejudice to the rules which have been already established on the Regulation (EC) 715/2009 and on the Notices of the CRE and CNMC, Enagas and TIGF have jointly assessed and discussed the Oversubscription and Buy Back procedure by the creation of this document.

The aim of the document is to describe in detail the OSBB at cross-border capacity between France and Spain (VIP Pirineos), to ensure a coordinated and consistent implementation of the referred procedure. The practical application of the OSBB procedure will follow the rules here established.

2   Additional capacity

2.1   Main Principles

The methodology proposed in this document concerns the VIP Pirineos, between Spain (Enagas) and France (TIGF). It is similar in both directions.

The additional capacity to be offered (namely OS quantity) is a day ahead bundled firm product proposed on day (D-1) for the following day D, in line with the definition of the gas day.

The construction of the methodology is based on: the best forecast of the use of cross border IP between France and Spain, the historical use from both an endogenous and exogenous perspective. The main conclusions are:

- Regarding the endogenous variables, the relationship between the physical flow through the interconnection and the relative nomination for the same day D changes on those days when there are commercial flows in both directions (nomination in both directions) or, in these cases, where there is a special operation previously agreed between the operators of the interconnection. For this reason, the physical flow is not considered as an explanatory variable for the use of the interconnection.

- The study of the exogenous variables – such as prices, temperatures, etc. - does not provide conclusive results about the use of the interconnections, due to: no clear and direct relationship, a lack of data or variables leading to significant results.

- Due to the lack of historical data at VIP Pirineos, the data analysed are related to Larrau Interconnection extrapolated to the joint VIP Pirineos connection.

- The period of study that gives the most relevant conclusions starts from the 1st of April 2013, date from which the capacity of Larrau Interconnection increased its nominal capacity in both directions.

The implementation of the OSBB scheme must apprehend the risk encountered by TSOs. It is necessary to introduce safety margins into the calculation of the OS quantity. A post deployment analysis of the method should bring sufficient guarantee so that a reduction of the safety indexes initially used could be re-evaluated.

2.2 Calculation of additional capacity Methodology

2.2.1 Choice of the objective variable and the reference variable

The implicit objective of the calculation method for the additional is to make the best estimation or forecast of the use of an interconnection on a certain day, based on the data available before offering the mentioned additional capacity.

Likewise, the variable that most ideally represents the expected physical flow in the interconnection will be called the *objective variable*, while the variable that provides the best information available to make the forecast of the objective variable will be called the *reference variable*.

After several historical analysis, **the best objective variable is confirmed to be the value of the last confirmed renomination from day D**, considering that this value is the one that the operator must guarantee to the shippers and that does not differ from the shared value.

Again, according to the conclusions provided by the historical analysis of the interconnections, where there is a clear relationship between the nomination on day D-1 for day D and the last confirmed renomination of day D, it can be deduced that **the reference variable** upon which the best forecasts of the objective variable will be based (the last renomination from day D) is the **nomination on day D-1 for day D**.

2.2.2 Risk level quantification

The methodology proposed in this document estimates the risk for the TSOs to propose such an OS quantity.

The estimation of this risk is based on the deviation that might occur between the last nomination on (D-1) for D, which is known at the time the methodology is activated, and the last confirmed renomination of day D, unknown at that time.

Therefore a Risk Index (RI) is defined based on the maximum historical deviation between the nomination made on day D-1 for day D and its last confirmed renomination on the corresponding day D, for the period of study. An additional safety factor is also considered in order to manage the risk associated with the implementation of the oversubscription and buy-back mechanism itself.

The Risk Index is defined as below:

$$RI = M_D \times f$$

Where,

$$M_D = max|(N_i - R_i)|$$

- **M_D** = the maximum deviation between the last nomination on day D-1 for day D and the last confirmed renomination of day D within the period of analysis that comprises the historical reference base:

$N_i \rightarrow$ last nomination of each day i

$R_i \rightarrow$ last confirmed renomination of each day i

$i \rightarrow$ interval between 1st April 2013 and today ().

- **f** = safety factor

2.2.3 Trigger Value definition

The calculation of the risk index RI indicates that there is a value in the last nomination on day D-1 above which offering an additional capacity induces a high risk for the TSOs.

This nomination value is called the Trigger Value T_V , and is defined as follows:

$$T_V = C_n - RI - OM$$

where:

Cn $\rightarrow$ Nominal capacity

RI $\rightarrow$ Risk index

OM $\rightarrow$ Operating margin, established as a percentage of the OBA

(OM = C% OBA)

Therefore, when the nomination of a day D-1 for a day D is above T_V, the additional capacity to be offered for day D is 0.

2.2.4 Additional capacity function

Based on the risk index RI and the Trigger Value Tv, the following function for **additional capacity D** is defined:

$$D = \begin{cases} \min(C_n - RI - OM - X , A * C_n) & X \leq \frac{3}{5} C_n \\ \min(C_n - RI - OM - X , B * C_n) & \frac{3}{5} C_n < X < T_V \\ 0 & X \geq T_V \end{cases}$$

where:

Cn $\rightarrow$ Nominal capacity
RI $\rightarrow$ Risk index
OM $\rightarrow$ Operating margin
X $\rightarrow$ Nomination
A $\rightarrow$ Cap1 (fixed parameter)
B $\rightarrow$ Cap2 (fixed parameter)
Tv $\rightarrow$ Trigger value

2.3   Update of OS Methodology _ 01/2017

Given that this methodology is based on historical data analysis of the interconnection, the variables of the additional capacity function must be recalculated daily with new real data of nominations and renominations. These variables are:

- Maximum Deviation M_D

- Risk Index RI

- Trigger Value Tv

- The function of additional capacity D

The most recent data analysis for years 2015 and 2016 shows that the difference between Nomination on day D-1 and final ReNominations on day D increases (historically < 25 GWh/day). This uncertainty implies a revision of the Md value.
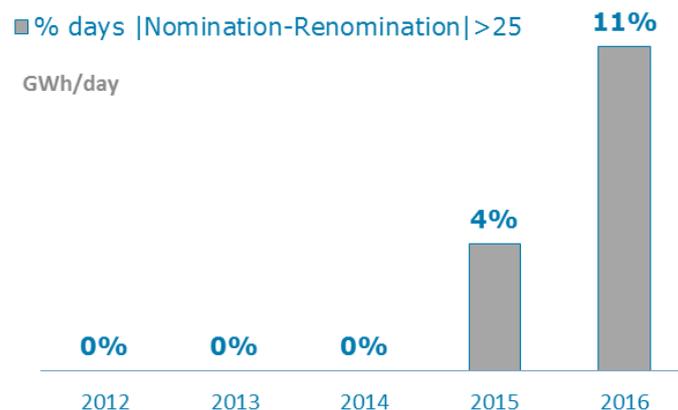
Source: TIGF / ENAGAS

For this reason, with a view to better risk assess the OSBB process, a mathematical treatment was applied on the historical differences between the Nominations and the ReNominations as follows:
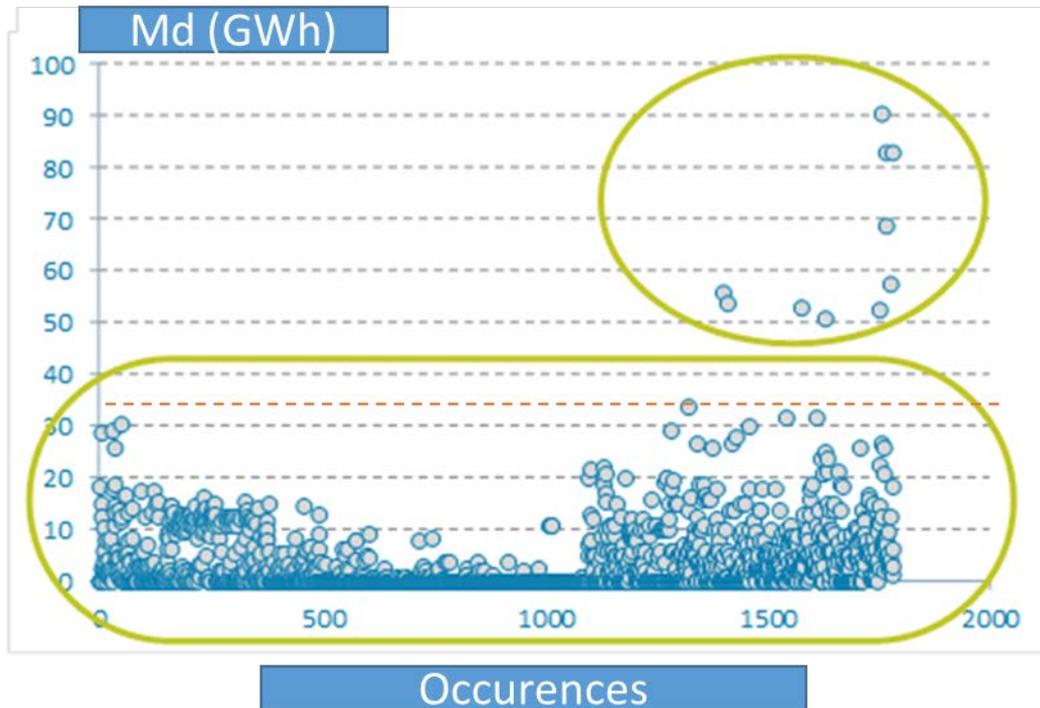
Main conclusions – agreed between ENAGAS and TIGF:

- Two different sets appear on the graph:
  - The relevant set (lower circle);
  - The non-relevant set considered as *"white noise"* (upper circle). It contains the days with no nomination or abnormal low nominations by shippers with the major contracts.
- The calculation of the Md excludes the non-relevant set.
- With this method, **the Md value is adjusted to 34 GWh/day**.

The following values for the fixed parameters are proposed as default values:

- C (% of the OBA for the calculation of the operating margin) = 25%

- f (safety factor) = 1.1 (equivalent to 10%)

- A (Cap1 of the nominal capacity) = 0.1 (which equals 10% of the nominal capacity)

- B (Cap2 of the nominal capacity) = 0.05 (which equals 5% of the nominal capacity)

Before the first practical application of this methodology, the relevant TSOs and NRAs shall agree upon a common set of parameters foreseen throughout the methodology, which shall be updated annually.

Consequently the additional capacity D offered follows the graph hereafter:
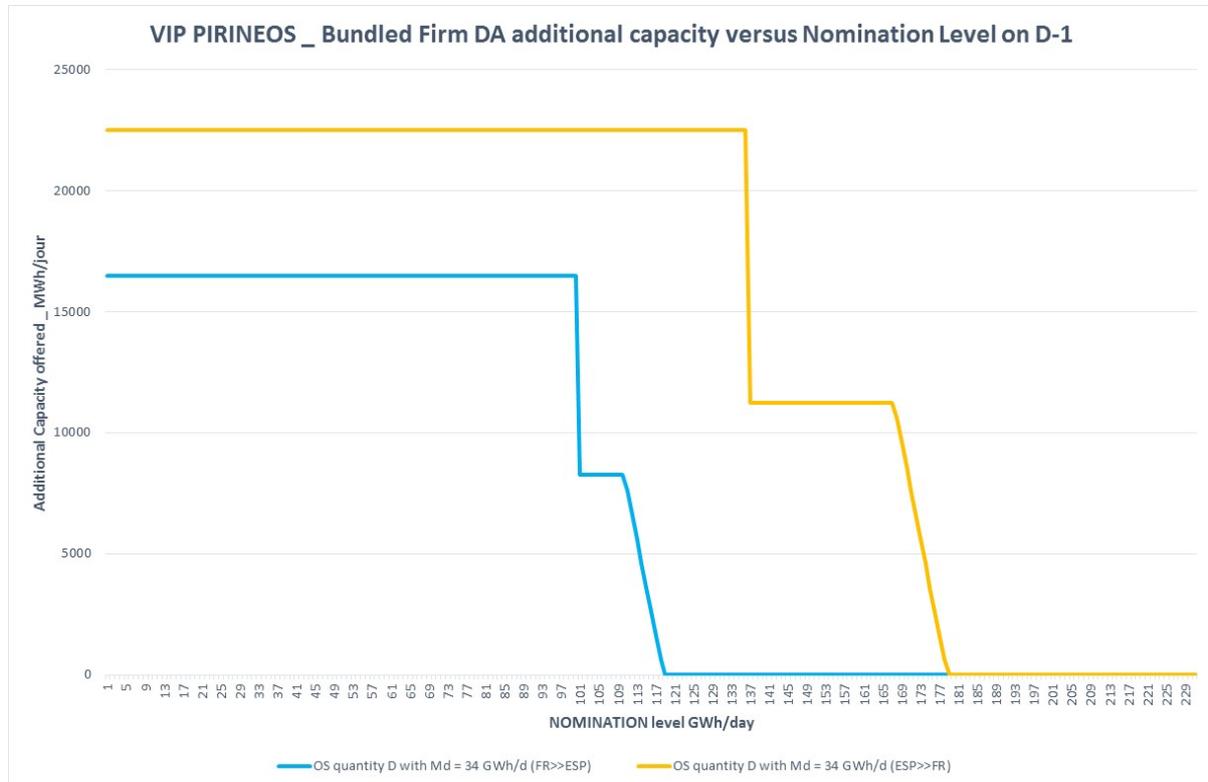
Source: TIGF / ENAGAS

2.4   Offer of additional capacity

Additional capacity will be offered at VIP Pirineos jointly with the available capacity through auctions. Both additional capacity and available capacity will be treated as firm capacity without distinction. Yet the auction shall be flagged to inform the market that the Capacity contains OS quantity.

The methodology for calculating the additional capacity ensures that the amount of additional capacity is the same at both sides of the VIP Pirineos.

In order to maximise the offer of bundled capacity, all the additional capacity will be offered as bundled capacity.

Additional capacity will be offered:

(1) As a daily standard capacity product through the rolling day ahead capacity auction which takes place at 15:30 UTC (D-1) in winter time or 14:30 UTC (D-1) (day light saving).

(2) On a firm basis together with the available capacity (no distinction between the additional capacity and the available capacity shall be made, but flagged for the market)

Therefore, the capacity offered in the rolling day ahead capacity auction shall be, each day, equal to:

> Capacity to be offered = A − C + D

A is the transmission system operator's technical capacity for each of the standard capacity products;

C is the previous sold technical capacity, adjusted by the capacity which is re-offered in accordance with applicable congestion management procedure;

D is additional capacity, for such day, if any

TSOs initially match the additional capacity to be offered (lesser value rule). If no capacity has been agreed at 15:00 UTC (D-1) in winter time or 14:00 UTC (D-1) (daylight saving), no additional capacity will be offered to the market that day.

Each TSO will upload the capacity to be offered in the rolling day ahead capacity auction (the same value per TSO); then, PRISMA will then bundle capacities. The remaining capacity, if any in case or different value uploaded, will be sold as unbundled. If the additional capacity has been partially sold, totally sold or unsold, it will not be proposed through within-day auctions.

Figure 1: Additional capacity to be offered
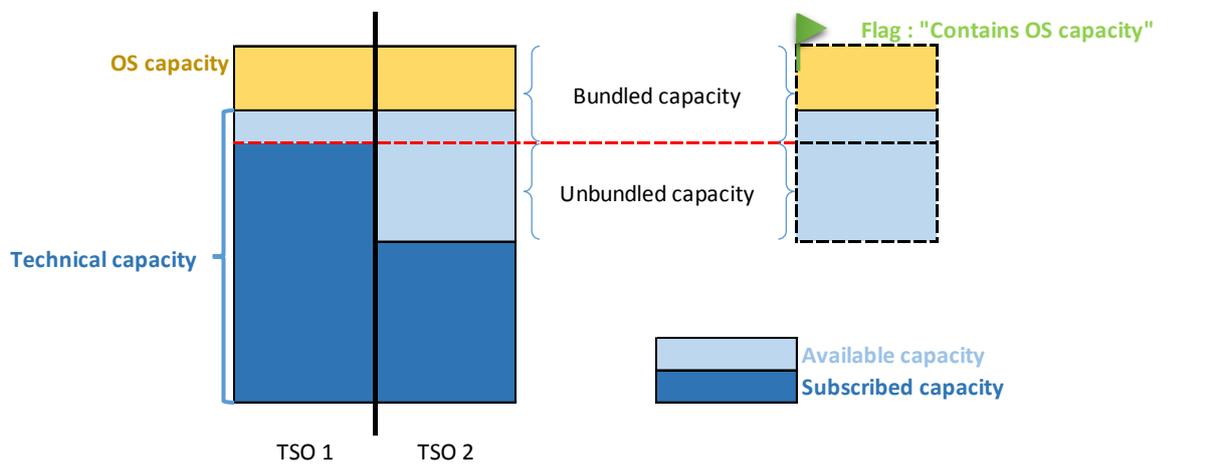
Source: TIGF / ENAGAS

The additional capacity will not be offered in the following cases:

- If no matched OS quantity value exchanged.

- If case of planned and unplanned maintenance and / or reduction periods;

- If a special operation has been agreed between transmission operators;

- In case of emergency situations at the request of transmission operators;

- In the event of IT system failures of transmission operators and / or shippers;

- If the transmission operators identify a deviance between the market behaviour and and the risk level apprehended through the OSBB methodology.

3 Buy-back procedure

3.1 Triggering of the buy-back procedure

When the sum of the net nominations the VIP Pirineos is higher than the technical capacity, and after confirmation that the system integrity solutions cannot allow to physically flow the required this level of nomination, the buy-back procedure is triggered.

It is applied in a coordinated way between adjacent TSOs.

3.2 System Integrity solutions

Once a risk situation has been identified, and before applying a market based procedure, TSOs verify whether alternative technical and commercial measures can maintain the system integrity in a more cost-efficient manner.

The technical and commercial measures to be applied shall follow the next merit order:

1. Interruption of interruptible capacities;

2. Management of the OBA – Operating Balancing Account.

3.3 Market-based procedure

If the measures described here above are not sufficient to maintain the system integrity, TSOs shall trigger a market based mechanism in order to buy-back the required capacity.

As soon as the TSOs have identified a risk situation, they may **suspend Nomination programmes and restrict network users upwards re-nomination rights**, in both flow directions until the end of the concerned gas day.

The TSOs shall launch the market-base procedure if:

Technical capacity < Σ Net nominations – Interruptible capacity - OBA

The market-based procedure uses PRISMA secondary market functionality and more precisely the Call For Orders (CFO) mechanism.

3.4 Preliminary sequence of events

**France and Spain timezone.

TIME**	OPERATION
14:00	1) Reception of Nominations [D-1 for D]
	2) each TSO perform internal Calculations for risk assessment and OS quantity as per detailed procedure
15:30	3) TIGF sends OS quantity to ENAGAS
15:45	4) ENAGAS matches OS quantity (lesser rule) and provides matched value to TIGF (deadline is 16:00).
	5) If any OS quantity to offer, each TSO creates OS quantity
16:00	6) Increment OS quantity into PRISMA bundled firm auction (no rollover).
16:30	7) PRISMA bundled firm auction D-1 for D
17:00	8) Reception of bundled firm auction result by TSOs with internal analysis
19:45	9) After analysis of 19 :45 confirmed nominations, if a residual risk is identified after appliance of system integrity solutions, the Buy Back process is triggered and the market is informed about the unique buy-back window at 20:30 on PRISMA secondary.
	10) TIGF initiates the buy back process by sending to Enagas : - the quantity required to be bought back, - the list of elligible shippers*, - the maximum buying price - *Elligible shipper : a shipper who has contracted bundled firm capacity and nominated some of this capacity
	11) Enagas matches the BB quantity and takes the greater value.
20:00	12) Enagas publishes the Request to Buy on PRISMA Secondary Trade acting as a shipper. TIGF validates. BB quantity cannot be higher than OS quantity sold.
	13) Enagas and TIGF communicates by telephone and/or mail as required all along the Buy Back process.
20:30	14) Auction start on secondary market. Reception of bid stacks.
21:00	15) Enagas / TIGF selects best bids to buy back required quantity.
	>> If the entire quantity is bought back. End of procedure. >> If the required quantity is partially bought back, the rest is deducted from all Nominations via prorata rule. >> If no Offer to Sell received, all BB quantity is deducted from all Nominations via prorata rule
	Note1 : the selection of offer is done internally by TSOs.
	Note2 : if buy-back is triggered, nominations are upwards till the end of the gas day.

3.4.1 CFO mechanism

Once the "Request to Buy" has been created by TSOs (it includes the selection of eligible shippers), eligible network users will be allowed to place "offers to sell" of bundled capacity from 19:30 UTC (or 18:30 UTC daylignt saving) to 20:00 UTC (or 19:00 UTC daylignt saving).

Each "offer to sell" shall contain at least the following information:

- The network user identification;

- The concerned interconnection point and direction of flow;

- The amount of capacity to sell (greater than zero). Each network user can place an amount of capacity to sell up to the level of his nominations.

- The price, which shall not be higher than the maximum price specified by the TSOs in the "Request to Buy". Offers to sell with a price higher than the maximum price will not be considered;

Network users may submit as many "offers to sell" as they wish. Each "offer to sell" shall be treated independently from other "offers to sell".

From 20:00 UTC (or 19:00 UTC daylignt saving) "offers to sell" may not be amended or withdrawn. All "offers to sell" will be considered binding.

TSOs consider valid "offers to sell":

- Condition 1) The "offer to sell" has been placed from a network user who have nominated their booked capacity (=Eligible shipper list)

- Condition 2) The price is equal to or below the maximum TSOs price.

Then, the TSO that has placed the "Request to Buy" will select "offers to sell" according to the price through a bid / ask approach.

Once best "offer(s) to sell" are selected, the adjacent TSO proceed with the acceptance of the offer(s) to sell. Selected shipper(s) are informed about their participation.

Particular cases: (on valid offers)

No offer to sell	The quantity required to be bought back will be prorated upon all network users who nominated their booked capacity, on all contract types.
Partial Buy Back Unique offer to sell	The partial quantity is bought back. The remaining quantity to be bought back will be prorated upon all network users who nominated their booked capacity, on all contract types. The seller is included in the prorata but deducted from his quantity bought back. Example:<table><tr><td>Request to Buy</td><td>5000</td><td>MWh</td></tr></table><table><tr><td>Offers to sell</td><td></td><td></td></tr><tr><td>Shipper A</td><td>3500</td><td>MWh</td></tr></table>
Partial Buy Back Several offers to sell	The offered quantities are bought back from sellers according to the price. The remaining quantity to be bought back will be prorated upon all network users who nominated their booked capacity, on all contract types. The sellers are included in the prorata but deducted from their quantities bought back. Example:<table><tr><td>Request to Buy</td><td>5000</td><td>MWh</td></tr></table><table><tr><td>Offers to sell</td><td></td><td></td></tr><tr><td>Shipper A</td><td>3500</td><td>MWh</td></tr><tr><td>Shipper B</td><td>500</td><td>MWh</td></tr><tr><td>Shipper C</td><td>500</td><td>MWh</td></tr></table>
Complete Buy Back Unique offer to sell	When an "offer to sell" exceeds the "Request to Buy", TSOs shall buy back only the capacity amount that is required based on the best price. Example:<table><tr><td>Request to Buy</td><td>5000</td><td>MWh</td></tr></table><table><tr><td>Offers to sell</td><td></td><td></td></tr><tr><td>Shipper A</td><td>7000</td><td>MWh</td></tr></table>
Complete Buy Back Several offers to sell	When "offers to sell" exceeds the "Request to Buy", TSOs shall buy back only the capacity amount that is required. Example1: Shipper A is selected [5000 MWh, 28€/MWh]<table><tr><td>Request to</td><td>5000</td><td>MWh</td></tr></table>

Buy			

Offers to sell			Price
Shipper A	7000	MWh	28
Shipper B	2000	MWh	29
Shipper C	1000	MWh	31

Example2: Shippers A and B selected and prorated

Request to Buy	5000	MWh

Offers to sell			Price	PRORATA	Prorated Qty
Shipper A	7000	MWh	28	78%	3888,889
Shipper B	2000	MWh	28	22%	1111,111
Shipper C	1000	MWh	31		

The final results of the CFO mechanism shall be communicated to the successful participant(s) after the selection is done.

4 Pricing

4.1 Maximum price TSOs are allowed to pay

At the VIP Pirineos, the capacity to be bought back will be a bundled capacity; thus the maximum price the TSO will upload to PRISMA will be the addition of the maximum prices that both TSOs are allowed to pay according to their national rules, as it is shown below:

$$C = A + B$$

A is the maximum price that TIGF is allowed to pay: it is the average of the clearing prices of the quarterly, monthly, and day ahead auction weighted by the booked quantities during these auctions, plus 25%, for the type of capacity (bundled or unbundled). In case of an implementation of the default rule, the buy-back price will be equal to the above mentioned price without an increase of 25%. When the TSO does not offer day-ahead products, the clearing price considered will be equal to the regulated price of the concerned day-ahead product[1]

B is the maximum price that Enagas is allowed to pay: the price is set as a multiplier of the tariffs to be applied; thus, the price is the daily reserve price + 25% of the daily reserve price[2]

C is the maximum price that TSOs are allowed to pay

4.2 Clearing price

Each clearing price is defined as the price of the successful "offer to sell". TSOs shall pay all successful network users the clearing price.

D = final price to be paid by both TSOs = clearing price of the dedicated buy-back window

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[1] CRE, «Délibération de la Commission de régulation de l'énergie du 27 juin 2013 portant décision relative à la mise en œuvre de l'annexe I au règlement (CE) n° 715/2009 sur les procédures de gestion de la congestion». Available at : http://www.cre.fr/documents/deliberations/decision/gestion-de-la-congestion/consulter-la-deliberation

[2] CNMC, «Circular 1/2013, de 18 de diciembre, de la Comisión Nacional de los Mercados y la Competencia, por la que se establecen los mecanismos de gestión de congestiones a aplicar en las conexiones internacionales por gasoducto con Europa ». Available at : http://www.cnmc.es/Portals/0/Ficheros/Energia/Circulares/CircularCNMC%201_2013.pdf

5 Costs and Revenues

5.1.1 Split of costs

If TSOs have bought back additional capacity, they will reimburse all successful network users the clearing price, in line with their internal means and procedures.

The cost of the buy-back procedure (i.e. clearing price of the CFO) needs to be shared between Enagás and TIGF, no matter who has placed the "Request to Buy". Costs of the CFO shall be attributed to TSOs with the rule of pro-rata to the maximum price each TSO is allowed to pay by his NRA.

It means that each TSO shall pay successful network users of the CFO mechanism a proportion of the clearing price as shown here after:

Nota: no unit for price are used in the table to focus on the approach of the split method. Any cost unit would work.

	TSO 1	TSO 2	TOTAL
Regulated tariff	X (=20)	Y (=5)	X+Y (=25)
Maximum majoration rate	125%	125%	
Maximum price	1.25*X (=25)	1.25*Y (=6.25)	1.25*(X+Y) (=31,25)
Part of max price	80%	20%	

CFO results | Cleared price | 30

	Cost for TSO 1	Cost for TSO 2
Pro-rata per TSO*	0.8*25 = 24	0.2 * 6.25 = 6

- TSO 1 reimburses 24 cost units to the shipper.
- TSO 2 reimburses 6 cost units to the shipper.

Source: TIGF / ENAGAS