



## **South Gas Regional Initiative**

### **Work Plan**

## **1<sup>st</sup> Target: Use of interconnections**

### **Period of analysis**

**[October 2014 to September 2016]**

October 2017

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## **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.

In 2011, TSOs of the SGRI committed to develop an early implementation of the [Commission Regulation 984/2013 of 14 October 2013 establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems and supplementing Regulation \(EC\) 715/2009 of the European Parliament and of the Council](#) (`CAM NC`)<sup>1</sup> on conditions for access to the natural gas transmission networks . The first CAM NC auctions were carried out in March 2014 for capacities to be used in October 2014. Nevertheless, the full implementation of the CAM NC was successfully reached on November 2015.

Therefore, taking into account that the CAM NC is implemented in the SGRI, the Work Plan for 2017-2018 focuses its attention on monitoring the implementation of the Network Codes, in particular the CAM NC and the Congestion Management Procedures Guidelines (CMP Guidelines)<sup>2</sup>.

For this purpose, TSOs have developed this document which assesses the use of interconnections in the region starting from the date of implementation of the CAM NC up to 30 September 2016. The study addresses the current situation of gas interconnection in the region, its usage, the assessment of the capacity allocated, gas flows and the congestion status.

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<sup>1</sup> Note that Regulation 984/2013 was repealed by [Commission Regulation \(EU\) 2017/459 of 16 March 2017](#)

<sup>2</sup> [Commission Decision of 24 August 2012 on amending Annex I to Regulation \(EC\) No 715/2009](#)

## Executive summary

<b>Name</b>	<p>Use of Infrastructures in the Region</p> <p>New South Gas Regional Initiative Work Plan 2017/18</p>
<b>Date</b>	September 2017
<b>Background</b>	<p>During the 37<sup>th</sup>, 38<sup>th</sup> and 39<sup>th</sup> IG meetings, NRAs and TSOs from the South Region developed the South Gas Regional Initiative Work Plan 2017/18 that intends to explore 5 different targets.</p> <p>The first of those targets is entitled “Use of infrastructures in the Region”, focusing on the use of concerned IPs for the specific window [October 2014 to October 2016].</p> <p>The report developed by the involved TSOs (TIGF, Enagas, REN and GRTgaz) includes an exhaustive range of technical and commercial pieces of information from: Liaison Nord Sud, VIP PIRINEOS and VIP IBERICO such as technical capacities, booked capacities, nominations / Renominations levels, physical flows, secondary trades, CMP application and assessment.</p>
<b>Conclusions &amp; Recommendations</b>	<p>Key points emerging from the report target:</p> <ol style="list-style-type: none"> <li>1. In order to remove premium during auctions, some measures should be further explored like full application of CMP and optimization in the use of the interconnections. If unsuccessful, new infrastructures could be investigated to avoid any congestion;</li> <li>2. Optimization of CMP measures, criteria to detect contractual congestion to be revisited;</li> <li>3. Conversion of unbundled to bundled capacity;</li> <li>4. Stimulation of the secondary market</li> </ol>

# 1 Current situation of gas interconnections in the Region

## 1.1 Capacities

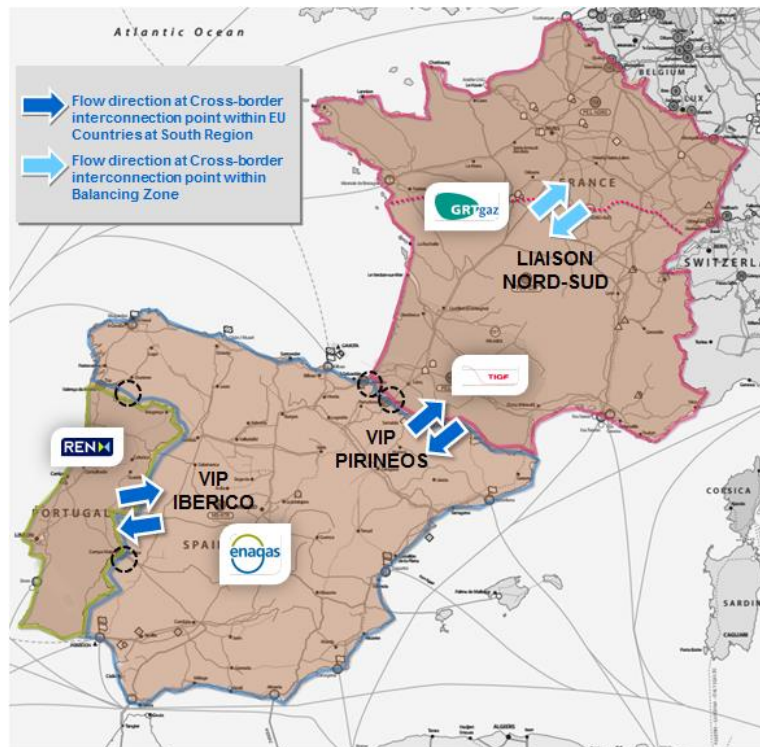
### 1.1.1 *Cross-border interconnections points within the South Region*

In the South Region there are several relevant interconnections points, both at country level and balancing zone level.

In October 2014, within the scope of South Gas Regional Initiative early CAM NC implementation, two ‘virtual interconnection points’ (VIP) were created in order to allocate capacity on an aggregated basis. These VIPs are:

- a virtual interconnection point between Portugal and Spain called “VIP Ibérico”, gathering the two physical interconnection points “Valença do Minho (PT) / Tuy (ES)” and “Badajoz (ES) / Campo Maior (PT)” (In 2012, a pilot experience of commercial aggregation of capacity was developed between Spain and Portugal)

- a virtual interconnection point between Spain and France called “VIP Pirineos”, gathering the two physical interconnection points “Larrau” and “Bariatou (FR) / Irun (ES)”.



Apart from these two country level cross-border interconnection points, the link between the two French balancing zones PEG Nord (Point d’Echange Gaz Nord) and TRS (Trading Region South) can be considered as another important interconnection in the South Region.

The liaison Nord-Sud will disappear the first November 2018 since the French regulator – CRE- has decided to merge the two French market areas. To achieve this, TIGF and GRTgaz are developing their networks.

### 1.1.2 Technical Capacities at Cross-border interconnections points within the South Region

#### 1.1.2.1 VIP Pirineos

After 2 open seasons in 2009 and 2010, the common technical capacity (after the lesser rule application) at VIP Pirineos increased to 175(S)/165(W) GWh/d from France to Spain, and to 225 GWh/d from Spain to France.

✓ France to Spain flow direction:

	Firm Technical Capacity (GWh/d)	
	From Oct-2014 to Nov-2015 (*)	From Dec-2015 to Sept-2016 (**)
Spanish side	185 (W) / 175 (S)	225
French side	165 (W) / 175 (S)	165 (W) / 175 (S) [plus 60 interruptible]
<b>Lesser Rule (Common value)</b>	<b>165 (W) / 175 (S)</b>	<b>165 (W) / 175 (S)</b> [plus 60(W)/50(S) interruptible]
(W) Winter: from April to October // (S) Summer: from November to March  (*) Commissioning of new infrastructures associated to OS 2013. <ul style="list-style-type: none"> <li>Spanish side: CS Navarra, Loop Tivissa-Paterna pipeline, Loop Tivissa-Castelnou pipeline, Lemona-Haro pipe, CS Haro reinforcements, Zarza de Tajo-Yela pipe, Villar de Arnedo CS.</li> <li>French side: Chazelle CS</li> </ul> (**) Commissioning of new infrastructures associated to OS2015. <ul style="list-style-type: none"> <li>Spanish side: CS Irún.</li> <li>French side: Arcangues-Coudures pipe.</li> </ul>		

Since December 2015 TIGF offers 60 GWh/d of interruptible capacity unbundled from France to Spain at VIP Pirineos through day-ahead auctions, only when 98% of firm capacity is sold.

✓ Spain to France flow direction

	Firm Technical Capacity (GWh/d)	
	From Oct-2014 to Nov-2015 (*)	From Dec-2015 to Sept-2016 (**)
Spanish side	205 (W) / 208 (S)	225
French side	170 (W) / 174 (S)	225
<b>Lesser Rule (Common value)</b>	<b>170 (W) / 174 (S)</b>	<b>225</b>
(W) Winter: from April to October // (S) Summer: from November to March  (*) Commissioning of new infrastructures associated to OS 2013. <ul style="list-style-type: none"> <li>Spanish side: CS Navarra, Loop Tivissa-Paterna pipeline, Loop Tivissa-Castelnou pipeline, Lemona-Haro pipe, CS Haro reinforcements, Zarza de Tajo-Yela pipe, Villar de Arnedo CS.</li> <li>French side: Chazelle CS</li> </ul> (**) Commissioning of new infrastructures associated to OS2015. <ul style="list-style-type: none"> <li>Spanish side: CS Irún.</li> <li>French side: Arcangues-Coudures pipe.</li> </ul>		

### 1.1.2.2 VIP Ibérico

From 1<sup>st</sup> October 2014 to 30<sup>th</sup> September 2018, the technical capacity at VIP Ibérico is 80 GWh/d from Portugal to Spain flow direction, and 144 GWh/d from Spain to Portugal flow direction.

### 1.1.2.3 Liaison Nord-Sud

From North to South, the liaison Nord-Sud has a firm capacity of 270 GWh/day and an additional interruptible capacity of 180 GWh/d.

From South to North, the liaison Nord-Sud has a firm capacity of 230 GWh/day and an additional interruptible capacity of 350 GWh/d.

This interconnection point will disappear the 1<sup>st</sup> of November 2018.

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## 1.2 Capacity calculation methodology

### 1.2.1 *VIP Pirineos and VIP Ibérico*

In accordance to article 6 of CAM NC, Enagás/TIGF optimize their level of technical capacity to maximize their offer of bundled capacity at the VIP Pirineos and Enagás/REN at VIP Ibérico.

A common methodology has been established by TSOs and validated by the South Region`s NRAs in the framework of the South Gas Regional Initiative, giving details of their calculations and of their maximization process in line with the regulation and the capacities agreed by the TSOs at VIPs.

#### 1.2.1.1 **Capacity calculation methodology at VIP Pirineos**

Currently, TIGF and Enagás calculate, agree, publish and offer capacity at the Interconnection Points of VIP Pirineos (Larrau and Biriadou/Irun). This capacity calculation is based on deep analysis of the technical capacity at the Interconnection on both sides, and done whenever needed, such as in case of critical demand changes, both at wide level and at local level, or in case of commissioning of new infrastructures that might have an impact in cross-border capacities

This joint method includes an in depth analysis of the technical capacities and takes into consideration the best information provided by network users regarding especially future flows that might affect the capacity figures at the interconnection.

Technical assumptions for the calculation of the technical capacity should be consistent with National Investment Plans and with ENTSOG's Union-wide TYNDP criteria.

Each TSO has developed its own methodology for the calculation of the technical capacity, both of single infrastructures or facilities, as well as the wide system capacity that can flow through an Interconnection Point.

The optimization of the technical capacity that can flow through an Interconnection Point in both directions complies with national regulation regarding operation set points, as well as with the national and European planning criteria and process.

This calculation comprises two different stages:



- On the one hand, the technical capacity regarding the marginal infrastructures linking the networks at both sides of the interconnection.

Considering an interconnection relying on a pipeline that links two compressor stations, one of each network, there is a single optimization and calculation of the technical capacity of the interconnection. These calculations are commonly performed by both TSOs by setting common hydraulic parameters and by agreeing the same equation of state. The optimization is commonly guaranteed by establishing the operative conditions regarding the inlet or discharge pressure of both compressor stations that ensure to provide the maximum capacity in the pipeline.

If there are not any compressor stations or there is just one compressor station linked to the interconnection at one side of the border, the variable that is agreed and set up is the pressure at the border. With this premise, the technical capacity is calculated independently by each TSO –by calculating the flow that can be routed through the interconnection at that certain pressure, and afterwards the technical capacity is maximized by applying the lesser rule to the different values.

- And on the other hand the wide system simulation analysis, with the scope of guaranteeing the security and quality of supply of the whole gas system.

In order to maximize the technical capacity several variables should be taken into account, such as

- ✓ Current demand levels –both in the whole system as well as at local level
- ✓ Future demand forecast
- ✓ Agreed pressure at the border
- ✓ Compressor stations operation
- ✓ Capacity already offered at other relevant points of the concerned systems
- ✓ ...

Considering all these variables, the first step when calculating the maximum technical capacity in one interconnection point is the agreement on the set of infrastructures that will be the basis of the calculations. Data exchange related to those infrastructures is as well shared, such as length, diameter, elevation of certain positions, etc.

The second step is the identification of the climatic scenarios which define the demand figures impacting in the resultant capacity. The technical capacity should be tested under the most conservative climatic scenario for each direction of the flow with the scope of guaranteeing simultaneously the security of supply of the whole national gas systems as well as the integration of the interconnection in the network. Additional climatic scenarios might be used for the estimation of the technical capacity that might be available in the interconnection under winter, summer or intermediate conditions.

After the agreement on the infrastructures, skeleton and climatic demand figures, certain operative conditions related to critical infrastructures or devices of the network should be analysed and set up with the scope of identifying the different boundary conditions that might result in different technical capacity numbers. Once more, the boundary conditions chosen for the maximization of the technical capacity should be conservative with the scope of being able to route the gas through the interconnection without damaging the security of supply standards approved at national level.

Additionally, the simulation parameters, such as hydraulic settings –equation of state, pipelines roughness, efficiency, etc.- should be agreed and commonly used.

This joint method takes into consideration a dynamic approach re-calculating the technical capacity whenever needed, such as in case of critical demand changes, both at wide level and at local level, or in case of commissioning of new infrastructures that might have an impact in cross-border capacities

Further steps on the dynamic approach of the technical capacity re-calculation are being explored by TSOs in line with NRAs vision about this topic.

Further details of the technical capacity calculation and optimisation can be found on TIGF and Enagás GTS websites:

Enagás site:

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<http://www.enagas.es/stfls/ENAGAS/Gesti%C3%B3n%20T%C3%A9cnica%20del%20Sistema/Pdf%204.pdf>

TIGF site:

<https://www.tigf.fr/en/what-we-can-offer/transport/capacity-trading/capacity-calculation/optimization-of-technical-capacity.html>

### **1.2.1.2 Capacity calculation methodology at VIP Ibérico**

Currently, REN and Enagás calculate, agree, publish and offer capacity at VIP Ibérico. This capacity calculation is based, in a first step, on deep analysis of the technical capacity of IP Badajoz/Campo Maior and IP Tuy/Valença do Minho on both sides and done whenever needed, such as in case of critical demand changes, both at wide level and at local level, or in case of commissioning of new infrastructures that might have an impact in cross-border capacities.

Each TSO has developed its own methodology for the calculation of the technical capacity, both of single infrastructures or facilities, as well as the wide system capacity that can flow through an Interconnection Point.

The optimization of the technical capacity that can flow through an Interconnection Point in both directions complies with national regulation regarding operation set points, as well as with the national and European planning criteria and process.

This calculation comprises two different stages:

- On the one hand, the technical capacity regarding the marginal infrastructures linking the networks at both sides of the interconnection.

Considering an interconnection relying on a pipeline that links two compressor stations, one of each network, there is a single optimization and calculation of the technical capacity of the interconnection. These calculations are commonly performed by both TSOs by setting common hydraulic parameters and by agreeing the same equation of state. The optimization is commonly guaranteed by establishing the operative conditions regarding the inlet or discharge pressure of both compressor stations that ensure the maximum capacity in the pipeline.

If there are not any compressor stations or there is just one compressor station linked to the interconnection at one side of the border, as it is the case of the Interconnections between Portugal and Spain, the variable that is agreed and set up is the pressure at the border. With this premise, the technical capacity is calculated independently by each TSO –by calculating the flow that can be routed through the interconnection at that certain pressure-, and afterwards the technical capacity is maximized by applying the lesser rule to the different values

The joint method applied by Enagás and REN takes into consideration a dynamic approach to re-calculating technical capacity whenever is needed, such as in case of critical demand changes, both at wide level and at local level, or in case of commissioning of new infrastructures that might have an impact on cross-border capacities. Whenever an update of capacities is required, a detailed timetable is set up in line with the regulatory requirements and commercial needs, such as auctions.

Further steps on the dynamic approach of the technical capacity re-calculation is being explored by TSOs in line with NRAs vision about this topic.

Further details of the technical capacity calculation and optimisation can be found on REN and Enagás GTS websites:

Enagas site:

<http://www.enagas.es/stfls/ENAGAS/Gesti%C3%B3n%20T%C3%A9cnica%20del%20Sistema/Pdf%203.pdf>

REN site:

<https://www.ign.ren.pt/web/guest/gestao-tecnica>

### **1.2.2 Capacity calculation methodology at Liaison Nord-Sud**

The capacity calculation to determine the level of interruptible capacity which will be effectively available (i.e. become firm) is done daily in order to maximise the gas flow from North towards South. It depends of the temperature of the day and the flows at some other points of the network (LNG regasification terminal of Montoir and underground storages).

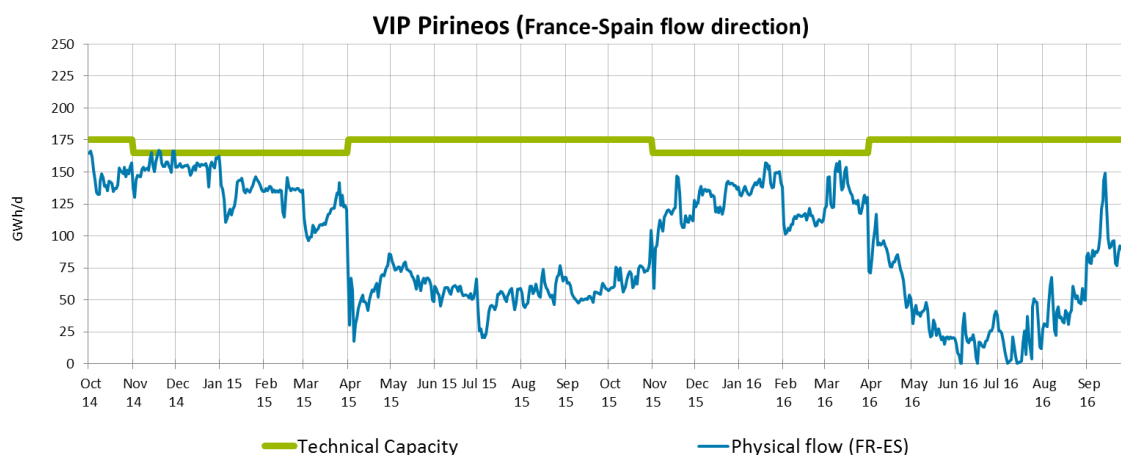
Two products are used in addition to the firm and interruptible capacities: Joint Transport Storage mechanism and market coupling.

### 1.3 Flows

Here you can find historical flows in the IPs of the South Region for the period of study between October 2014 and September 2016 as well as an analysis of the physical utilization rate for Q4 2014, 2015 and Q1 to Q3 2016.

#### 1.3.1 VIP Pirineos

##### 1.3.1.1 France to Spain flow direction:

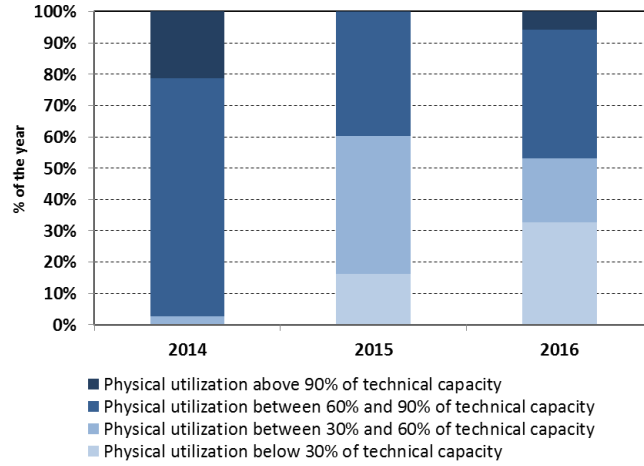


**Figure 1: Physical flows at VIP Pirineos from France to Spain**

In 2014, physical use of the interconnection exceeded 90% of the technical capacity during 78 days (21% of the year), while in 2015 this threshold was only exceeded for 1 day.

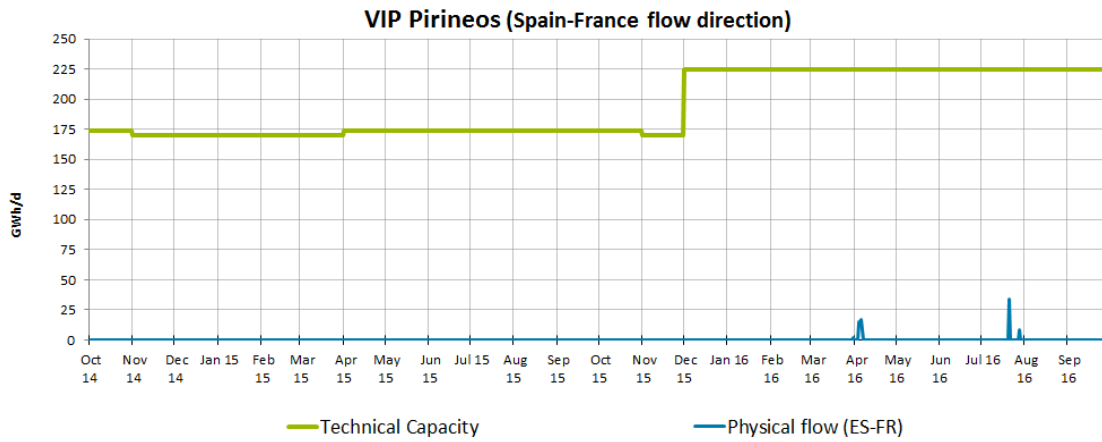
In 2016, physical use of the interconnection exceeded 90% of the technical capacity during 21 days (6% of the year). A seasonal use can be observed at this interconnection point.

**Physical utilization rate of VIP Pirineos - France to Spain Flow direction**



**Figure 2: Physical utilization rate of VIP Pirineos from France to Spain**

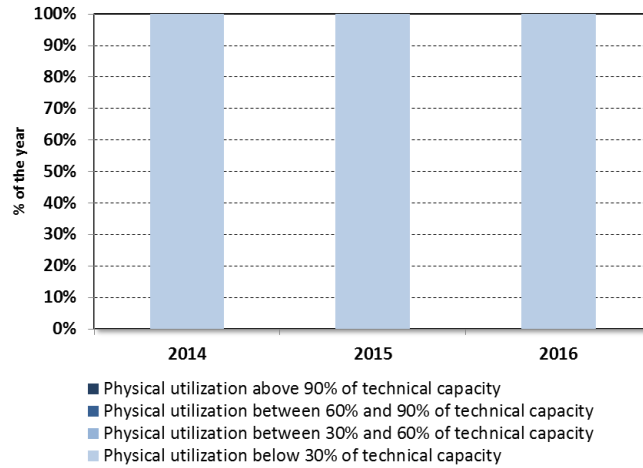
**1.3.1.2 Spain to France flow direction:**



**Figure 3: Physical flows at VIP Pirineos from Spain to France**

In this direction, the interconnection has been physically used only three days (less than 1 GWh/d).

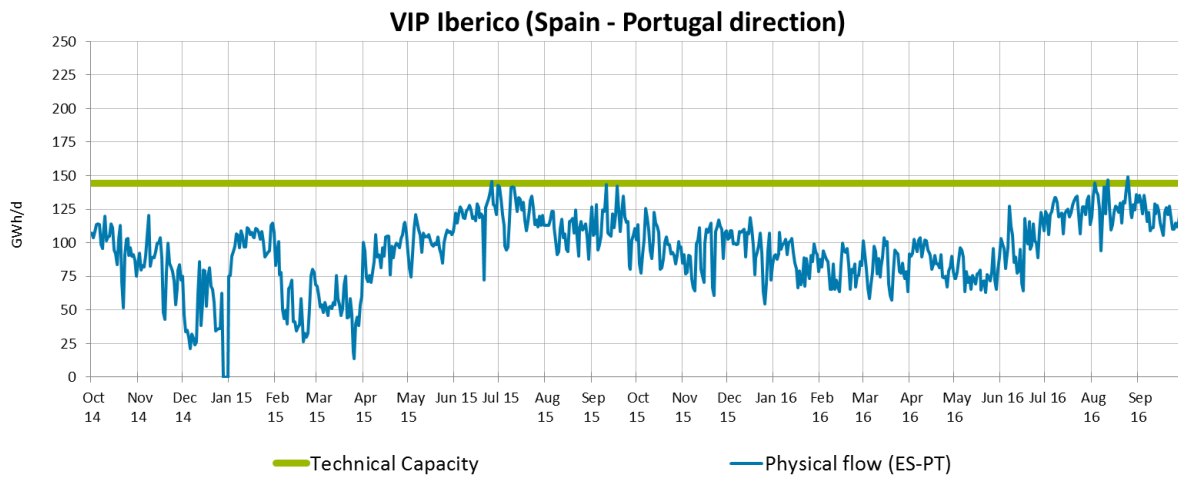
**Physical utilization rate of VIP Pirineos - Spain to France Flow direction**



**Figure 4: Physical utilization rate of VIP Pirineos from Spain to France**

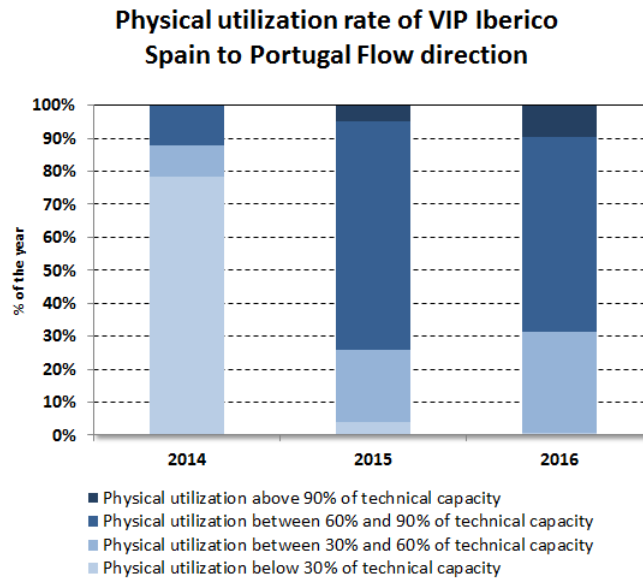
**1.3.2 VIP Ibérico**

**1.3.2.1 Spain to Portugal flow direction:**



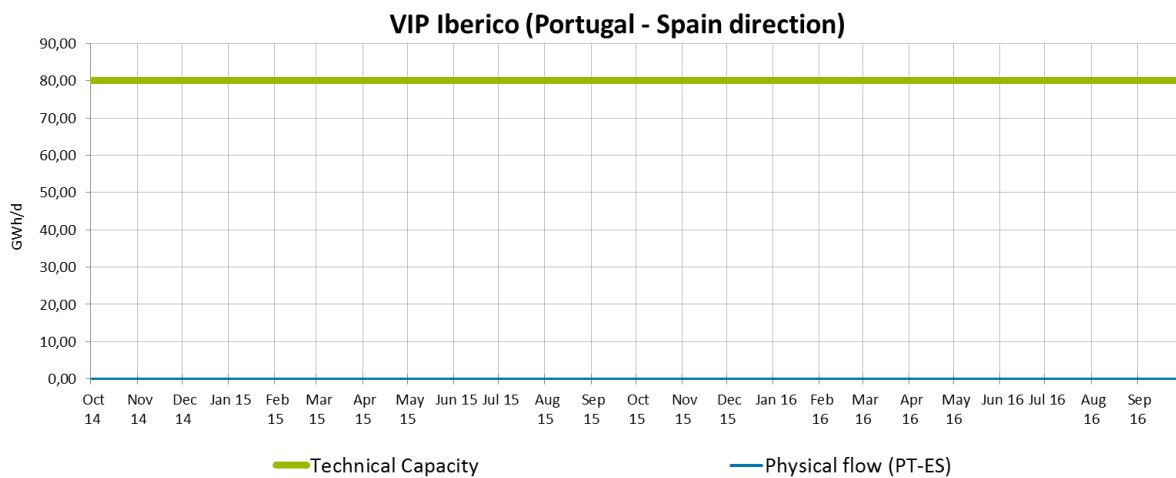
**Figure 5: Physical flows at VIP Ibérico from Spain to Portugal**

In 2015, physical use of the interconnection exceeded 90% of the technical capacity during 18 days (5% of the year), while in 2016 this threshold was exceeded during 35 days (10% of the year).



**Figure 6: Physical utilization rate of VIP Ibérico from Spain to Portugal**

**1.3.2.2 Portugal to Spain flow direction**

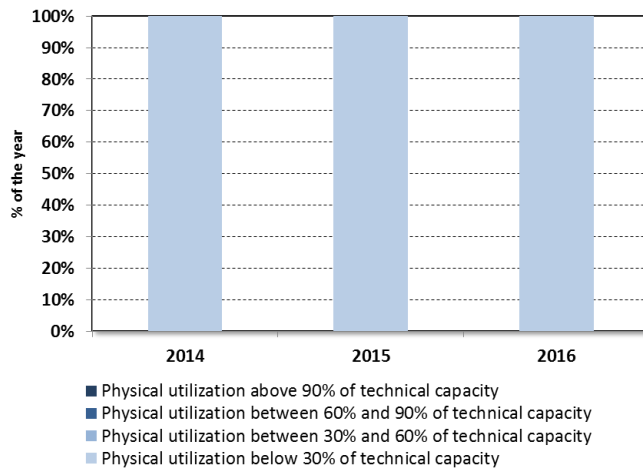


**Figure 7: Physical flows at VIP Ibérico from Portugal to Spain**

During the three years, the interconnection has not been used in the direction from Portugal to Spain.

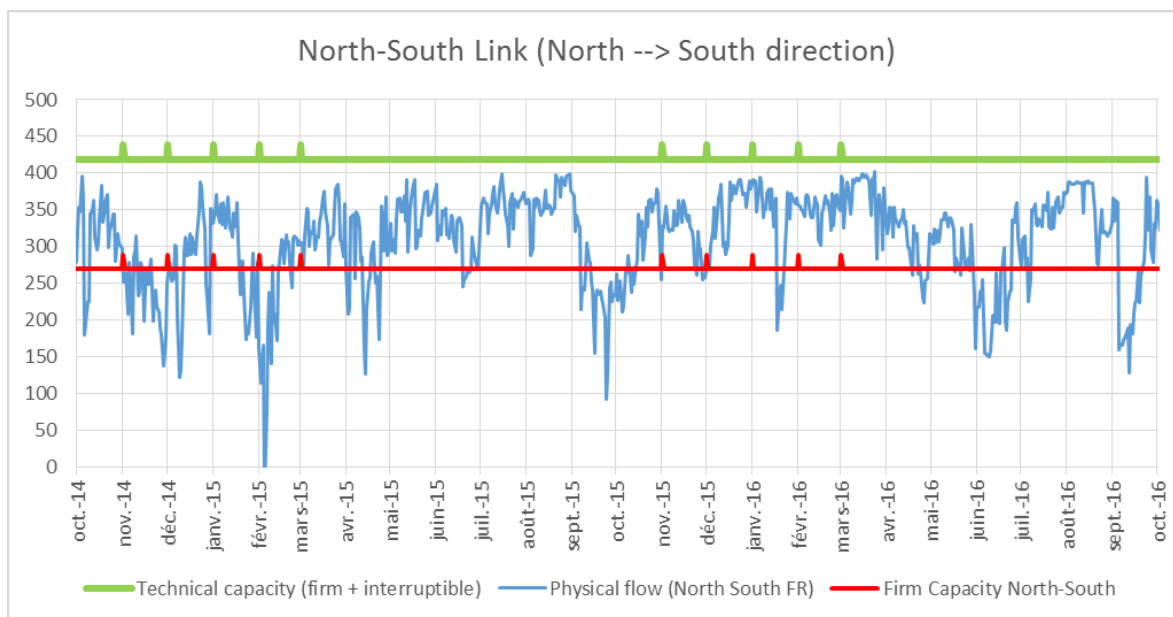


**Physical utilization rate of VIP Iberico  
Portugal to Spain Flow direction**



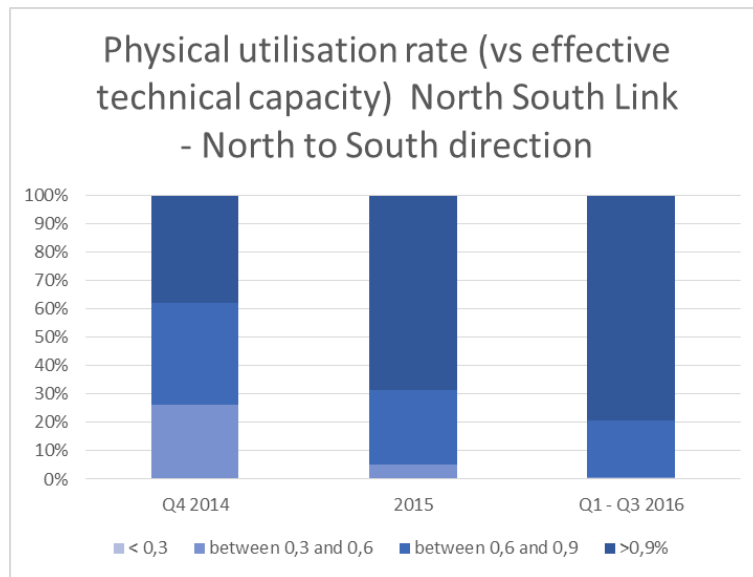
**Figure 8: Physical utilization rate of VIP Ibérico from Portugal to Spain**

**1.3.3 Liaison Nord-Sud**



**Figure 9: Physical flows at Liaison Nord-Sud from North to South**

If you compare to firm capacity, the Liaison Nord → Sud is used at more than 100% most of the time. That is why we have compared the used to the effective technical capacity (i.e. the capacity available on the considered day) in the figures hereafter :



**Figure 10: Physical utilization rate of Liaison Nord-Sud from North to South**

The capacity is heavily used from North towards South whereas in the other direction the interconnection is not used.

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## 2 Use of the gas interconnections

### 2.1 Maximization of the Capacity Offered

#### 2.1.1 *Calculation of the bundled capacity offered VIP Pirineos*

Each TSO calculates the maximum technical capacity and the maximum booked capacity in both directions of the interconnection. The common value is reached in order to identify the maximum bundled capacity that could be offered to the market.

In order to maximise the capacity to be offered to the market each TSO will consider capacities from CMP procedures.

Until November 2015, Enagás offers Yearly, Quarterly and Monthly products by auction. From November 2015, Daily and Within-Day auctions will also be held.

The calculation of the bundled capacity to be offered to the market starts with the available capacity for the annual yearly capacity auctions. The available capacity that has not been allocated in the yearly auctions will be offered in the upcoming auctions.

Enagás will take into account Chapter III of the NC CAM 459/2017, and analyses booked capacity within the time period to be offered. Enagás considers the maximum value of booked capacity for each year, thereby ensuring the minimum available capacity.

According to the results of the Annual Yearly capacity auctions and considering the amount of capacity set aside for this product, Enagás calculates bundled capacity to be offered at the Annual Quarterly capacity auctions.

After that, Enagás calculates bundled capacity to be offered at the Rolling Monthly capacity auctions according to the results of the Annual Quarterly capacity auction.

Enagas considers the maximum technical capacity value for each product. In case of different values in the same period of time, Enagas considers the minimum available value to ensure the offer capacity.

Find below the chart which summarizes the minimum common value capacity to be commercialized at VIP Pirineos:

Until December 2015:

	TIGF-ENAGAS
FR-ES	165
ES-FR	170

**Table 1: Bundled capacities at VIP Pirineos until December 2015 (GWh/d 0°C)**

After December 2015:

	TIGF-ENAGAS
FR-ES	165
ES-FR	225

**Table 2: Bundled capacities at VIP Pirineos after December 2015 (GWh/d 0°C)**

### **2.1.2 Calculation of the bundled capacity offered VIP Ibérico**

Each TSO calculates the maximum technical capacity and the maximum booked capacity in both directions of the interconnection. The common value is reached in order to identify the maximum bundled capacity that could be offered to the market.

In order to maximise the capacity to be offered to the market, each TSO will consider capacities from CMP procedures.

Until November 2015, Enagás and REN offer Yearly, Quarterly and Monthly products by auction. From November 2015, Daily and Within-Day auctions will also be held.

The calculation of the bundled capacity to be offered to the market starts with the available capacity for the annual yearly capacity auctions. The available capacity that has not been allocated in the yearly auctions will be offered in the upcoming auctions.

Both TSOs will take into account Chapter III of the CAM NC, and analyse booked capacity within the time period to be offered. TSOs consider the maximum value of booked capacity for each year, thereby ensuring the minimum available capacity.

According to the results of the Annual Yearly capacity auctions and considering the amount of capacity set aside for this product, TSOs calculate bundled capacity to be offered at the Annual Quarterly capacity auctions.

After that, TSOs calculate bundled capacity to be offered at the Rolling Monthly capacity auctions according to the results of the Annual Quarterly capacity auction.

TSOs consider the maximum technical capacity value for each product. In case of different values in the same period of time, TSOs consider the minimum available value to ensure the offer capacity.

Find below the chart which summarizes the minimum common value capacity to be commercialized at VIP Ibérico in GWh/day at 25°C:

	REN-ENAGAS
PT-ES	80
ES-PT	144

**Table 3: Bundled capacities at VIP Ibérico (GWh/d 0°C)**

## 2.2 Booked capacities (bundled/unbundled)

The aim of this section is to analyse booked capacity at cross-border interconnection points within the South Region both at country and at balancing zone level, distinguishing bundled and unbundled capacities, and providing figures of the status of each interconnection point in terms of booked and nominated capacity. This analysis covers the period from October 2014 until September 2016.

The concept of bundled capacity is defined in Article 3 (4) of CAM NC in the following way:

*«'Bundled capacity' means a standard capacity product offered on a firm basis which consists of corresponding entry and exit capacity at both sides of every interconnection point».*

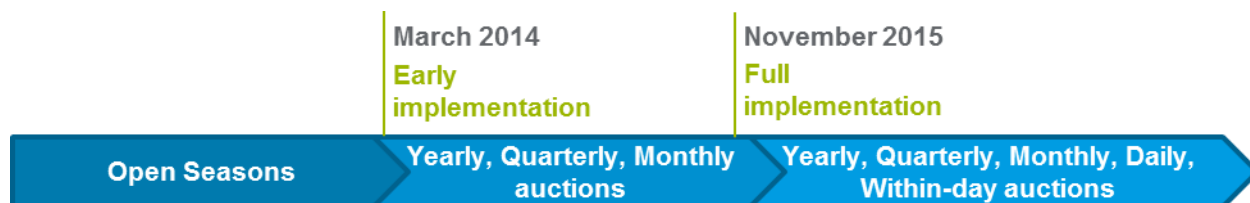
Although the unbundled capacity is not defined in the CAM NC, this concept is understood as a standard capacity product offered by one TSO on a firm or interruptible basis which consists of corresponding entry or exit capacity at one side of an interconnection point.

### 2.2.1 Current transitional situation

Before the “early implementation” of the CAM NC, capacity was booked in an unbundled way, by means of long-term contracts (LT contracts), through the South Region TSOs allocation capacity platforms. These LT contracts were booked through Open Seasons, a mechanism

for evaluating the need for new interconnection capacity and for developing coordinated and common allocation procedures at interconnection points. The Ministerial Order ITC/2607/2008 defines these procedures for the interconnection points between Spain and France. Open Seasons were a common approach to cross-border capacity allocation between four different balancing areas, namely, one balancing area in Spain and, before April 2015, three balancing areas in France (TIGF, GRTgaz nord, GRTgaz sud).

While NC CAM settled the obligation of offering standard products through auctions from November 2015, TSOs were requested by NRAs to establish an “early implementation” of the CAM NC. This “early implementation” consisted of offering Yearly, Quarterly and Monthly products through bundled and unbundled auctions on PRISMA since March 2014, date on which the first Yearly auction was held. On the other hand, Daily and Within-day products started to be offered on PRISMA by REN and Enagas since November 2015, the date of the “full implementation” of the CAM NC; TIGF offered these products since the “early implementation” in an unbundled way. Thus, from October 2014 to November 2015, Daily products were booked through First Come First Served (FCFS) on each TSO platform (REN and Enagas) in a bundled way.



**Figure 11. Allocation mechanism timeline**

Therefore, bundled capacity comes mainly<sup>3</sup> from auctions held in PRISMA, while unbundled capacity comes from LT contracts, Daily FCFS<sup>4</sup> products booked until November 2015 or from unbundled auctions. Furthermore, given that capacity at interconnection points is not allowed to be reduced since October 2013, the existing unbundled capacity from LT contracts is still booked.

<sup>3</sup> Apart from the auctions held in PRISMA, Daily capacity booked via FCFS in VIP Ibérico before the November 2015 was also booked in a bundled way.

<sup>4</sup> In VIP Pirineos.

The capacity offer is calculated as the difference between the technical and the already booked capacity<sup>5</sup>. Due to the fact that LT contracts represent a significant percentage of the technical capacity, the amount of offer in the auctions is limited.

In this context, the volume of unbundled capacity remains superior to the quantity of bundled capacity offered due to the fact that LT unbundled contracts represent a significant percentage of the technical capacity.

## **2.2.2 VIP Pirineos**

As shown on the figures hereafter, the North South flow direction, from France to Spain, prevails in terms of booked and nominated capacity.

Seasonal nominations are observed in both directions. While from France to Spain the peaks of nominations are observed during winter months, falling during the summer; from Spain to France nominations are only made during summer months.

### **2.2.2.1 North South flow direction**

In this case, unbundled capacity (146 GWh/day) is around 8 times higher than bundled capacity sold on PRISMA (18 GWh/day) during the gas year October 2014 – September 2015, while it is 146 times higher (146 GWh/day) than bundled capacity sold on PRISMA (1 GWh/day) during the period October 2015 – September 2016 (*see Figure 11*). Thus, unbundled capacity represents 93% of the total booked capacity during the whole period, while bundled capacity only represents 7%.<sup>6</sup>

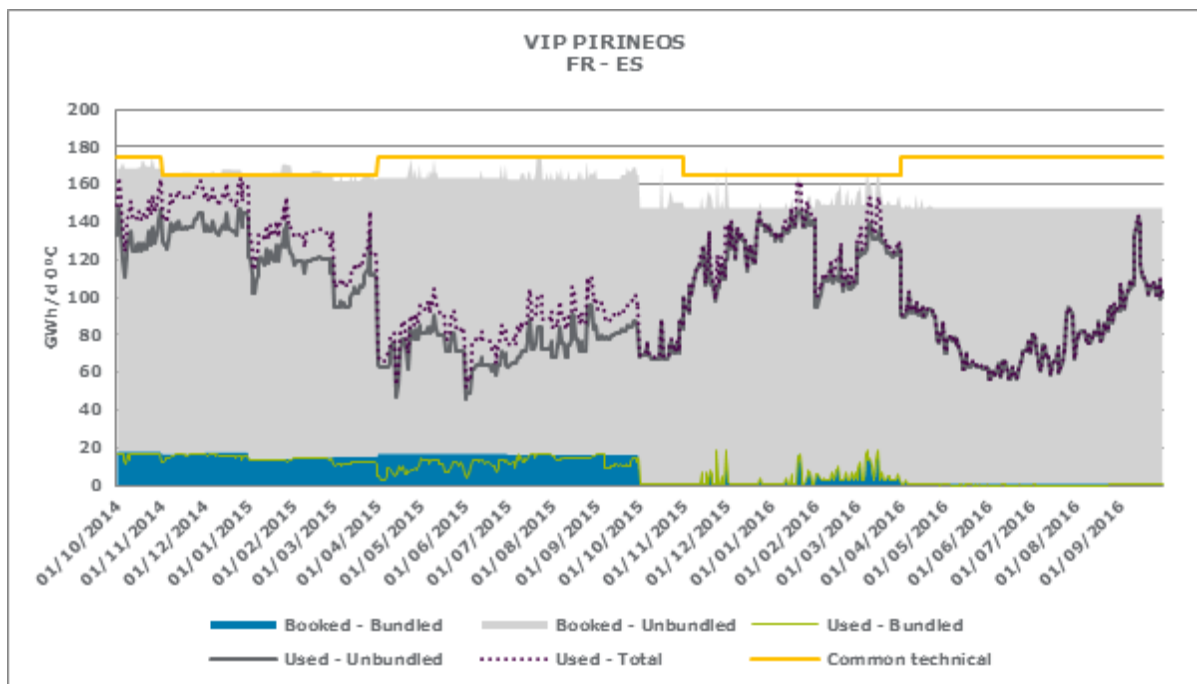
Related to the technical capacity, during the gas year October 2014 – September 2015 bundled capacity sold on PRISMA represented 10% of the technical capacity, while unbundled capacity from LT contracts represented 86%. These percentages decrease for the year October 2015 – September 2016, the bundled capacity sold on PRISMA represented 1% of the technical capacity, while unbundled capacity from LT contracts represented 84%.

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<sup>5</sup> Taking into consideration the quotas to reserve for each capacity product duration.

<sup>6</sup> For further information regarding the period beyond the study, see *Appendix I*.

Concerning the use of the booked capacity, 77% of the bundled capacity has been nominated during the whole period. The use of the bundled capacity is higher during the first year, as 81% of the booked capacity has been used, while the use during the second year represented 74% of the bundled booked capacity. On the other hand, 66% of the unbundled capacity has been used during the two years.

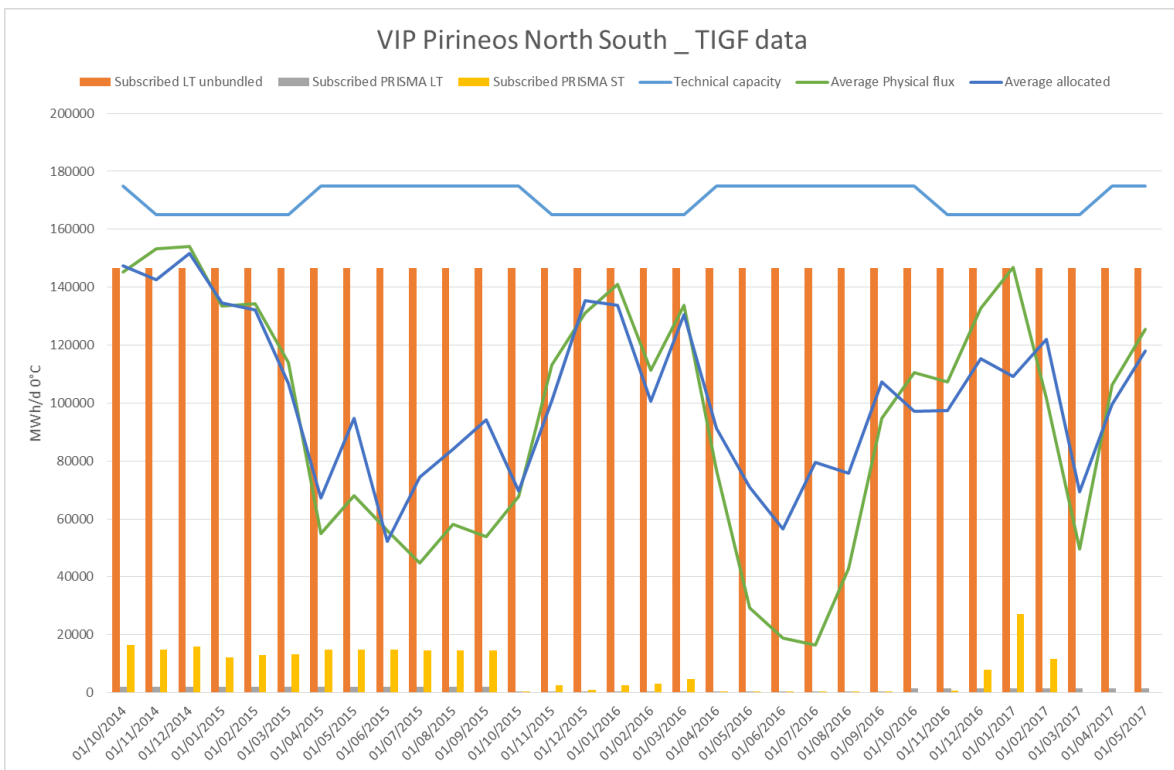
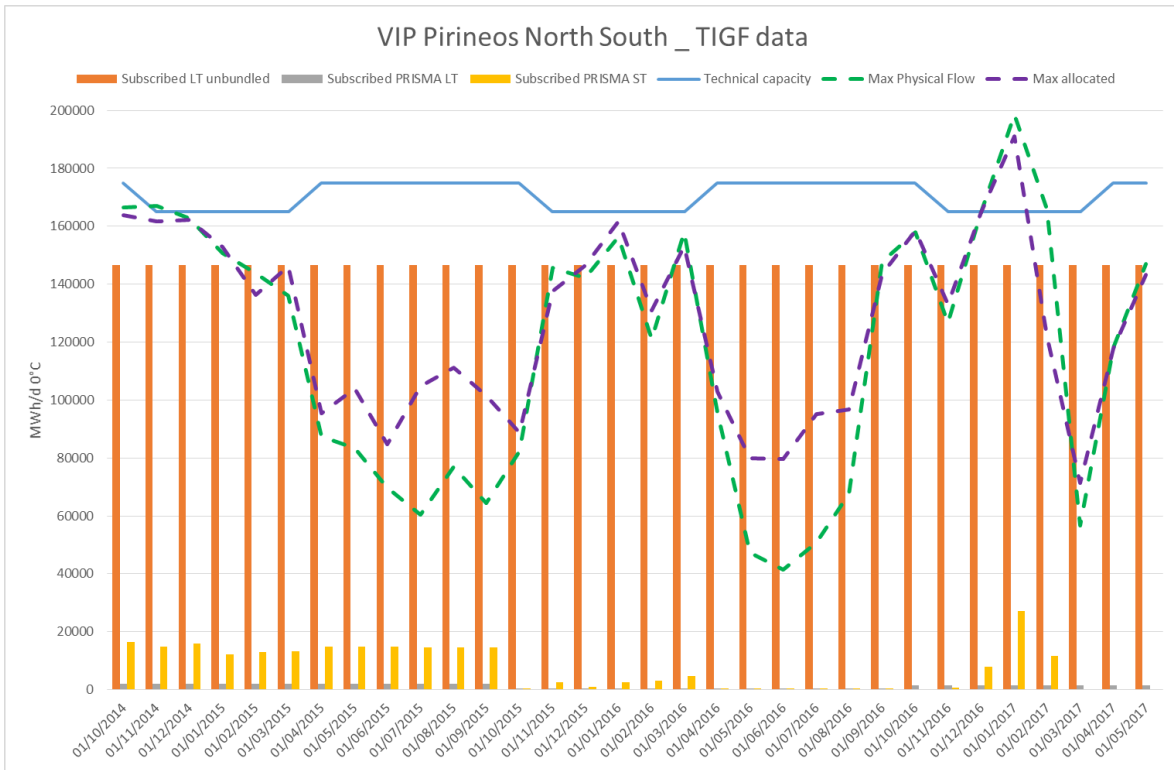


**Figure 12: Status of booked and nominated capacity at VIP Pirineos, France to Spain direction**

As it can be seen, the nominations in this direction are seasonal, showing peaks during winter months.

On TIGF side, the nominations are followed in an aggregated way. Hereafter are the aggregated figures for the concerned period.





**Figure 13: Status of booked capacity and physical flow at VIP Pirineos, France to Spain direction**

Remark :

- *Subscribed LT unbundled : Historical contract and seasonal contracts (via Open season)*
- *Subscribed PRISMA LT : Annual products subscribed via PRISMA (bundled)*
- *Subscribed PRISMA ST : Quarterly, Monthly, Daily and Within day products subscribed via PRISMA (bundled)*
- *Technical capacity : Nominal technical capacity*

### **2.2.2.2 South North flow direction**

In this direction, unbundled capacity represents the total amount of the booked capacity as only three days of bundled capacity has been booked via PRISMA (less than 1 GWh/d).

As it can be observed on the following figures, unbundled booked capacity on French side is 50 GWh/d higher than on the Spanish side. This is because one shipper booked 50 GWh/d on the Open Season 2013 at both sides of the interconnection, but this shipper reduced this capacity on the Spanish side before the “early implementation” of the CAM NC. Therefore, the status of booked capacity during this period is different at each side of the interconnection point.

#### **2.2.2.2.1 French side**

Unbundled capacity from LT contracts represents 77% of the technical capacity (132 GWh/d over 170 GWh/d) during the gas year October 2014 – September 2015, and 78% (177 GWh/d over 225 GWh/d) during the gas year October 2015 – September 2016.

Moreover, as it can be observed, since December 2015, unbundled capacity from LT contracts increased from 132 to 177 GWh/d, +45 GWh/d booked via the Open Season 2015 (South-North direction).

Long term contracts subscribed during open seasons 2013 and 2015 will end starting from 2023/2024 gas year. Consequently, the bundled capacity proposed through the auction system will increase as much. There will be no more LT contracts starting from the gas year 2028/2029 (both sides).

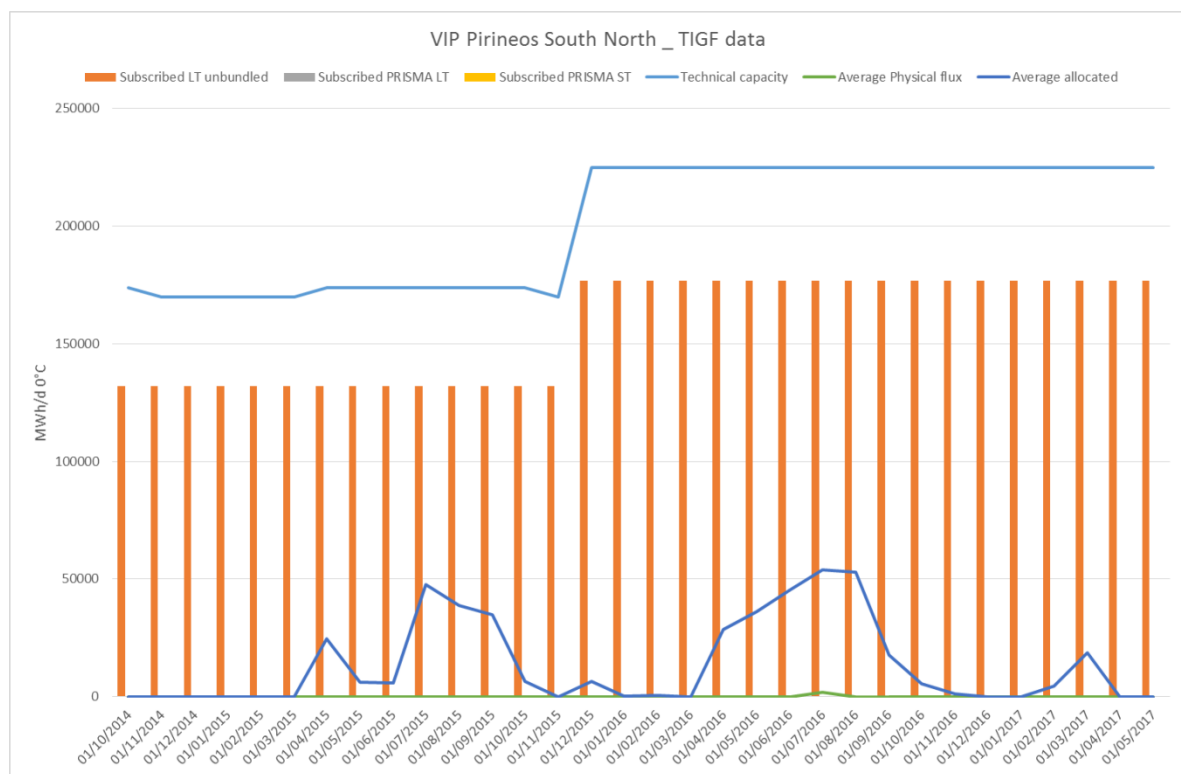
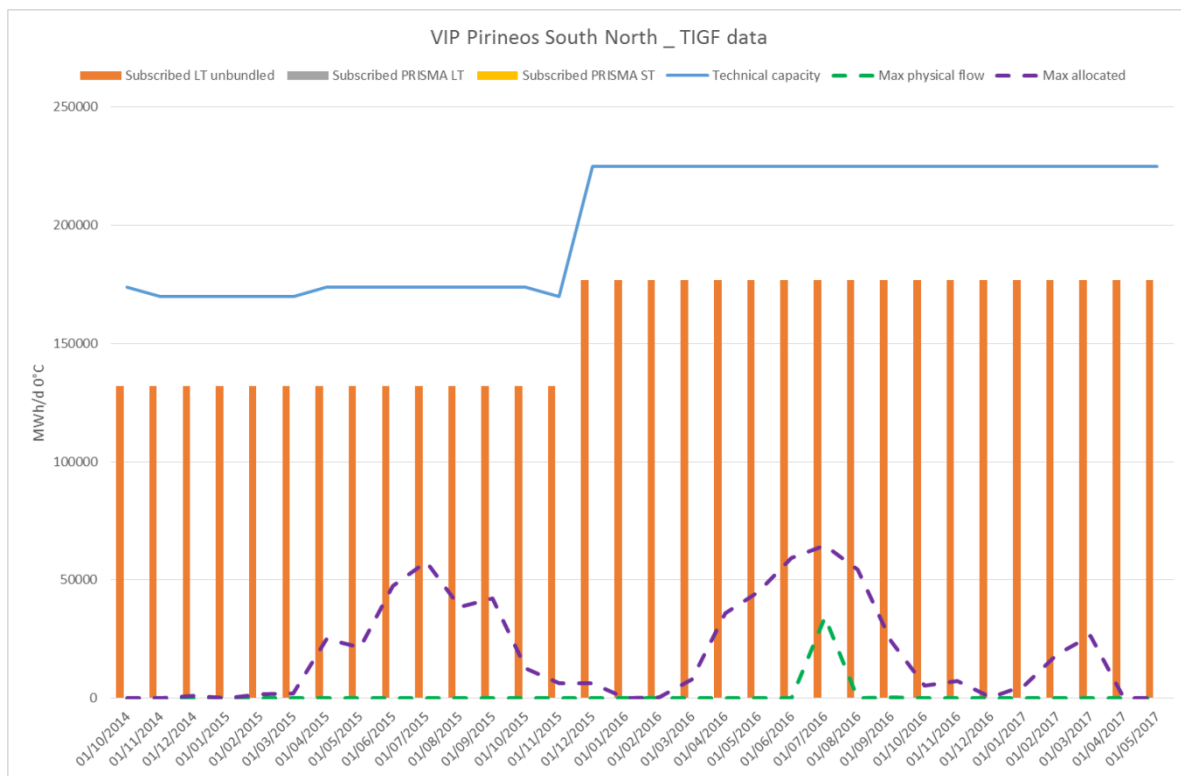


Figure 14: Status of booked capacity and physical flow at VIP Pirineos, Spain to France direction

*Remark :*

- *Subscribed LT unbundled : Historical contract and seasonal contracts (Open season)*
- *Subscribed PRISMA LT : Annual products subscribed via PRISMA (bundled)*
- *Subscribed PRISMA ST : Quarterly, Monthly, Daily and Within day products subscribed via PRISMA (bundled)*
- *Technical capacity : Nominal technical capacity*

#### **2.2.2.2.2 Spanish side**

Unbundled capacity from LT contracts represents 51%<sup>7</sup> of the technical capacity during the gas year October 2014 – September 2015, and 55%<sup>8</sup> during the gas year October 2015 – September 2016.

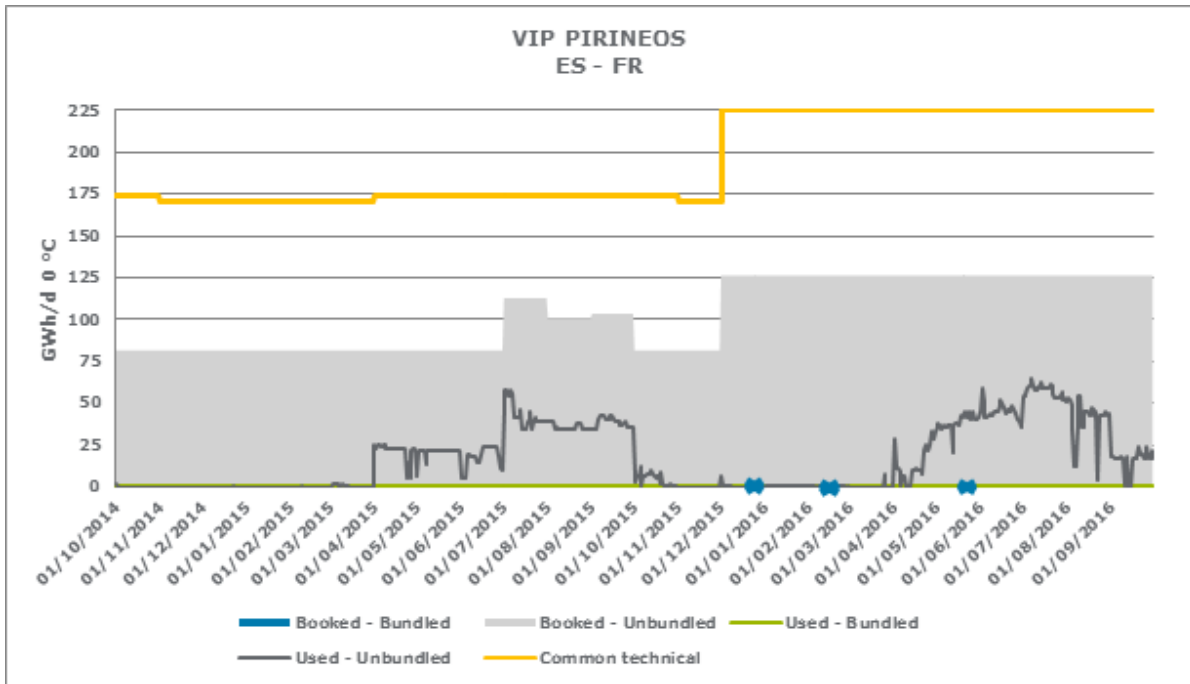
Moreover, as it can be observed, since December 2015 unbundled capacity from LT contracts increases by 35% (from 88 to 119 GWh/d) due to the new capacity booked via the Open Season 2015.<sup>9</sup>

As seen on the next figure, the use of the capacity follows seasons. From April to September, it represents 30% of the booked capacity during these months, while it is not used from October to March.

<sup>7</sup> Percentage calculated on the total firm capacity of the Spanish side (225 GWh/d)

<sup>8</sup> Percentage calculated on the total firm capacity of the Spanish side (225 GWh/d)

<sup>9</sup> For further information beyond the period of study, see [Appendix I](#)



**Figure 15: Status of booked and nominated capacity at VIP Pirineos, Spain to France direction**

Next chapter (*Chapter 4*) classifies bundled and unbundled capacity based on how these capacities were booked: standard auctions, FCFS or LT contracts.

### 2.2.3 VIP Ibérico

At this interconnection point flow direction from Spain to Portugal prevails over Portugal to Spain direction.

#### 2.2.3.1 Portugal to Spain flow direction

During the period analysed capacity has been booked only during one month (October 2015) in a bundled way, where 0.2 GWh/d have been both booked and used.

This capacity represents 0.2% of the technical capacity.

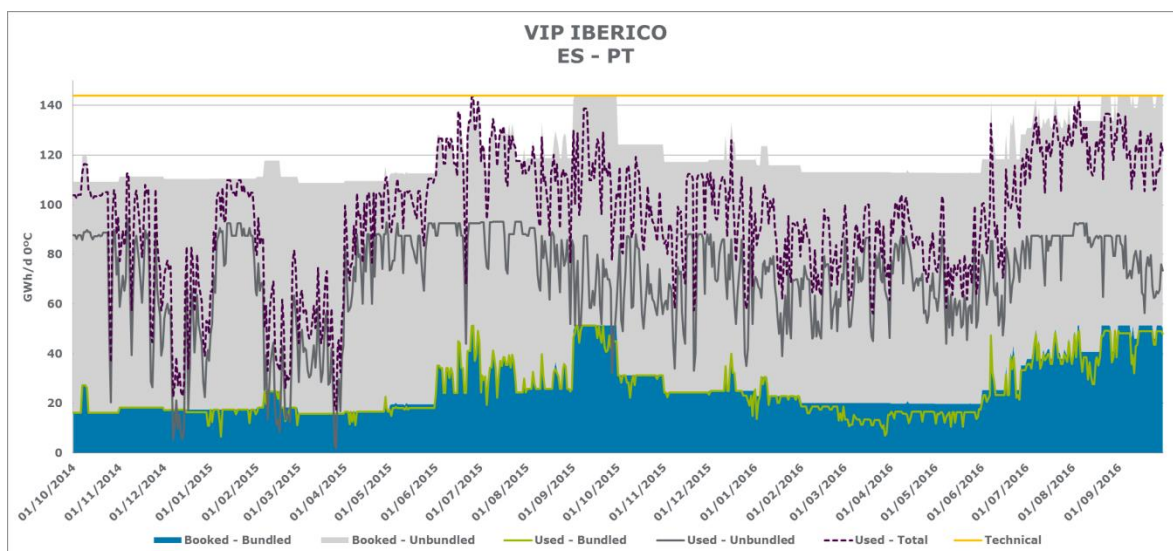
#### 2.2.3.2 Spain to Portugal flow direction

Again unbundled capacity prevails over bundled capacity with a proportion of around 4 times the bundled capacity. Unbundled capacity comes from a transit contract and two LT contracts signed between two shippers and both TSOs. This transit was booked by a shipper at both sides of the interconnection and until January 2015 was out of the Third Party Access

System. Since then, Enagas integrated it into the Third Party Access System, in order to accomplish the requirement established by the European regulators (according to the [“Informe sobre la propuesta de adecuación del contrato de tránsito de gas a Portugal a la normativa europea”](#) of the CNMC on the 5<sup>th</sup> September 2014). On the other hand, REN offers this capacity in an unbundled way via auctions held on the PRISMA Platform.

Therefore, unbundled capacity represents 65% of the technical capacity during the whole period. The use of this capacity is practically constant over time (85% of the unbundled capacity has been used), although it can be appreciated that there is a decrease on its use during December 2014 (40% of the booked capacity has been used) the months February 2015 and March 2015 (36% of the booked capacity has been used).

Concerning the bundled capacity, it represents 19% of the technical capacity on average during the whole period. As it can be observed on [Figure 16](#), there are peaks of bundled capacity during summer months (from June to September). In fact, bundled capacity increases nearly two times during these months. Furthermore, the use of bundled capacity is compliant to the booked capacity, as 93% of the booked capacity has been used.<sup>10</sup>



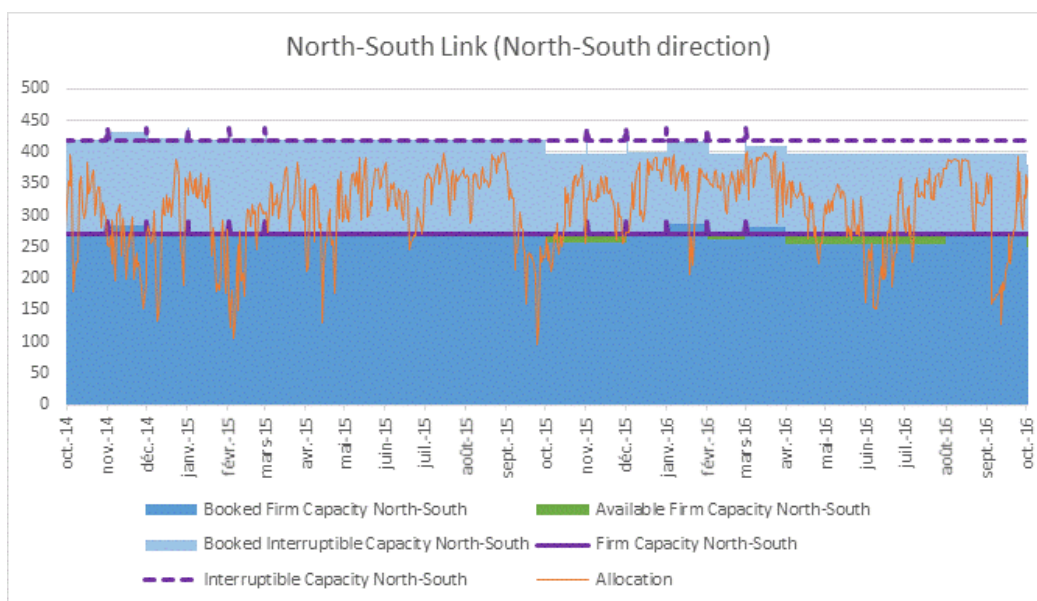
**Figure 16: Status of booked and nominated capacity at VIP Ibérico, Spain to Portugal direction**

<sup>10</sup> For further information beyond the period of study, see [Appendix I](#)

Next chapter (*Chapter 4*) classifies bundled and unbundled capacity in base how these capacities were booked: standard auctions, FCFS or LT contracts.

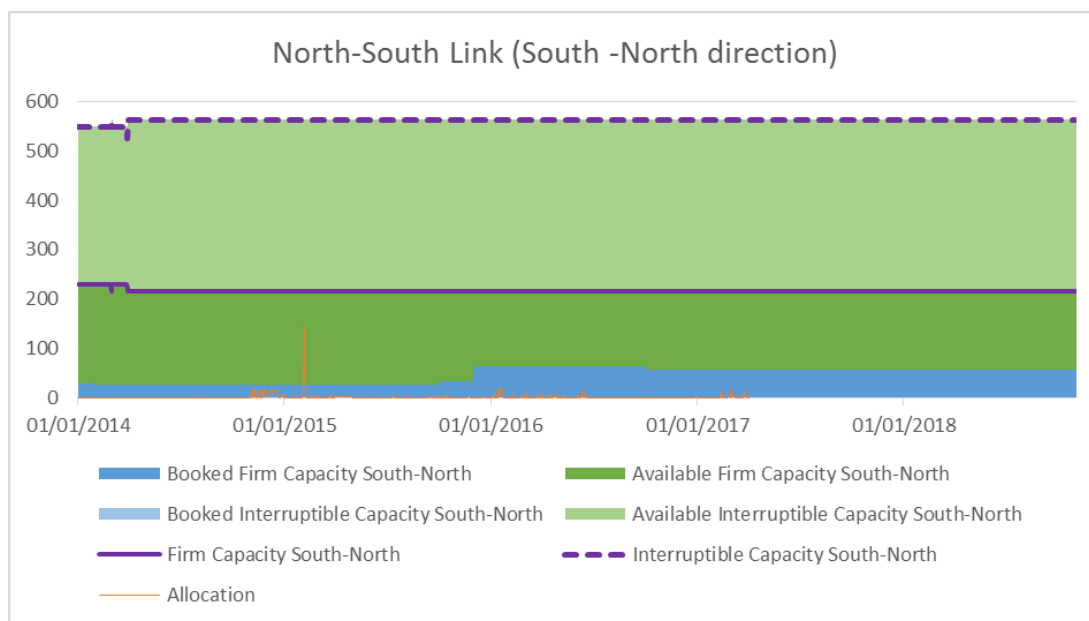
### 2.2.4 Liaison NORD-SUD

The capacity has always been offered as a bundled product since it is the same TSO on both side of the IP.



**Figure 17: Status of booked and used capacity at Liaison Nord-Sud, North to South direction in GWh/day**

The IP is only booked and used to ship gas from PEG Nord to TRS.



**Figure 18: Status of booked and used capacity at Liaison Nord-Sud, South to North direction in GWh/day**

### 2.3 Nomination/renominations procedures

Two nomination and re-nomination procedures may be distinguished during this period: before November 2015 and after November 2015.

- Before November 2015 these procedures were regulated by national regulation (PD-15 in Spain, MPGTG in Portugal) and the Interconnection Agreements between TSOs.
  - There were 2 nomination periods before D-1.
  - There were 2 re-nomination periods before D-1.
  - There were re-nomination cycles starting 2 hours before the beginning of the gas day D up to 3 hours before the end of the gas day D.

They were performed in a manual way.

- Since November 2015, nomination and re-nomination procedures have been regulated by Chapter IV of [Commission Regulation \(EU\) No 312/2014, of 26 March](#)



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[2014, establishing a Network Code on Gas Balancing of Transmission Networks](#) (BAL NC) and BRS Nominations.

- Nominations are allowed from 14:00 h of D-1. Any notification received by the TSO after two o'clock in the afternoon (2:00 p.m.) shall be considered as a revised notification.
- Re-nomination period starts immediately after the confirmation deadline and ends no later than 3 hours before the end of gas day D.

These procedures are performed automatically by TSOs systems.

Nominations for the entry and exit of both interconnection points can be sent in accordance with the rules put in place for single-sided nomination. For this purpose, the role of initiator is assigned to TIGF at the VIP Pirineos and to REN at the VIP Ibérico.

The matching procedure consists on the following steps:

- Step 1: TIGF/REN will forward to ENAGAS GTS all received and not rejected single-sided nominations.
- Step 2: TIGF/REN and ENAGAS GTS will calculate for each received (re-)Nomination the Processed Quantities, in order to determine if the (re-)Nominated Quantity by the Shipper can be totally or only partially accepted.

For each (re-)Nomination Cycle, only the last applicable (re-) nomination (including nominations generated with default rule) that was sent before the Shipper deadline will be taken into account.

In the event that there were constraints in any of the upstream or downstream VIP Pirineos/VIP Ibérico systems, the affected Party will communicate their Shippers a notification considering the limitations arisen not later than forty-five (45) minutes after the Shippers' (re-)Nomination Cycle. This Party will also proceed to calculate the Processed Quantities as described in Exceptional Event Situation.

- Step 3: TIGF/REN will send ENAGAS GTS the Processed Quantities based on the Nominated Quantities.

- Step 4: ENAGAS GTS shall perform the “Matching Process” by using the criteria of the Lesser Rule.
- Step 5: ENAGAS GTS will send the Matching Result to TIGF/REN.

More information about nomination, re-nomination and matching procedures is included in the Interconnection Agreement published on the TSOs websites:

Enagas site:

<http://enagas.es/stfls/ENAGAS/Gesti%C3%B3n%20T%C3%A9cnica%20del%20Sistema/Documentos/Consulta%20p%C3%BAblica%20Interconnection%20agreement%20Enagas%20REN.pdf>

<http://enagas.es/stfls/ENAGAS/Gesti%C3%B3n%20T%C3%A9cnica%20del%20Sistema/Documentos/Consulta%20p%C3%BAblica%20Interconnection%20agreement%20TIGF-ENAGAS.pdf>

REN site:

<https://www.ign.ren.pt/web/quest/interconnection-agreement-vip-iberico>

## 2.4 Bundling agreements (art. 20 CAM NC)

Although CAM NC settles the obligation of maximising the offer of bundled capacity by TSOs, shippers are not obliged to book bundled capacity nor convert their unbundled contracts into bundled. One bundling request has been received at VIP Pirineos, South North flow direction. One shipper transferred the total amount and duration of its contract to another shipper belonging to the same business group (this transaction is shown on the *Appendix II*). The new contract was converted to bundled by TSOs.

Regarding the situation of VIP Ibérico, the common bundling process of capacities results in an unbundled portion of capacity on the Portuguese side that is not currently offered to the market. Since no unbundled capacity is made available on the Spanish side, only the owners of the LT contracts on the Spanish side may use the equivalent portion of unused capacity on the Portuguese side. For that reason, the Portuguese regulation allows only that this

portion of capacity be allocated to the owners of those LT contract owners frequently resulting, as such, as unused capacity.

## 2.5 Capacity used and users' nominations/renominations evolution

### 2.5.1 *VIP Pirineos*

#### 2.5.1.1 North South flow direction

As it can be observed on the next figure re-nominations follow practically the same pattern than nominations performed by users. However, there are some days in November 2015 and April 2016 with low nominations and where re-nominations were around 4 times the initial amount.

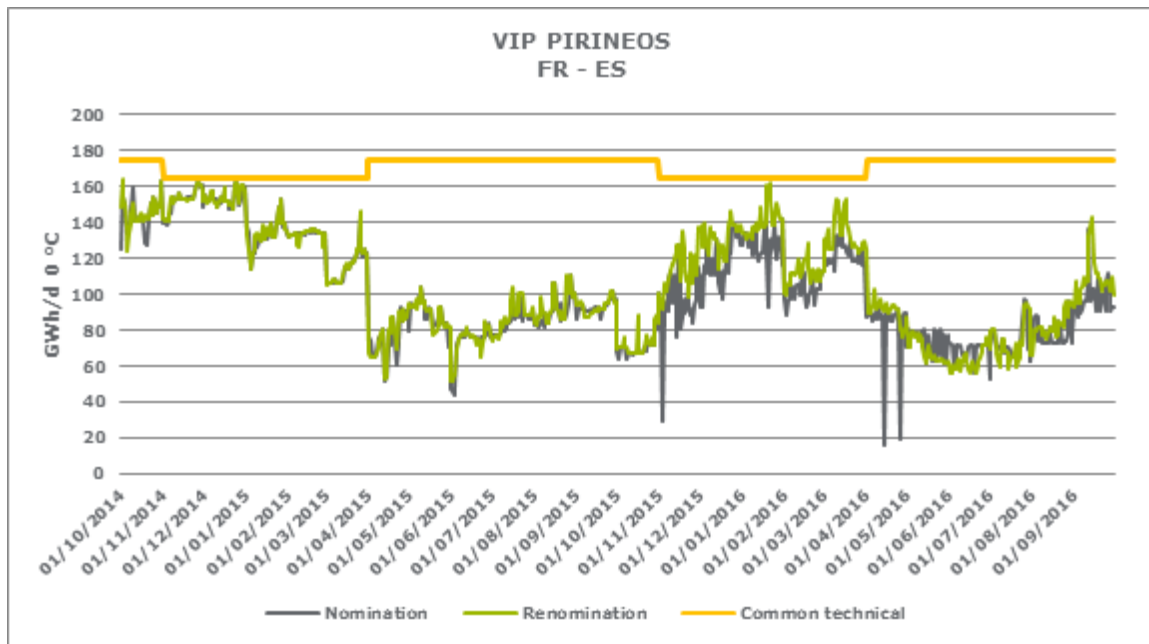
In general, re-nominations are 4% higher than nominations, with a maximum punctually reaching 23%.

All data accounted (peaks included) over the period, calculations show:

an average deviation  $[(\text{final nomination} - \text{initial Nomination}) / \text{initial nomination}] \times 100 = -3\%$ : meaning that the initial Nominations are quite accurate.

Maximum deviation  $[(\text{final nomination} - \text{initial Nomination}) / \text{initial nomination}] \times 100 = 23\%$ : for a day, final nomination ended 23% higher than the initial one.

Minimum deviation  $[(\text{final nomination} - \text{initial Nomination}) / \text{initial nomination}] \times 100 = -94\%$ : for a day, final nomination ended 94% lower than the initial one.



**Figure 19: Nominations and renominations evolution at VIP Pirineos, France to Spain direction**

### 2.5.1.2 Spain to France flow direction

In this case re-nominations follow the same pattern as nominations, being 3% higher during the first peak (April 2015 – September 2015), and 15% higher during the second peak (April 2016 – September 2016).

All data accounted (peaks included) over the period, calculations show a deviation  $[(\text{final nomination} - \text{initial Nomination}) / \text{initial nomination}] \times 100$  :

Average of: = -141% | Maximum = 100% | Minimum = -12234%.

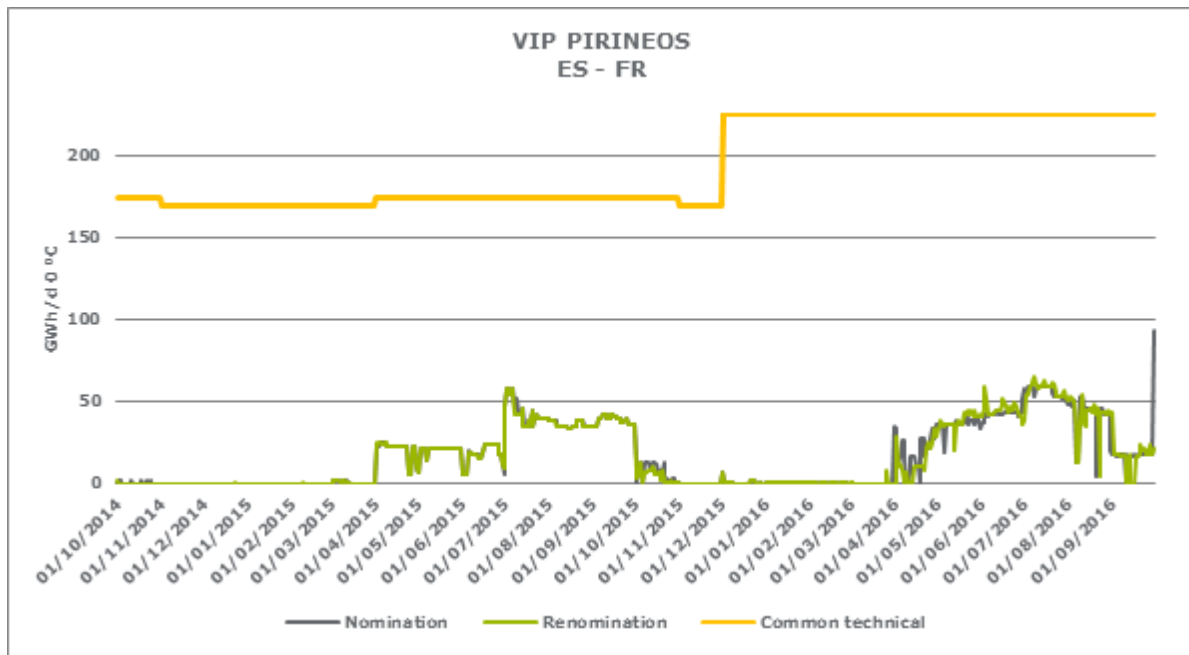


Figure 20: Nominations and renominations evolution at VIP Pirineos, Spain to France direction

## 2.5.2 VIP Ibérico

### 2.5.2.1 Portugal to Spain direction

In this direction of that interconnection point, no re-nomination has been performed.

### 2.5.2.2 Spain to Portugal direction

In this case it can also be observed that re-nominations meet the same pattern as nominations, being 3% higher than nominations.

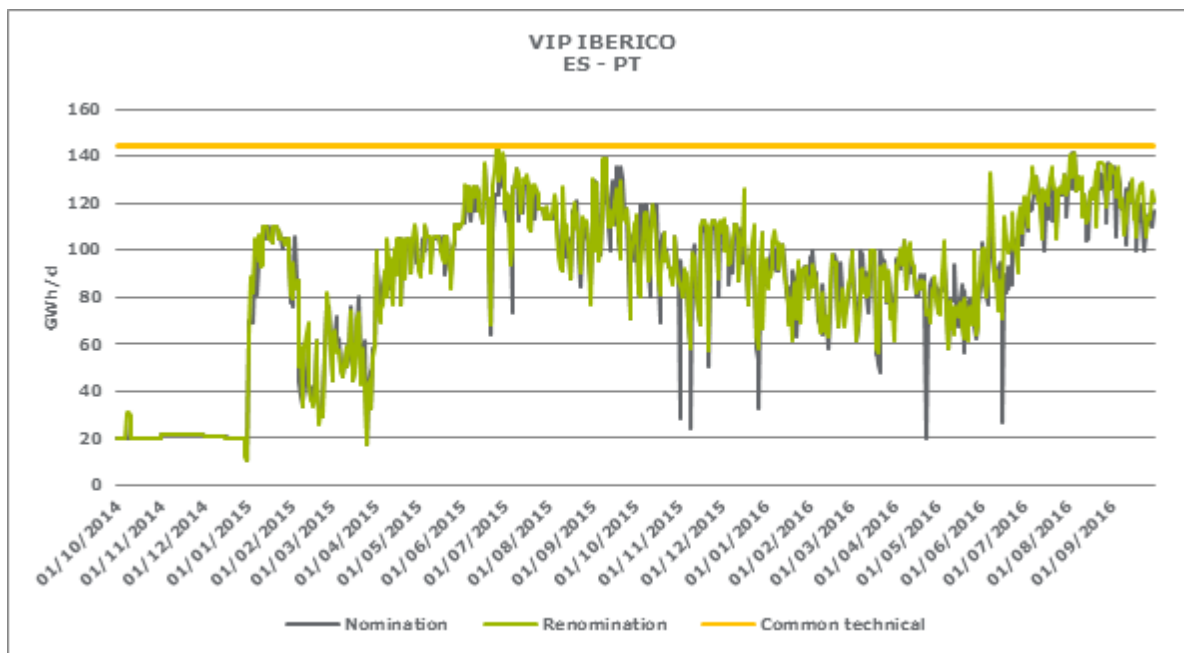


Figure 21: Nominations and renominations evolution at VIP Ibérico, Spain to Portugal direction

2.5.3 Liaison NORD-SUD

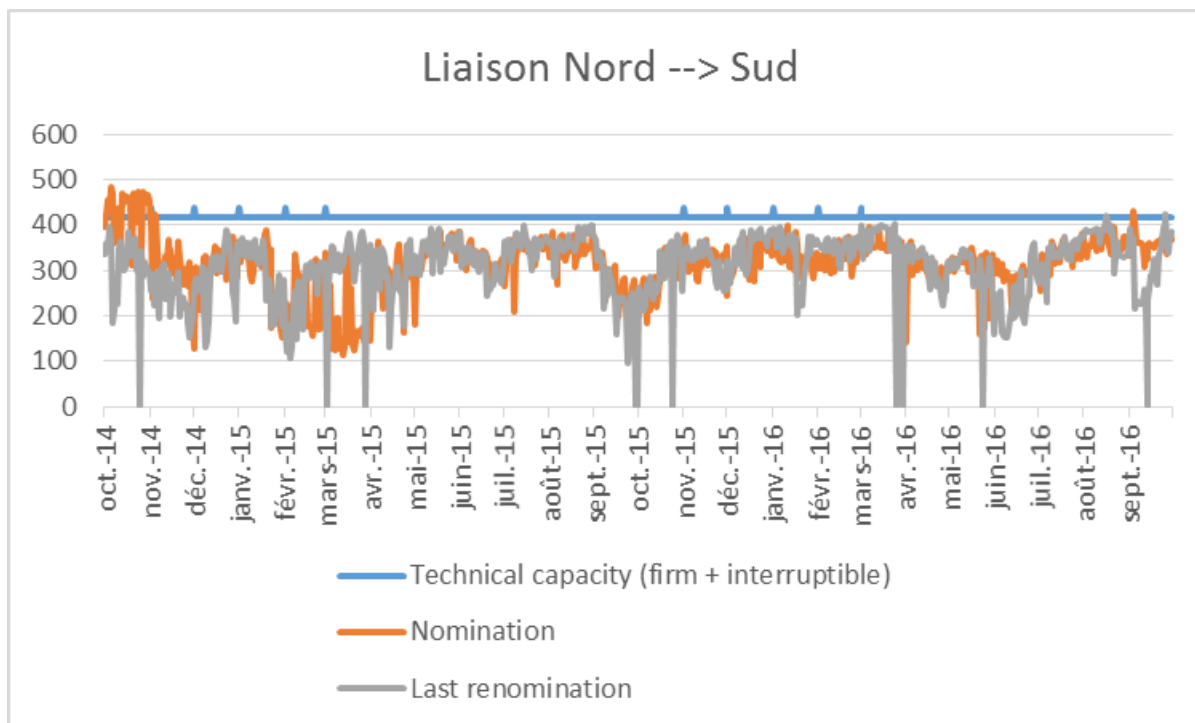


Figure 22: Nominations and renominations evolution at Liaison, North-South direction in GWh/day

The last renomination is sometimes zero and sometimes 150% of the nomination. This huge variation within-day is due to the fact that the liaison is used to balance shippers' position in the TRS zone.

## 2.6 Available capacities

### 2.6.1 VIP Pirineos

#### 2.6.1.1 North South flow direction

Taking into consideration analysis exposed on 3.1 *Booked capacities (bundled/unbundled)* section, as well as the changes of the technical capacity between the winter and the summer time, the average available capacity for the gas year October 2014 – September 2015 is 8 GWh/d on the French side and 5 GWh/d on average on the Spanish side, whilst it is 22 GWh/d on the French side and 22 GWh/d on the Spanish side for the year October 2015 – September 2016.

Available capacities (GWh/d 0 °C)					
Gas year	Side of the interconnection	Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	French side	4	4	12	12
	Spanish side	1	0	11	10
2015	French side	20	14	27	27
	Spanish side	19	13	27	27

**Table 4: Available capacities at VIP Pirineos, France to Spain direction**

The available capacity during Q3 and Q4 is higher than during Q1 and Q2 due to the additional capacity of 10 GWh/d<sup>11</sup> offered during months of summer, as it can be seen on next tables:

<sup>11</sup> The firm technical capacity is 175 GWh/d in the summer period and 165 GWh/d in the winter.

Spanish side <sup>12</sup>		Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	Technical	168	165	175	175
	Booked	167	165	164	165
	<b>Technical - Booked</b>	<b>1</b>	<b>0</b>	<b>11</b>	<b>10</b>
	Nominated	151	127	80	91
	<b>Technical - Nominated</b>	<b>17</b>	<b>38</b>	<b>95</b>	<b>84</b>
2015	Technical	168	165	175	175
	Booked	149	152	148	148
	<b>Available</b>	<b>19</b>	<b>13</b>	<b>27</b>	<b>27</b>
	Nominated	106	129	74	89
	<b>Technical - Nominated</b>	<b>62</b>	<b>36</b>	<b>101</b>	<b>86</b>

Units in GWh/d 0°C

**Table 5: Available capacities at VIP Pirineos, on the Spanish side**

French side		Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	Technical	168,3	165	175	175
	Booked	164,1	161,3	163,4	163
	<b>Available</b>	<b>4,2</b>	<b>3,7</b>	<b>11,6</b>	<b>12</b>
2015	Technical	168,3	165	175	175
	Booked	148,3	150,5	147,5	147,5
	<b>Available</b>	<b>20</b>	<b>14,5</b>	<b>27,5</b>	<b>27,5</b>

Units in GWh/d 0°C

**Table 6: Available capacities at VIP Pirineos, on the French side**

### 2.6.1.2 South to North direction

In accordance with each quarter, available capacity changes as follows:

<sup>12</sup> This table contains average data for booked capacity and nominated capacity.



Available capacities (GWh/d 0 °C)					
Gas year	Side of the interconnection	Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	French side	39	42	42	42
	Spanish side	87	83	93	69
2015	French side	43	48	48	48
	Spanish side	92	99	99	99

Note: increment of capacity from 170 to 225 GWh/d from Q2/2015.

Units in GWh/d 0°C

**Table 7: Available capacities at VIP Pirineos, Spain to France direction**

Details:

Spanish side <sup>13</sup>		Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	Technical	168	165	175	175
	Booked	82	82	82	106
	<b>Technical - Booked</b>	87	83	93	69
	Nominated	0	0	20	39
	<b>Technical - Nominated</b>	168	165	155	136
2015	Technical	189	225	225	225
	Booked	97	126	126	126
	<b>Technical - Booked</b>	92	99	99	99
	Nominated	2	0	33	38
	<b>Technical - Nominated</b>	187	225	192	187

Units in GWh/d 0°C

**Table 8: Available capacities at VIP Pirineos, on the Spanish side**

<sup>13</sup> This table contains average data for booked capacity and nominated capacity.

French side		Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	Technical	171,3	174	174	174
	Booked	132	132	132	132
	<b>Available</b>	39,3	42	42	42
2015	Technical	190	225	225	225
	Booked	147	177	177	177
	<b>Available</b>	43	48	48	48

Units in GWh/d 0°C

**Table 9: Available capacities at VIP Pirineos, on the French side**

## 2.6.2 VIP Ibérico

### 2.6.2.1 Spain to Portugal direction

Available capacity is 24 GWh/d on average during the whole period. However, there are certain months and days in which there is no capacity available (some days of June 2015, the month September 2015, some days of August 2016 and the whole month of September 2016).

Spanish side		Q1	Q2	Q3	Q4
		Oct. - Dec.	Jan. - Mar.	Apr. - Jun.	Jul. - Sep.
2014	Technical	144	144	144	144
	Booked	111	111	117	130
	<b>Technical - Booked</b>	<b>33</b>	<b>33</b>	<b>27</b>	<b>14</b>
	Nominated	80	70	106	114
	<b>Technical - Nominated</b>	<b>64</b>	<b>74</b>	<b>38</b>	<b>30</b>
2015	Technical	144	144	144	144
	Booked	120	114	116	138
	<b>Technical - Booked</b>	<b>24</b>	<b>30</b>	<b>28</b>	<b>6</b>
	Nominated	96	83	88	124
	<b>Technical - Nominated</b>	<b>48</b>	<b>61</b>	<b>56</b>	<b>20</b>

**Table 10. Available capacities at VIP Iberico, on the Spanish side**

### **2.6.2.2 Portugal to Spain direction**

Given that no capacity has been booked at this interconnection point excepting one month, available capacity corresponds to the technical capacity, 80 GWh/d. During October 2015, the only month in which capacity has been booked (0.2 GWh/d), available capacity has been 79.8 GWh/d.

### **2.6.3 *Liaison Nord-Sud***

In the direction North towards South, there was no available capacity left most of the time. Capacity was available the following months:

- 12 GWh/day in October and November 2015,
- 8.6 GWh/day in February 2016,
- 14 GWh/day from April to July 2016
- And 3.5 GWh/day in August 2016.

Regarding interruptible capacity, 30 GWh/day were available from Q4 2014 until Q3 2015, then 50 GWh/day were available until Q3 2016.

In the direction South towards North, there was plenty of capacity available: more than 180 GWh/day from October 2014 to November 2015, then 150 GWh/day until September 2016. No interruptible capacity has been booked in this direction.

## **2.7 Secondary capacity trade**

### **2.7.1 *VIP Pirineos and VIP Ibérico***

[Regulation 715/2009](#) of the European Parliament and Council stated the obligation of TSOs to allow the free exchange of capacity rights and to facilitate this exchange in a transparent and non-discriminatory way.

As a consequence, in February 2010 Enagas has implemented a tool, known as the *Bulletin Board*, in which users could exchange their booked capacity. Requests of secondary trades

were sent to Enagas, which analysed them and processed them through its IT system (SL-ATR) and published each transaction on its website.

TSOs have made their best efforts in order to accomplish a single Secondary Market Place in which transactions could be automatically performed (shippers sending a secondary proposal, automatically validated by TSOs). Thus, from November 2015 Enagas and TIGF have implemented secondary market via PRISMA Platform.

Therefore, before the implementation of the secondary market via PRISMA, 9 trades have been received on Enagas systems, in which 4 shippers have exchanged unbundled capacity.

It should be noted that all trades have been received for the VIP Pirineos and non for the VIP Ibérico. These 9 trades have been received for both directions as follows:



**Figure 23: Secondary trades received before the 1<sup>st</sup> November 2015**

On the other hand, from the 1st November 2015, 10 unbundled trades have been performed. In this case the exchange has occurred only at VIP Pirineos, direction Spain to France.



**Figure 24: Secondary trades received after the 1<sup>st</sup> November 2015**

All of these transactions were made via Over The Counter, which means that have been agreed on a capacity trade in advance, bilaterally outside of the platform. Thus, both

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platforms (SL-ATR and PRISMA) have been used as an exchange, confirmation and validation tool.<sup>14</sup>

Note: no capacity exchange traded via the secondary market for TIGF, for the concerned period.

### **2.7.2 Liaison Nord-Sud**

On the liaison Nord → Sud, shippers usually exchange around 7 GWh/day during the two gas years considered in this study.

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<sup>14</sup> For further information concerning the details of these trades, see *Appendix II*

### **3 Assessment of the capacity allocated since the implementation of the CAM network code**

#### **3.1 Allocated capacity in different time horizons (auctions) and pre-existing contracts**

The purpose of this section is to distinguish the origin of the booked capacity shown on point *2.2 Booked capacities (bundled/unbundled)*. As explained, unbundled capacity may proceed from LT-contracts, FCFS and unbundled auctions held through PRISMA Platform, while bundled capacity only comes from bundled auctions performed on PRISMA Platform.

Capacity on PRISMA is offered on a standard basis, via the standard products included in Article 9 of the CAM NC:

- Yearly standard capacity products
- Quarterly standard capacity products
- Monthly standard capacity products
- Daily standard capacity products
- Within-day standard capacity products

Yearly, Quarterly and Monthly products have been offered on standard auctions since the early implementation of the CAM NC (for the gas year October 2014 – September 2015), while Daily and Within-day products have been offered on PRISMA by Enagas and REN since November 2015. Therefore, from October 2014 to November 2015, Daily products were booked through First Come First Served (FCFS) on each TSO platform. On the other hand, Within-day products started to be offered and booked when its auctions started in November 2015 (full implementation of the CAM NC).

This transitional situation, in which capacity has been allocated via two different mechanisms, makes difficult to assess which are the preferences of the shippers in reference to booking capacity or what a premium means in auctions where the capacity offered is low due to the existence of previous contracts.

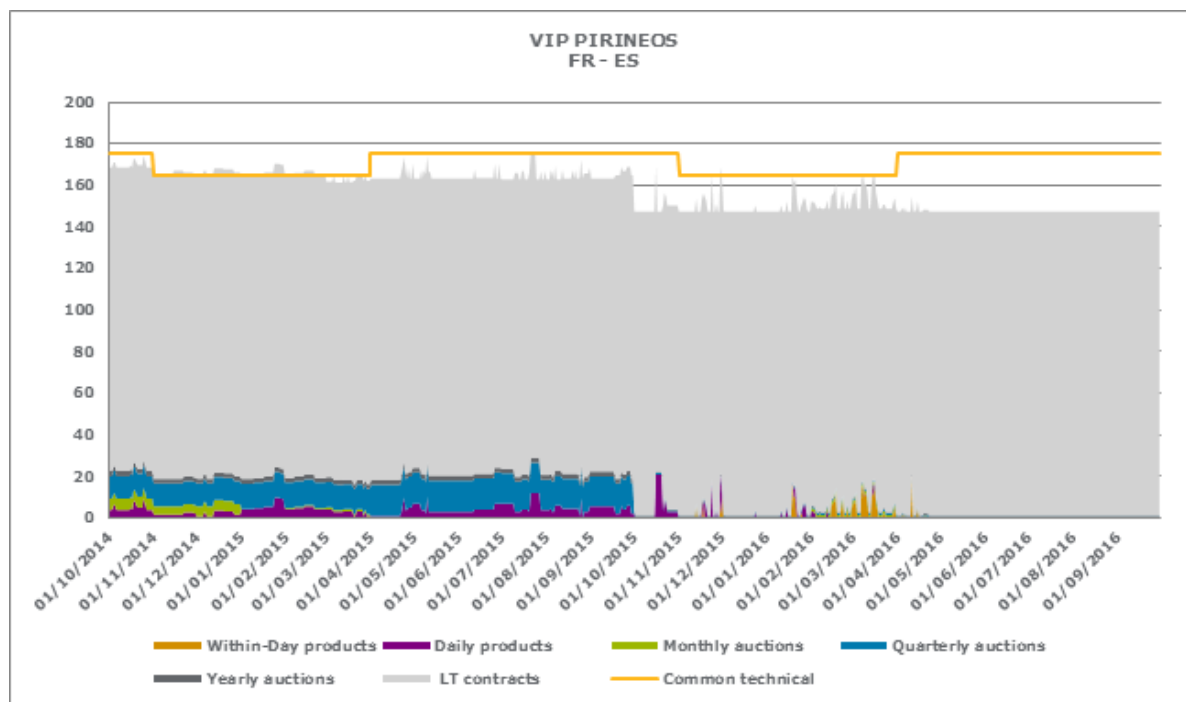
### 3.1.1 VIP Pirineos

Next figures show, for each direction and profile (bundled or unbundled), the origin of the booked capacity.

It has to be considered that until November 2015 Daily products were booked through FCFS on the Spanish side, while they were offered and booked through PRISMA on the French side. Thus, during this period Daily products capacity were unbundled.

#### 3.1.1.1 North South flow direction

In this direction, hereafter is a representation of all kinds of products, i.e. LT contracts, Yearly, Quarterly, Monthly, Daily and Within-Day products.



**Figure 25: Allocation of capacity in accordance with the different time horizons, France to Spain direction**

As it can be seen, LT contracts prevail over the rest of the products during the whole period, representing 93% of the total booked capacity in this direction.

Furthermore, during the first year there was more participation on the Yearly (1.3% by the total booked capacity) and Quarterly auctions (8% by the total booked capacity) than during

the second year, where Yearly products only represent 0.3% of the total booked capacity and Quarterly products represent 0.5%.

Regarding Monthly products, they account for 0.5% of the total booked capacity, representing the higher participation during the first year October 2014 – September 2015.

Finally, Daily capacity represents 2.5% of the booked capacity during the first year, declining to 0.5% in the second year. Since November 2015, there were 42 days in which capacity was booked through Within-day auctions (7 GWh/d on average).

The next table shows the percentage that each kind of product represents within the total capacity booked at this interconnection point on the Spanish side.

	<b>% by booked capacity</b>					
	<b>LT contracts</b>	<b>Yearly products</b>	<b>Quarterly products</b>	<b>Monthly products</b>	<b>Daily products</b>	<b>Within-day products</b>
<b>Oct. 14 - Sep. 15</b>	87%	1,3%	8%	0,8%	2,5%	
<b>Oct. 15 - Sep. 16</b>	98%	0,3%	0,5%	0,2%	0,5%	0,5%
<b>Oct. 14 - Sep. 16</b>	<b>93%</b>	<b>0,8%</b>	<b>4,2%</b>	<b>0,5%</b>	<b>1,5%</b>	<b>0,5%</b>

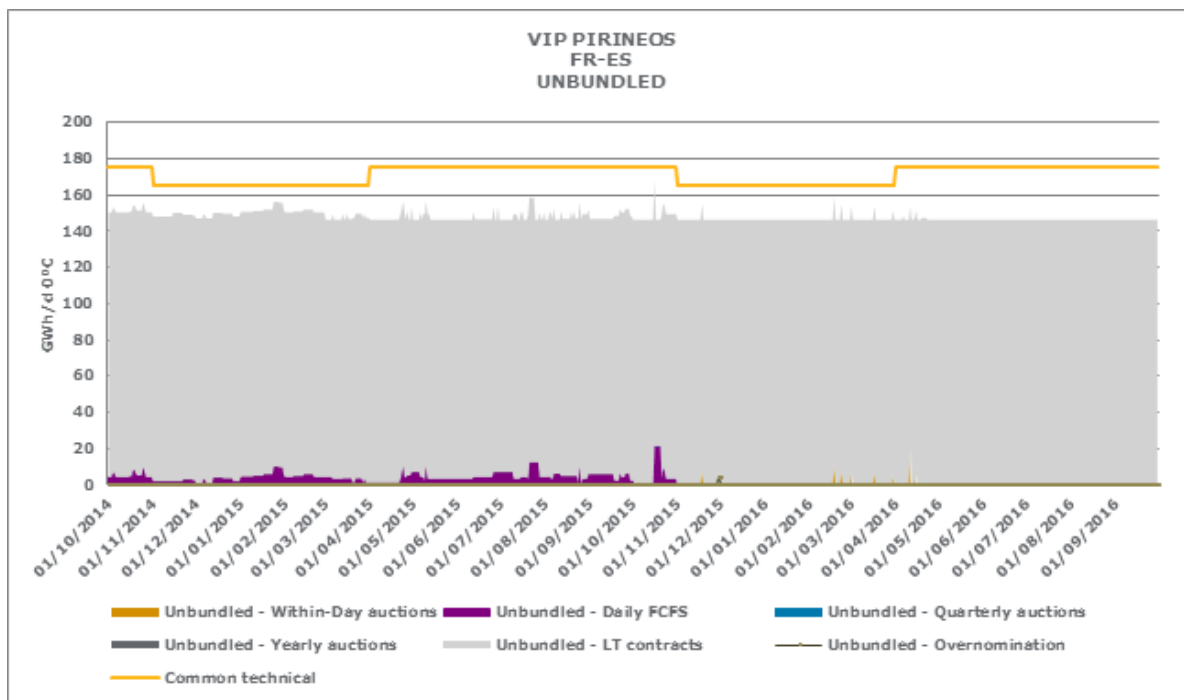
**Table 11: Percentage of each product within the total booked capacity, France to Spain direction<sup>15</sup>**

Additionally, taking into consideration that unbundled capacity is around 8 times higher than bundled capacity during the year October 2014 – September 2015, and it is 146 times higher than bundled capacity during the second year, it may be interesting to analyse which part of the unbundled capacity comes from LT contracts, Daily FCFS and unbundled auctions, and to what extend the bundled capacity comes from each kind of standard auctions.

Regarding the unbundled capacity, only 2% has been booked through FCFS and only 0.3 GWh/d have been booked on the Yearly auction for the gas year 2014 - 2015, and 0.3 GWh/d for each Quarter of the gas year 2015 - 2016. Thus, 98% of the unbundled capacity comes from LT contracts signed before the implementation of the CAM NC.

<sup>15</sup> Percentage calculated on the total average firm capacity of the VIP Pirineos after applying lesser rule (165 GWh/d).



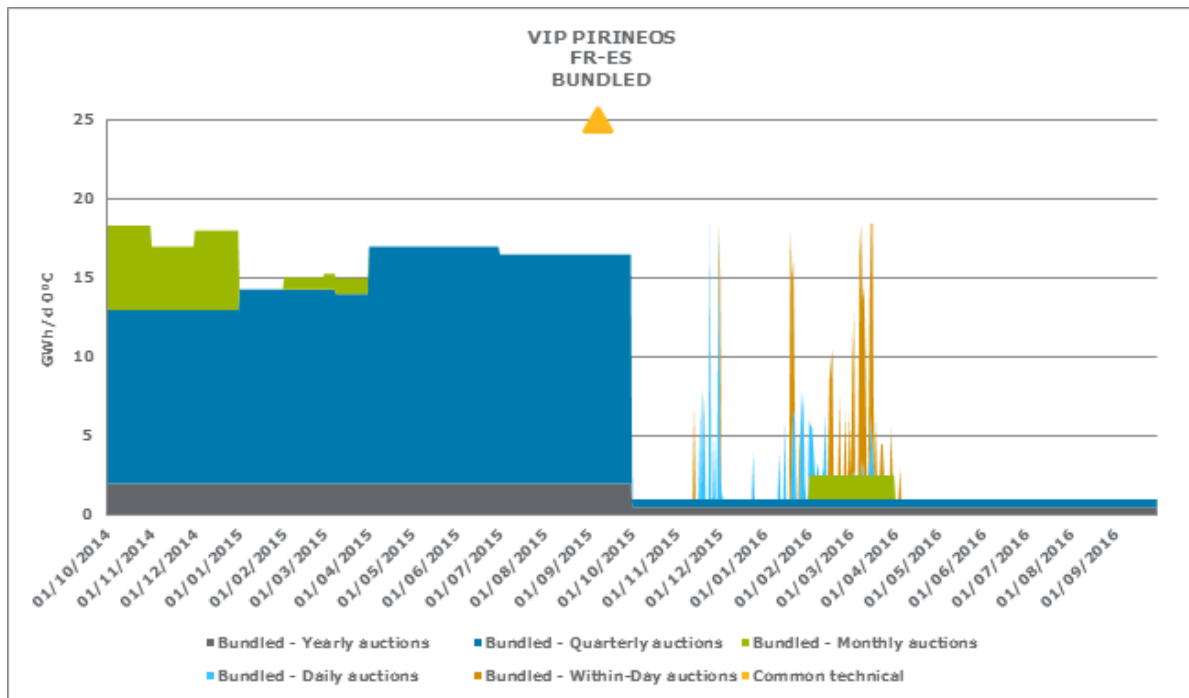


**Figure 26: Allocation of UNBUNDLED capacity in accordance with the different time horizons, France to Spain direction**

On the other hand, referring to bundled capacity, it only represents 7% of the booked capacity for this period. As it can be seen on the next figure, there was a higher assignment in Yearly, Quarterly and Monthly products during the first year than during the second one. Actually, the assessment of Yearly capacity dropped to 75% in comparison with the previous year, while the assessment of Quarterly capacity fell to 96% during the second year.

Regarding Monthly auctions, October, November and December 2014 were the months in which there was a higher degree of booked capacity, followed by February and March 2016.

As it can be seen, November 2015 and, January, February and March 2016 are the months with the most important participation on Daily and Within-day bundled auctions.

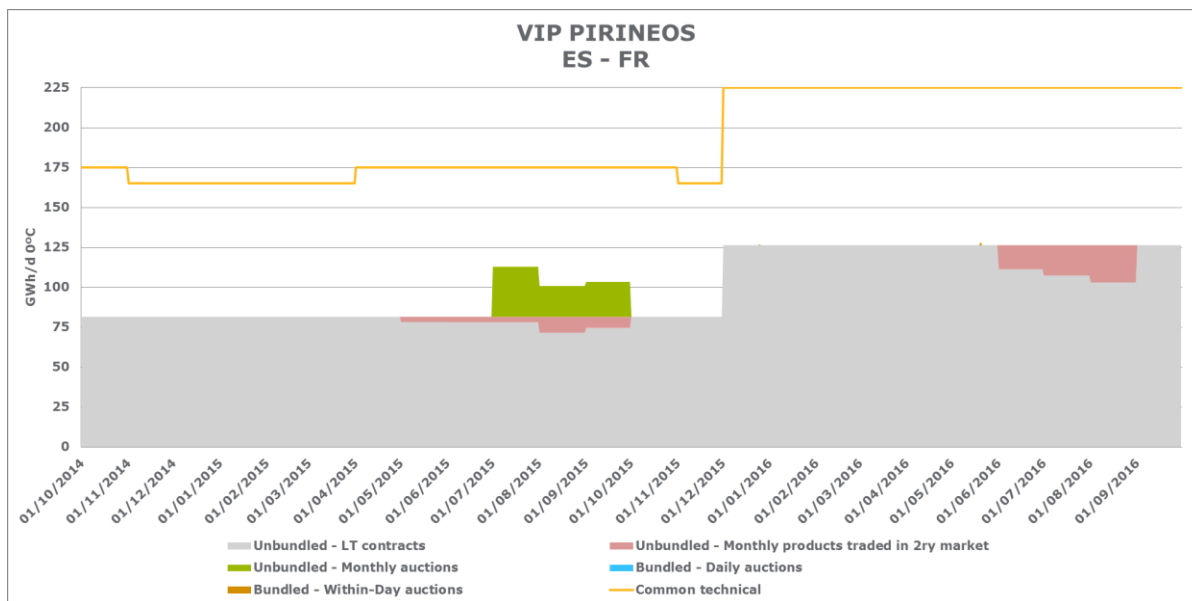


**Figure 27: Allocation of BUNDLED capacity in accordance with the different time horizons, France to Spain direction**

### 3.1.1.2 South North flow direction

#### 3.1.1.2.1 *Spanish side*

At this direction there is only representation of LT contracts and Monthly unbundled products, apart from two Within-day bundled products and one Daily bundled product whose capacity is not representative. However, there are only three months (July, August and September 2016) in which capacity has been booked through unbundled auctions, since the other monthly products come from unbundled trades in the Secondary Market. Therefore, Monthly capacity from unbundled auctions represents 23% of the booked capacity from July 2016 to August 2016. The rest of the period, capacity from LT contracts and trades in the 2<sup>y</sup> Market represent the total of the booked capacity at this direction of the interconnection.



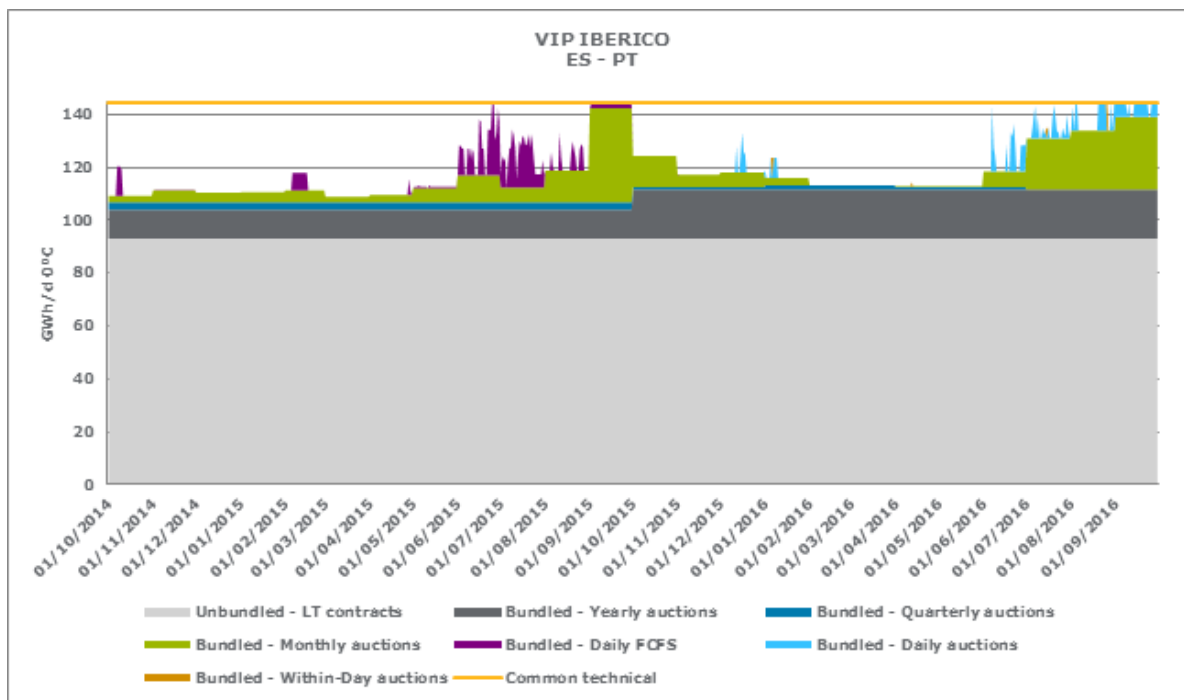
**Figure 28: Allocation of capacity in accordance with the different time horizons, Spain to France direction**

Remark: For French side, refer to 2.2.2 to see TIGF aggregated figures.

### 3.1.2 VIP Ibérico

#### 3.1.2.1 Spain to Portugal direction

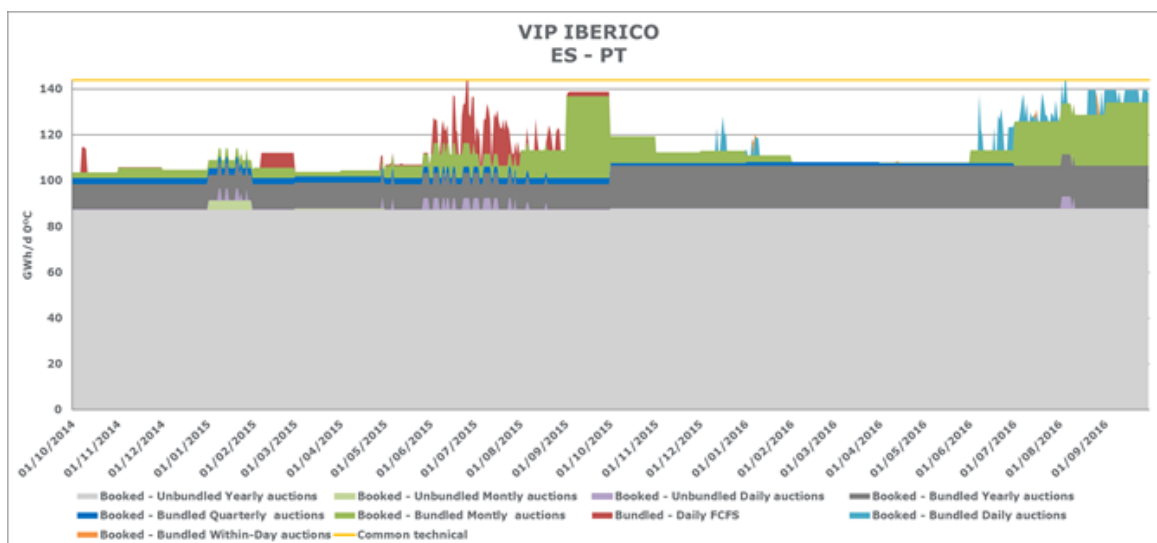
As it can be seen, capacity from LT contracts on the Spanish side is the only unbundled capacity. This capacity is flat, with a value of 93 GWh/d. The rest of booked capacity is bundled and comes from the different standard auctions. However, before November 2015, Daily capacity was booked via FCFS. According to the *Information Memorandum* signed between Enagas and REN, capacities would be offered in a bundled way as far as possible. Thus, even though Daily products were booked on each TSO platform before November 2015, REN and Enagas were coordinated each time a request of capacity was received. Therefore, Daily capacity booked before November 2015 was bundled.



**Figure 29: Allocation of capacity in accordance with the different time horizons, Spain to Portugal direction – Spanish side**

On the Portuguese side, the capacity from the LT contracts has an inferior value than it is on the Spanish side. In this case, the shippers booked, on yearly auction, 87 GWh/d from October 2014 to September 2015 and 88 GWh/d in the following year.

It was also booked, as unbundled, some of the available capacity resultant from the yearly auction on the monthly and daily horizons.



**Figure 30: Allocation of capacity in accordance with the different time horizons, Spain to Portugal direction – Portuguese side**

Again, the capacity that prevails over the rest is the one coming from LT contracts (78%), followed by capacity booked through Yearly auctions (12%). It has to be considered that at this direction only one year is offered on Yearly auctions, as requested by REN.

In this case Quarterly products represent a lower degree of booked capacity: only 2% of the booked capacity on average during the two years. On the other side, capacity booked through Monthly auctions represents 6% of the booked capacity during the whole period. However, as it can be seen, Monthly capacity increases from June to September, as well as Daily capacity.

The next table shows the percentage of each product within the total booked capacity on the Spanish side.

	% by booked capacity					
	LT contracts	Yearly products	Quarterly products	Monthly products	Daily products	Within-day products
Oct. 14 - Sep. 15	80%	10%	2%	6%	2%	
Oct. 15 - Sep. 16	76%	15%	1%	6%	1%	0%
<b>Oct. 14 - Sep. 16</b>	<b>78%</b>	<b>12%</b>	<b>2%</b>	<b>6%</b>	<b>2%</b>	<b>0%</b>

**Table 12: Percentage of each product within the total booked capacity, Spain to Portugal direction**

Similarly to the Spanish side, in the Portuguese side, prevails with the highest percentage of booked capacity, the one coming from LT contracts, followed by capacity booked on the yearly auction.

The next table shows the percentage of each product within the total booked capacity on the Portuguese side.

	<b>% by booked capacity</b>					
	<b>LT Contracts</b>	<b>Yearly Products</b>	<b>Quarterly Products</b>	<b>Monthly Products</b>	<b>Daily Products</b>	<b>Within-day Products</b>
<b>Oct. 14 - Sep. 15</b>	85%	11%	3%	7%	3%	
<b>Oct. 15 - Sep. 16</b>	85%	18%	1%	8%	1%	0%
<b>Oct. 14 - Sep. 16</b>	<b>85%</b>	<b>14%</b>	<b>2%</b>	<b>8%</b>	<b>2%</b>	<b>0%</b>

**Table 13: Percentage of each product within the total booked capacity, Spain to Portugal direction**

### **3.1.3 Liaison Nord-Sud**

#### **3.1.3.1 North to South Direction**

In order to prevent hoarding since the point is physically congested, not all the capacity has been sold long-term. The capacity is mainly booked long-term and via yearly products. A few GWh/day have been offered as daily and within-day products during some days in November

2014, March 2015 and from September to November 2015 but no capacity has been sold this way.

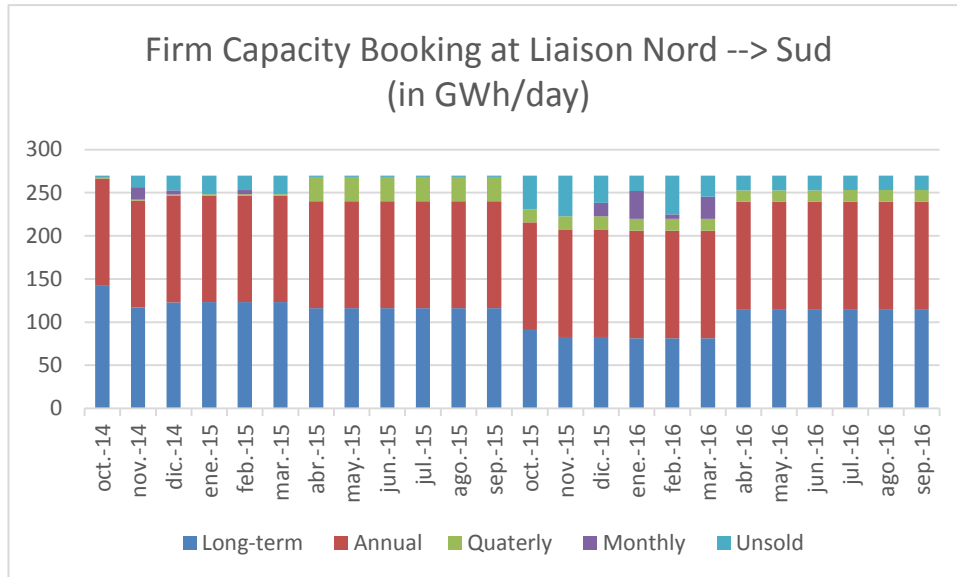


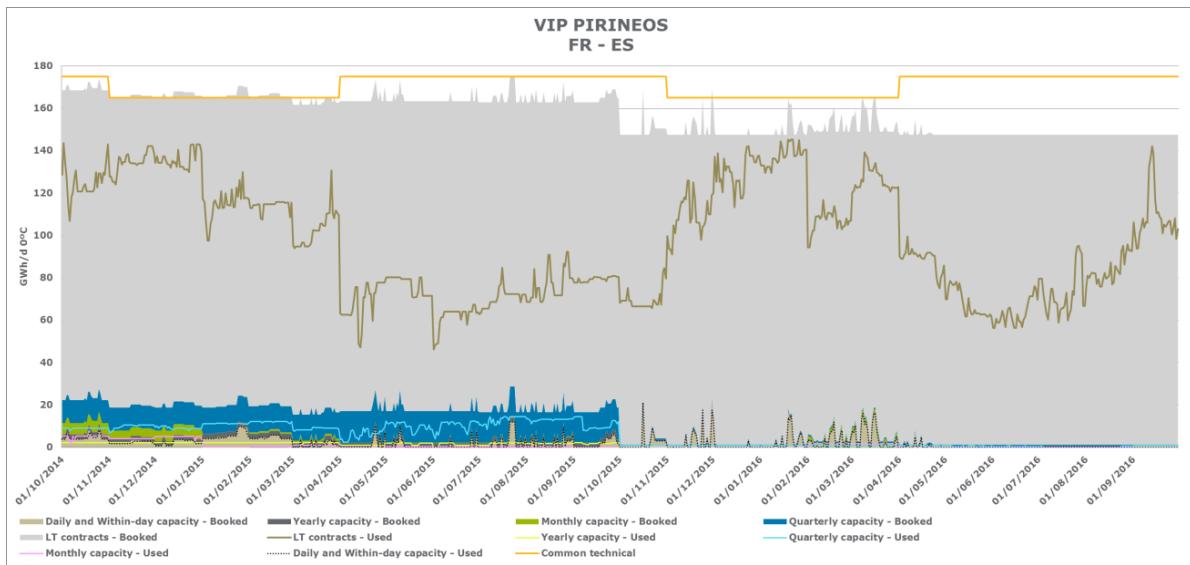
Figure 31: Allocation of capacity in accordance with the different time horizons, Liaison Nord-Sud

### 3.2 Relation between used capacity and time horizon

#### 3.2.1 VIP Pirineos

##### 3.2.1.1 North South flow direction

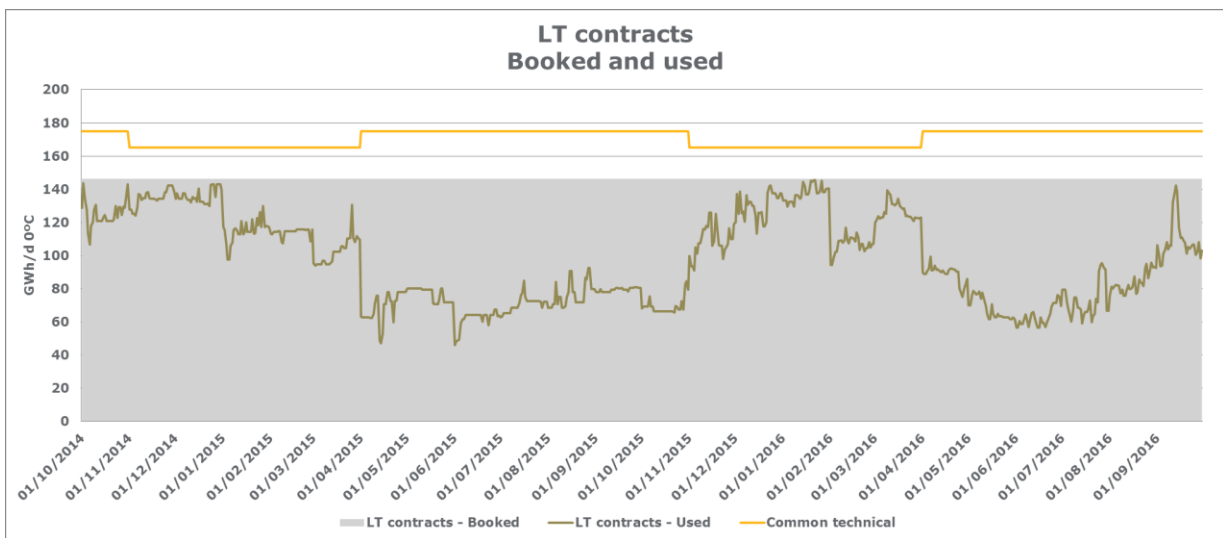
Next figure shows the use of each kind of capacity, classified according to its duration.



**Figure 32: Use of capacity in accordance with the different time horizons, France to Spain direction**

On the following pictures it is shown each kind of product in detail:

LT contracts are not used entirely, but 66% during the whole period. As it can be seen, the maximum use occurs during winter months.

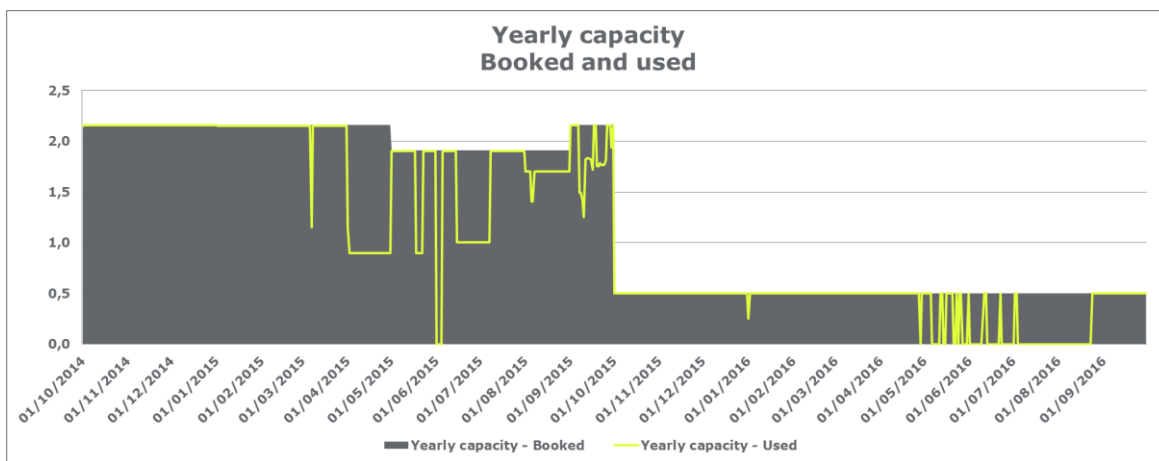


**Figure 33: Use of LT contracts, France to Spain direction**

Referring to Yearly capacity, excepting some months of summer, we can see that it is used completely. Actually, it is used 88% on average during the whole period. The decrease of capacity during the months April 2015 – August 2015 was due to four trades of one Yearly

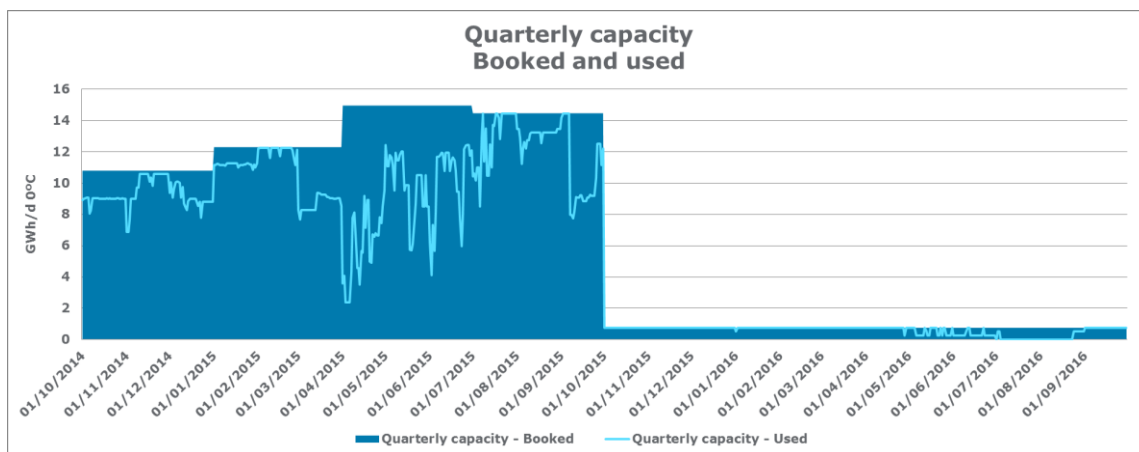


contract (a shipper owning a Yearly contract sold 0.3 GWh/d during four months to another shipper, see *Appendix I*).



**Figure 34: Use of Yearly capacity, France to Spain direction**

Similarly to Yearly capacity, Quarterly contracts are more used during winter months than during summer months, as it can be seen on next figure. This capacity is used 78% on average during the two years.



**Figure 35: Use of Quarterly capacity, France to Spain direction**

Regarding to Monthly capacity, it is used in its totality excepting some days during the first year. Thus, the use during the year October 2014 – September 2015 represents 94% of the booked capacity, while it is 100% during the second year.

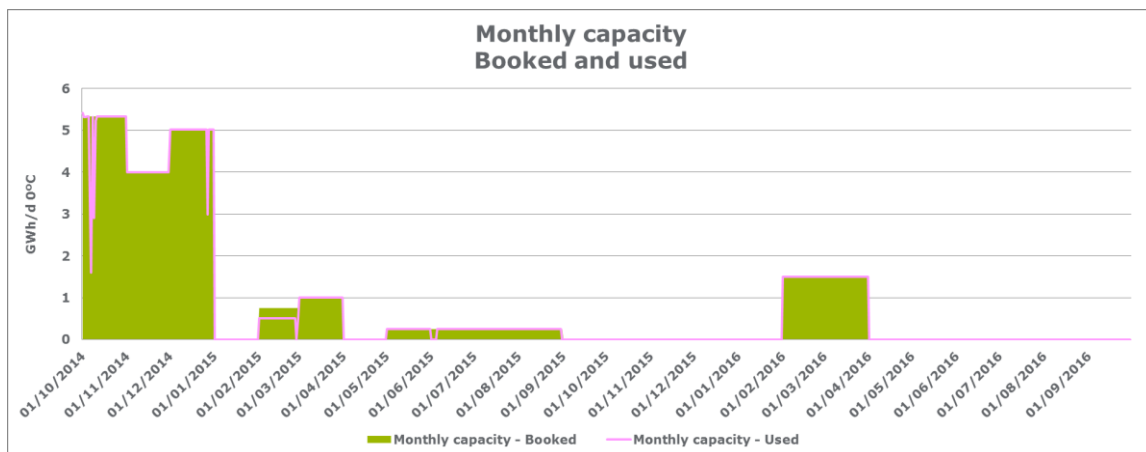


Figure 36: Use of Monthly capacity, France to Spain direction

Finally, Daily and Within-day contracts are almost entirely used (92%).

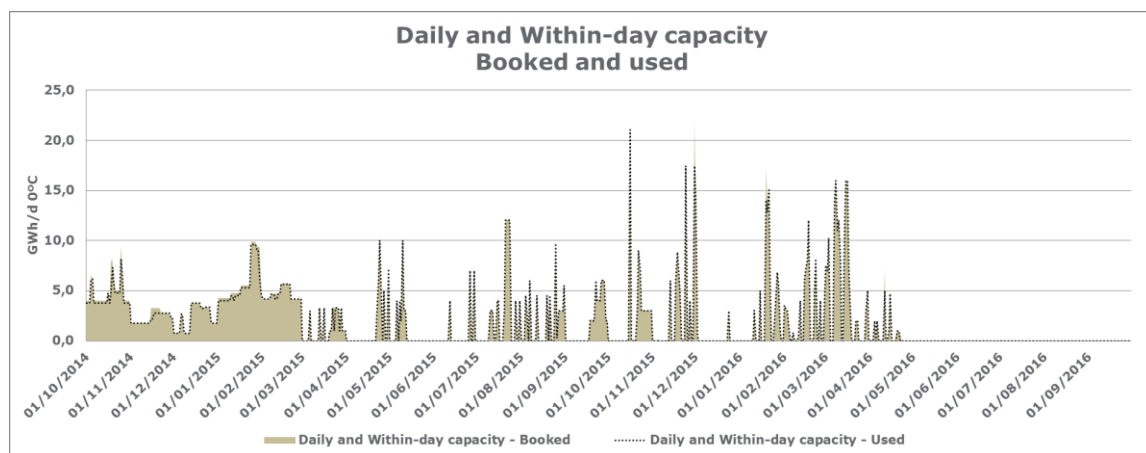


Figure 37: Use of Daily and Within-day capacity, France to Spain direction

Next table summarizes the use of each product.

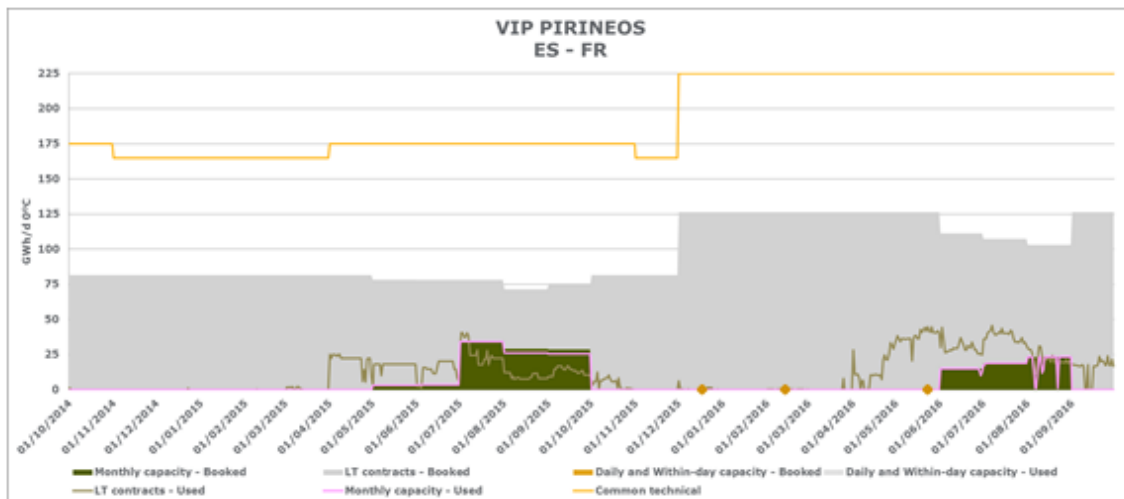
	% use LT contracts	% use Yearly capacity	% use Quarterly capacity	% use Monthly capacity	% use Daily and Within-day capacity
Oct. 14 - Sep. 15	66%	88%	79%	94%	96%
Oct. 15 - Sep. 16	66%	74%	77%	100%	82%
Oct. 14 - Sep. 16	66%	81%	78%	95%	92%

**Table 14: Percentage of use in accordance with the different time horizons, France to Spain direction**

**3.2.1.2 South North flow direction**

In this direction, and as explained before, the use of capacity is seasonal: use during summer months and no use during winter. Moreover, summer months correspond to the months in which not only Monthly assessment via auctions have occurred, but also Monthly trades haven been performed on the Secondary Market. Thus, Monthly contracts are completely used (95%). However, LT contracts are only 14% used during the whole period.

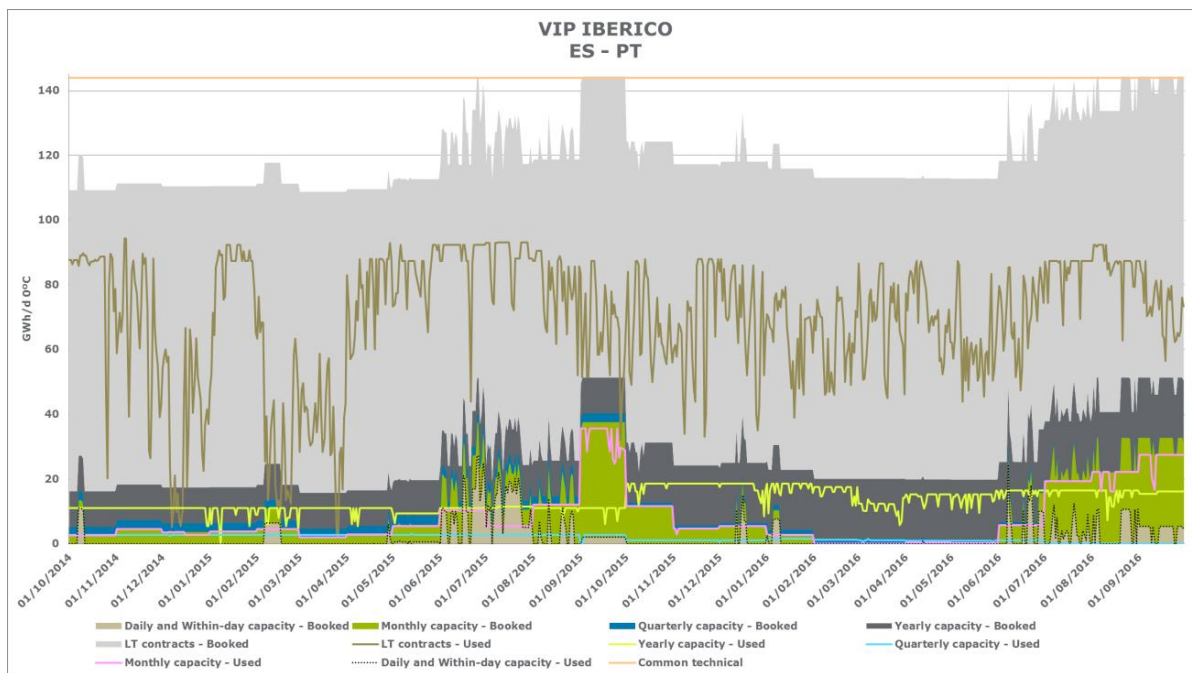
Finally, the two Daily contracts and the Within-day contract are not used entirely, but 35%.



**Figure 38: Use of capacity in accordance with the different time horizons, Spain to France direction**

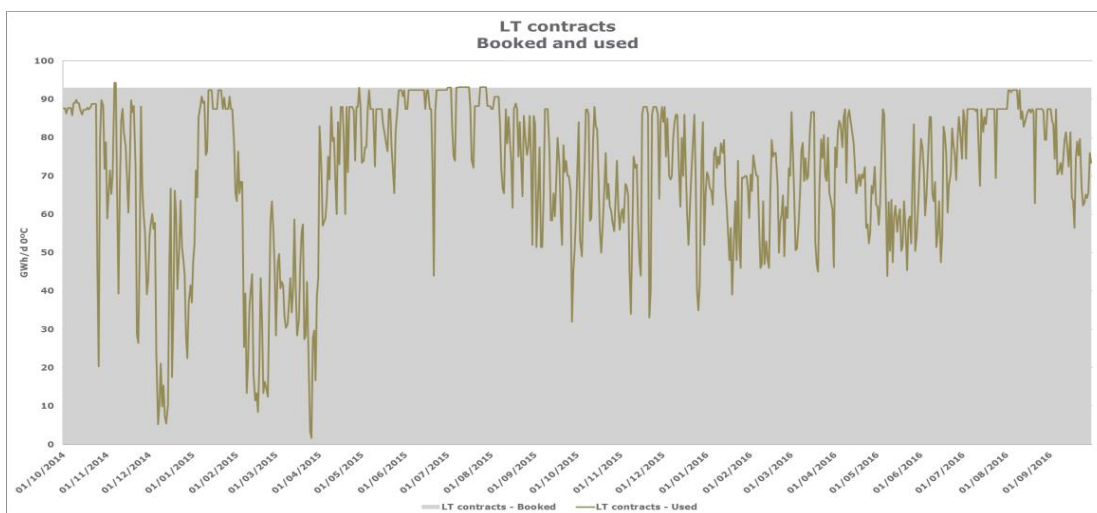
**3.2.2 VIP Ibérico**

Next figure shows the use of each kind of capacity, classified according to its duration.



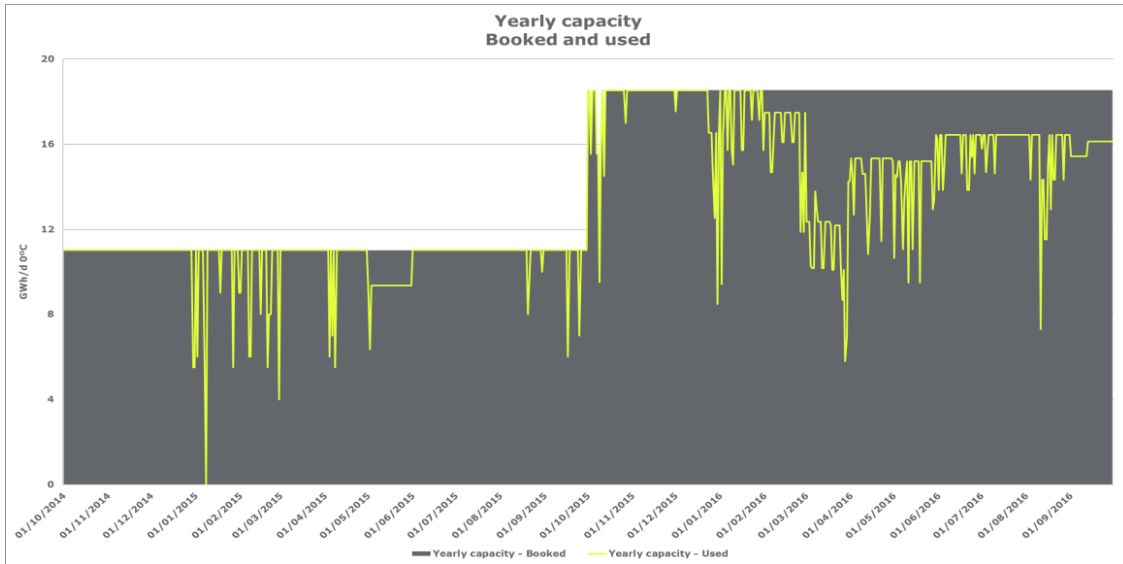
**Figure 39: Use of capacity in accordance with the different time horizons, Spain to Portugal direction**

As it can be seen, again capacity from LT contracts prevails over the rest of capacity and its use is practically flat since January 2015 (77%).



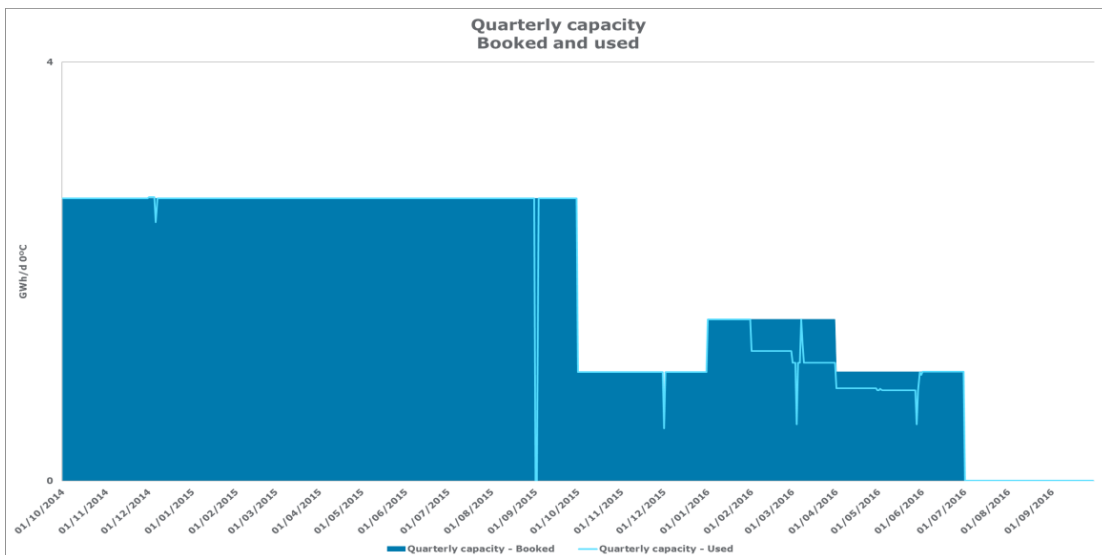
**Figure 40: Use of LT contracts, Spain to Portugal direction**

On the other side, Yearly capacity is almost entirely used; in fact it is used 91% on average during the whole period. As it can be seen on next figure, this capacity is more used during the first year than during the second year, in which its use decreases since January 2016.



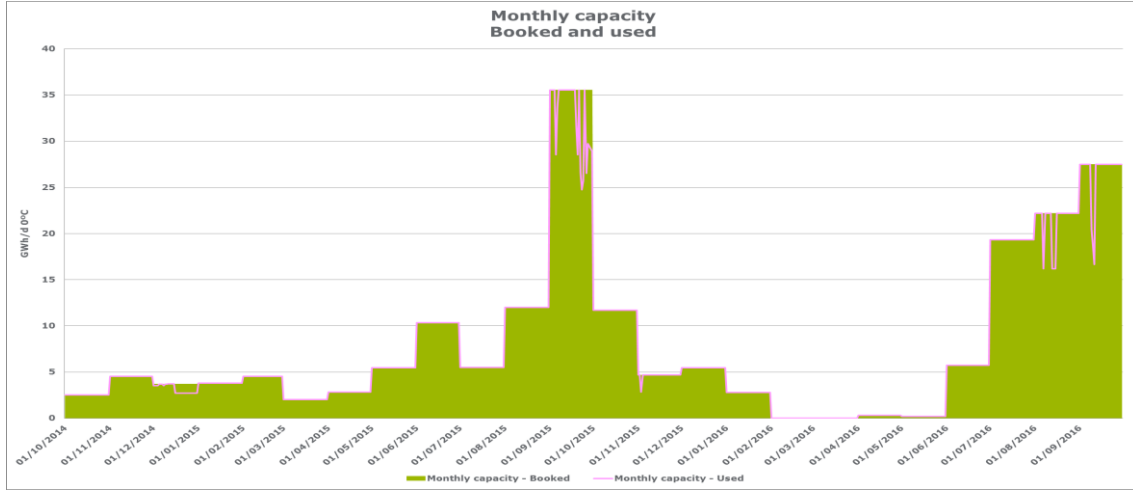
**Figure 41: Use of Yearly capacity, Spain to Portugal direction**

Quarterly capacity is also used practically in its totality, since it's use represents 99% of the Quarterly booked capacity during the first year and 91% during the second year.



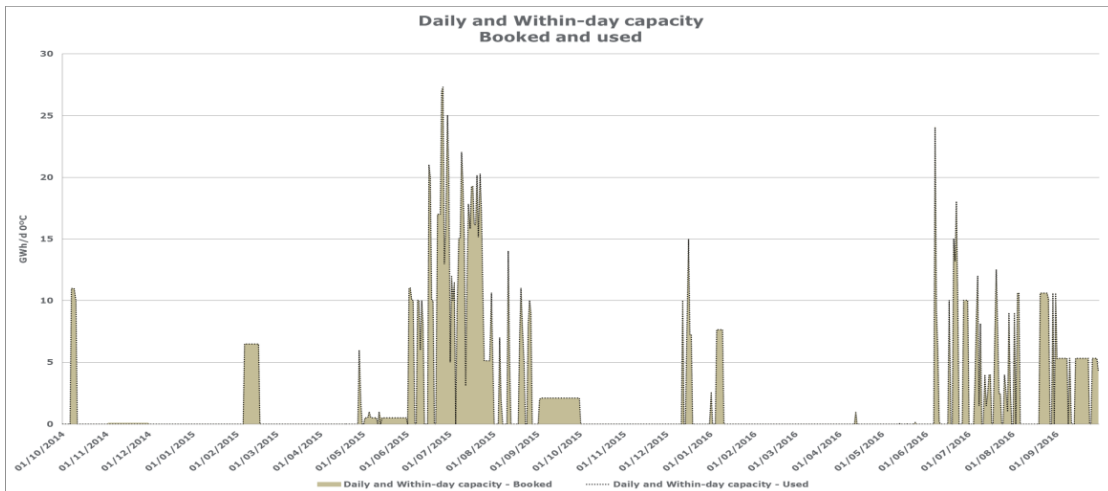
**Figure 42: Use of Quarterly capacity, Spain to Portugal direction**

Monthly contracts are also used in its totality (99% on average).



**Figure 43: Use of Monthly capacity, Spain to Portugal direction**

Finally Daily and Within-day contracts are also almost used in its totality.



**Figure 44: Use of Daily and Within-day capacity, Spain to Portugal direction**

Next table summarizes the use of each product.

	% use LT contracts	% use Yearly capacity	% use Quarterly capacity	% use Monthly capacity	% use Daily and Within-day capacity
Oct. 14 - Sep. 15	74%	96%	99%	98%	82%
Oct. 15 - Sep. 16	77%	86%	91%	99%	97%
Oct. 14 - Sep. 16	75%	91%	96%	99%	87%

**Table 15: Percentage of use in accordance with the different time horizons, Spain to Portugal direction**

## 4 Assessment of the gas flows and the congestion status

### 4.1 Analysis of the VIP's congestion status

#### 4.1.1 VIP Pirineos

There were 176 days in which booked capacity represented more than 98% of the technical capacity at VIP Pirineos North South flow direction. These days spread over a week in October 2014, November and December 2014, and from January to March 2015, with some days of July and November 2015 and March 2016.<sup>16</sup>

From November 2014 to February 2015, 100% of the technical capacity was booked, as well as some days in March, July and November 2015 and March 2016. In fact, the last two weeks in November 2014 and almost the whole month of December 2014, January and February 2015 booked capacity reached 101% of the technical capacity as an average value.

Also for this point and direction (north to south) there were three products that cleared with an auction premium, which are the following:

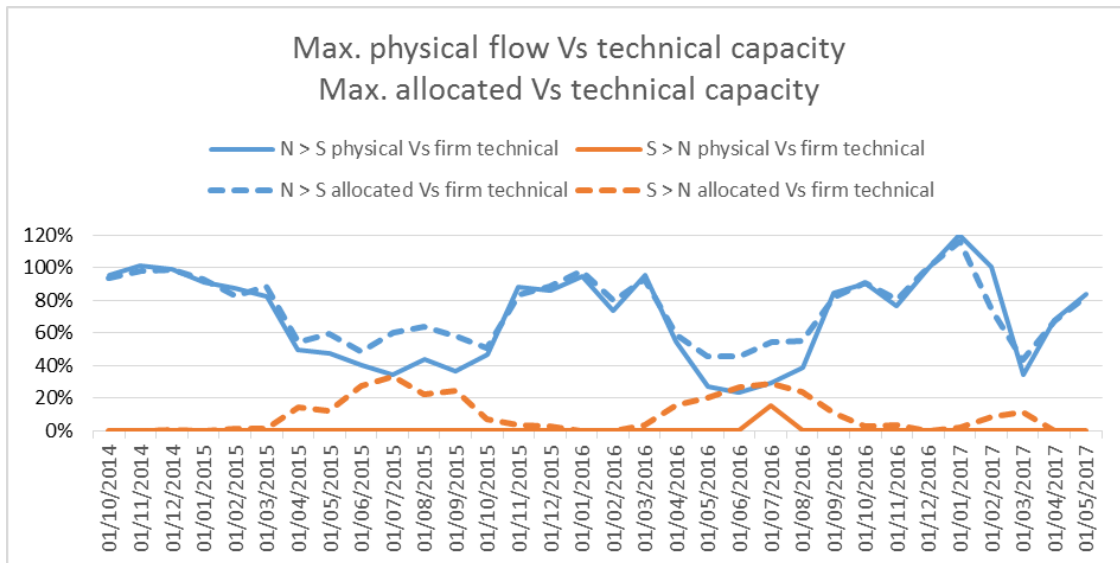
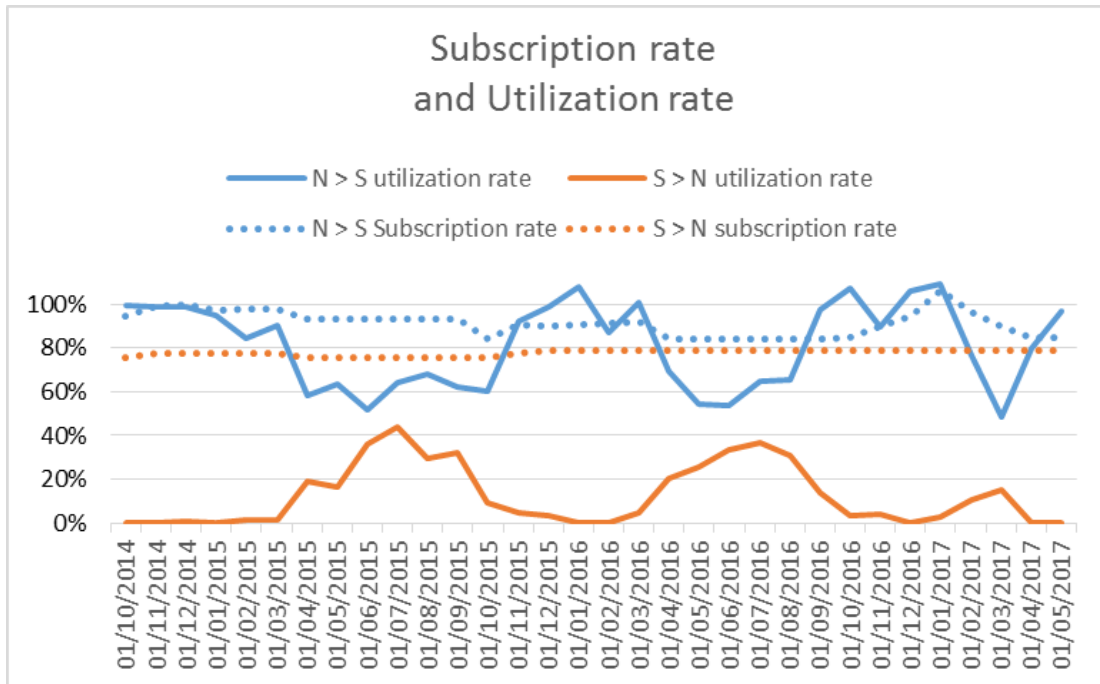
- The bundled firm product of exit France and entry Spain for the gas year 2014/2015, where 96% of the offer was booked.
- The bundled firm product of exit France and entry Spain for the quarter October 2014 – December 2014, where 65% of the offer was booked.
- The bundled firm product of exit France and entry Spain for the quarter January 2015 – March 2015, where 74% of the offer was booked.<sup>17</sup>

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<sup>16</sup> For further information beyond the analysed period, see [Appendix I](#)

<sup>17</sup> For further information beyond the analysed period, see [Appendix I](#)





**Figure 45: Indicators at VIP Pirineos**

#### 4.1.2 VIP Ibérico

During the period analyzed there have been 67 days when booked capacity represented 100% of the total bundled offered capacity at VIP Ibérico Portugal to Spain direction. These days were during June and September 2015 and August and September 2016. On the other

hand, all of the auctions have closed at the reference price. Nevertheless, there were no instances in which used capacity was higher than the technical capacity.

## 4.2 Use of anti-hoarding mechanisms in the region

### 4.2.1 Long Term Use-It-Or-Lose-It

#### 4.2.1.1 Enagas

In April 2015, April 2016 and April 2017 Enagas has performed the calculations according to regulation [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](#), in order , to determine whether to apply or not this mechanism. Underused capacity was detected but it was not been withdrawn in any case.

#### 4.2.1.2 TIGF

At French side, the Long-Term UIOLI procedure can be implemented if the following conditions are met:

1) if, for two successive periods of six (6) consecutive Months, starting on the first (1) October or the first (1) April, the Daily Scheduled Quantities of withdrawal or delivery for the Shipper at a Network Interconnection Point are, on average, less than eighty percent (80%) of the Daily Entry or Exit Capacity subscribed by the Shipper at the aforementioned Network Interconnection Point for a period greater than or equal to one year, which has not been sold to another shipper under the Contract or returned pursuant to article 3.1.4 above;

And;

2) if, TIGF has not been able to fulfil at least one duly justified request from another shipper for an annual subscription for a Daily Entry or Exit Capacity at the aforementioned Network Interconnection Point.

For the concerned period, the triggering of the LT UIOLI mechanism was not required.

#### **4.2.1.3 REN**

For the time being, this mechanism didn't have application to the Portuguese side of VIP Ibérico.

### **4.2.2 *Surrender capacity***

#### **4.2.2.1 Enagas**

Although this mechanism has been implemented in Enagas systems since March 2014 (for the assignment of the gas year October 2014-2015), no shippers have requested to surrender their capacity so far.

#### **4.2.2.2 TIGF**

Following the application of the CRE deliberation dated from the 27/06/2013, TIGF may accept any request to return a Firm Capacity of one or several months held by a Shipper.

The request to return a Firm Capacity specifies the interconnection point (PITT) in question, the quantity and the start and end dates, and must be made by a person duly authorised for this purpose.

This mechanism has not been required by the market for the concerned period.

#### **4.2.2.3 REN**

Although this mechanism has been implemented since March 2014 (for the assignment of the gas year October 2014-2015), no shippers have requested to surrender their capacity so far.

### **4.2.3 *Oversubscription and Buy-Back***

#### **4.2.3.1 VIP Ibérico**

This mechanism has been implemented since April 2017 at VIP Ibérico in a manual mode and it will be automatically implemented in April 2018.

#### **4.2.3.2 VIP Pirineos**

It will be implemented in October-November 2017 at VIP Pirineos in a manual mode and it will be automatically implemented in April 2018.

#### 4.2.3.3 Liaison Nord – Sud

Since the point is physically congested in the direction North to South, GRTgaz has not implemented CMP measures which are made only to deal with contractual congestion.

### 4.3 Assessment of the CMP implementation

According to the definition from the CMP guidelines given in the part 4.4 hereafter, the point VIP Pirineos is contractually congested for the period of study.

However, none of the CMP mechanisms have been triggered, leading to no factual assessment of their efficiency or results.

Note about OSBB potential to tackle congestion: for a specific congested day such as experienced on the 30/11/2015 - where the whole firm capacity was sold - the level of Nomination would have been too high to have triggered the OS capacity.

### 4.4 Areas where further coordination between TSOs is needed

The concept of contractual congestion is defined in Article 2 (21) of Regulation 715/2009 as follows:

«‘Contractual congestion’ means a situation where the level of firm capacity demand exceeds the technical capacity».

The *CMP Guidelines* introduced detailed obligations on how to design congestion management procedures in the event of contractual congestion at interconnection points.

For this reason, an indicator for contractual congestion is needed. According to the *ACER’s annual reports*, and in the case where auctions are applied: «congestion is apparent once the auction clears with an auction premium».

In the aforementioned reports, the contractual congestion is identified when one of the conditions set on Paragraph 2.2.3 (1) of the *CMP Guidelines* are met, which are the following:

«if [...] it is shown that at interconnection points demand exceeded offer, at the reserve price when auctions are used, in the course of capacity allocation procedures in the year covered

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by the monitoring report for products for use in either that year or in one of the subsequent two years,

- (a) for at least three firm capacity products with a duration of one month or
- (b) for at least two firm capacity products with a duration of one quarter or
- (c) for at least one firm capacity product with a duration of one year or more or
- (d) where no firm capacity product with a duration of one month or more has been offered.

These criteria could be formally extended as the indicator of contractual congestion for all the CMP mechanisms, and not only for the *Firm day-ahead use-it-or-lose-it* mechanism, as stated in the *CMP Guidelines*. However, the [2017 ACER annual report on CMP](#), page 27, also states that:

*“In addition, more flexibility with regard to the application of FDA UIOLI is desired and requested by a number of NRAs. Instead of “automatically” applying the FDA UIOLI in case of contractual congestion, the concerned NRAs may first consider the other parameters assessed in this report - the use of interruptible capacity, secondary capacity markets, extent of unsuccessful requests, existence of contractual congestion at the day-ahead level - before a duly-reasoned decision on the FDA UIOLI application is taken.”*

For all this reason, common and harmonized definitions between TSOs, at NRAs level, would be relevant to clear any doubt or room for interpretation.

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## 5 Conclusions and recommendations

### 5.1 Conclusions

In the Region of the South Gas Regional Initiative (France, Spain and Portugal), the gas flow direction from North to South prevails over the South North direction in terms of net physical flow, as well as the direction from Spain to Portugal.

The capacity offered to the market at each interconnection is calculated by adjacent TSOs with a common methodology based on CAM NC.

At both points VIP Pirineos and VIP Ibérico, the unbundled capacity booked with LT contracts, subscribed before the implementation of the CAM NC, represents the largest part of the booked capacity at each point and direction. Consequently, the remaining capacity offered and booked in a bundled way on PRISMA is minor.

Focusing on the use of bundled capacity by product type: Yearly, Quarterly, Monthly, Daily and Within-Day products are used with a high rate (>90%). The unbundled capacity is used following seasons with an average rate of 80 to 90%.

The nomination and re-nomination procedures are implemented jointly by adjacent TSOs. The nomination and re-nomination values follow a similar trend (+/-3%). Yet, on specific days, maximum deviations can overpass 100% of the initial nomination.

During some dedicated periods, capacities are not fully used. During these periods, unused capacity could be offered on the Secondary Market. However, shippers do not take much this opportunity to sell the capacity they do not use but pay for.

#### 5.1.1 *VIP Pirineos*

The North South gas flow direction (from France to Spain) prevails over the South North direction in terms of net physical flow. Analyses show, in winter 2014-2015 mainly, that VIP Pirineos (North to South) was contractually congested and somehow physically congested (in November and December 2014).

Focusing on the summers 2015 and 2016, the nominated commercial flows from South to North were registered for injection purposes into underground storages located in the TRS market area.

The use of the interconnection is seasonal, whatever the direction.

In reference to the report of ACER published the 31<sup>st</sup> of May 2017: "[ACER 2017 Implementation Monitoring Report on Contractual Congestion at Interconnection Points](#)", and based on CMP guidelines from ACER (cf part 4.4), the VIP Pirineos is contractually congested for the period of study. However, there was no demand from the market for the surrender mechanism. Also, the triggering of UIOLI LT was not necessary because the conditions of application were not fulfilled.

At VIP Pirineos some auctions cleared with premium over the reserved price; thus not all demand for capacity has been satisfied at the reserved price. Therefore, in order to avoid these possible situations in which the demand for capacity at the VIP could not be satisfied:

- CMP measures and their optimization at the IP could tackle contractual congestion.
- Demand Assessments Reports is an additional case by case indicator to assess additional incremental demand. It is a newly created tool sets by the amended CAM NC which has just quick-in. The first report is available at ENTSOG website as well as TSOs websites since end July 2017.
- new infrastructures could be investigated to address any physical congestion;

Taking into account the occasional occurrence of 100% bookings of bundled capacity, the unused capacity is considered to be of more important value to the market.

### **5.1.2 VIP Ibérico**

The direction Spain to Portugal prevails over Portugal to Spain direction. It is observed a seasonal booking and use during the summer months at Spain to Portugal direction. In this direction, booked capacity is practically fully used, and every type of product is utilized.

The bundling arrangement at this VIP results in a portion of capacity that is not offered to the market and may only be allocated to the owners of the LT contracts in Spain. Hence, a typical share of 2 to 3% of total capacity results not allocated.

- Taking into account the occasional occurrence of 100% bookings of bundled capacity, this unused capacity is considered to be of more important value to the market.

### **5.1.3 Liaison Nord-Sud**

Since the interconnection point is physically congested, the French Regulator, CRE, has decided to address the congestion by merging the two remaining market zones: PEG Nord and the Trading Region South (TRS). TIGF and GRTgaz, along with the French market players, are investing and cooperating in order to merge the two market zones by 1<sup>st</sup> November 2018. At this date the Liaison Nord Sud will disappear.

## **5.2 Recommendations**

These analyses demonstrate that unbundled capacity from LT contracts prevails over bundled capacity from auctions held through PRISMA. In this regard, while TSOs are required to maximise the offer of bundled capacity, shippers are not obliged to book bundled capacity nor convert their unbundled contracts into bundled. Thus, in order to maximise the bundled capacity booked at each interconnection point, TSOs could reinforce their communication to shippers about the conversion of their capacities into bundled products.

Nevertheless, taking into account that article 21 of CAM NC obliges TSOs as from 1 January 2018 to offer a free of charge capacity conversion service to network users holding unbundling contracts, the situation could be improved *per se*. In order to be able to apply this conversion capacity mechanism, TSOs shall consider the need to offer all technical capacity as bundled product.

Regarding the concept of contractual congestion, common and harmonized triggering conditions of CMP between NRAs and TSOs might have to be re-determined among the South Gas Regional Initiative. NRAs in the Region should agree on a common application procedure for the LT UIOLI mechanism which works differently in France and Spain. At the same time, amendments to the criteria currently used to detect contractual congestion may



also be proposed. For instance, ACER's recommends in its report that the Commission may consider aligning criterion d)<sup>18</sup> with the other congestion criteria.

At both VIPs, adjacent TSOs are/have been working jointly to implement common CMP criteria for OSBB mechanism. To the extent that the whole technical capacity will be gradually offered as a bundled product, the criteria to apply CMP at both sides of IPs must be the same. For further coordination TSOs shall work together to guarantee a common set of criteria for CMPs in the interconnection in a coordinated way.

As discussed in the IG meetings, with the aim of tackling the episodes of physical congestion occurred in VIP Pirineos, once completed the merge of the market areas in France by the end of 2018, it would be very valuable to reassess the possibility to convert part of the existing interruptible capacity in the French side into firm.

About the secondary market liquidity, it is not liquid enough, nor organized to ease finding counter parts in an anonymous way. Trades validated on the secondary market today are trades preliminary granted bilaterally. Solutions to support the convergence between Offers and Demands could be investigated.

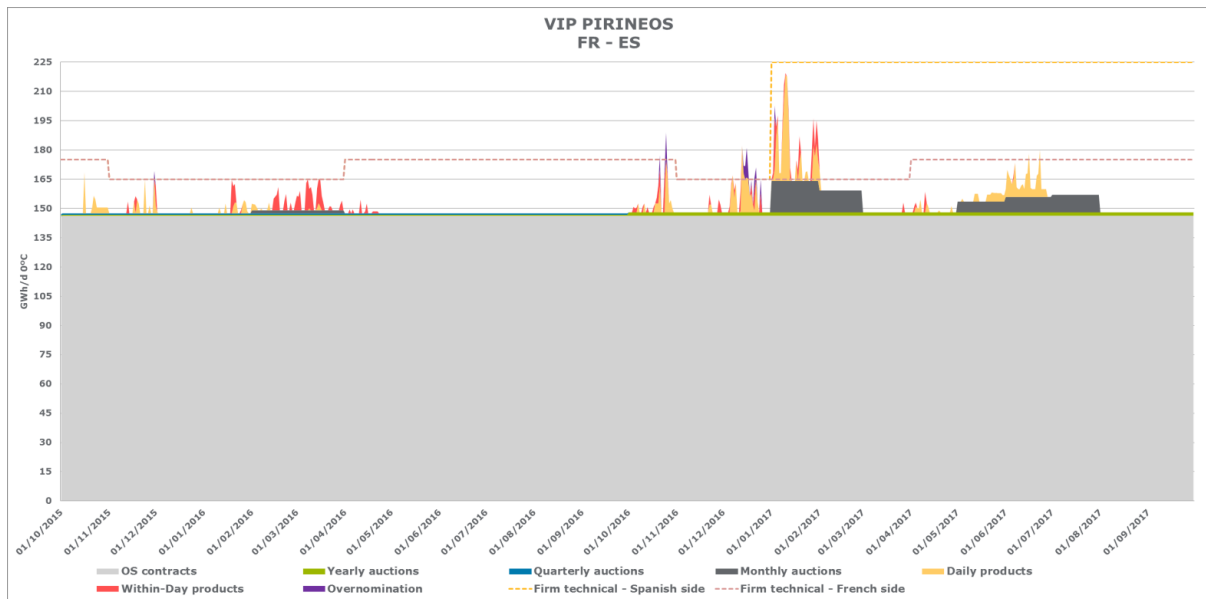
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<sup>18</sup> See page 30 of this report.

## Appendix I: Booking profile period Oct. 15 – Oct. 17

### I.i. VIP Pirineos

#### North South flow direction



**Figure 46. Booked capacity in VIP PIRINEOS, France to Spain direction**

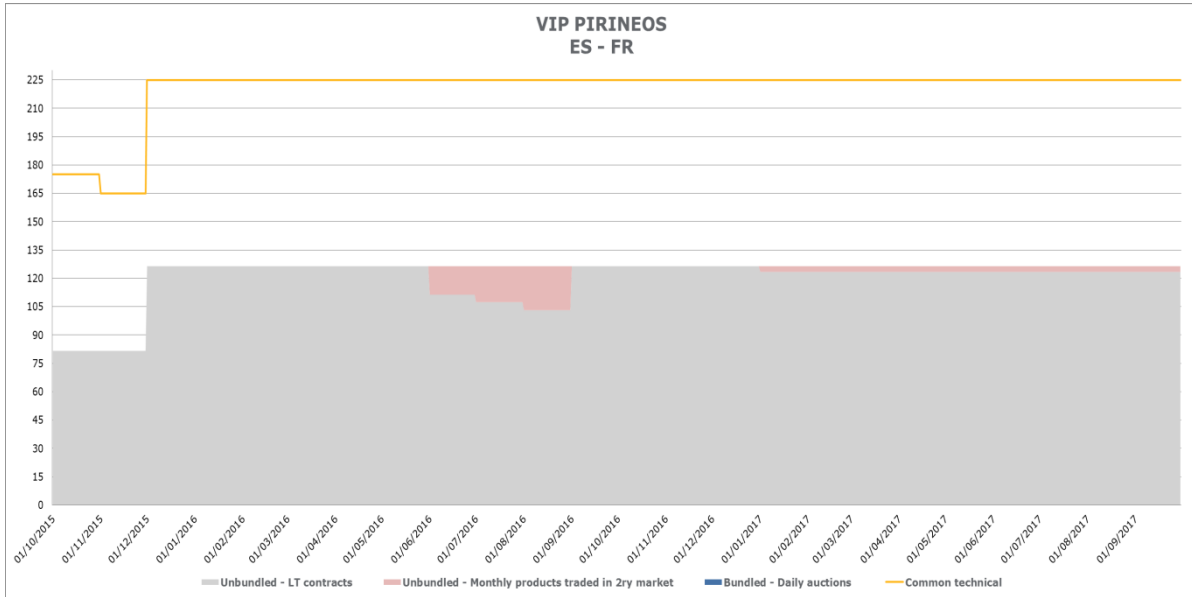
Since 1<sup>st</sup> January 2017, Enagás has increased the firm capacity offered from France to Spain by 60 GWh/d unbundled, up to 225 GWh/d (Firm: bundled + unbundled)

For the whole month of January 2017, all the firm capacity at the IP has been booked through Monthly auction.

There were two auctions which cleared with a premium:

- The annual bundled firm product [exit France || entry Spain] for the gas year 2016/2017, where 75% of the offer was booked;
- The unbundled firm product of exit France and entry Spain for the gas year 2016/2017, where 100% of the offer was booked, although it is outside of the period studied in this report.

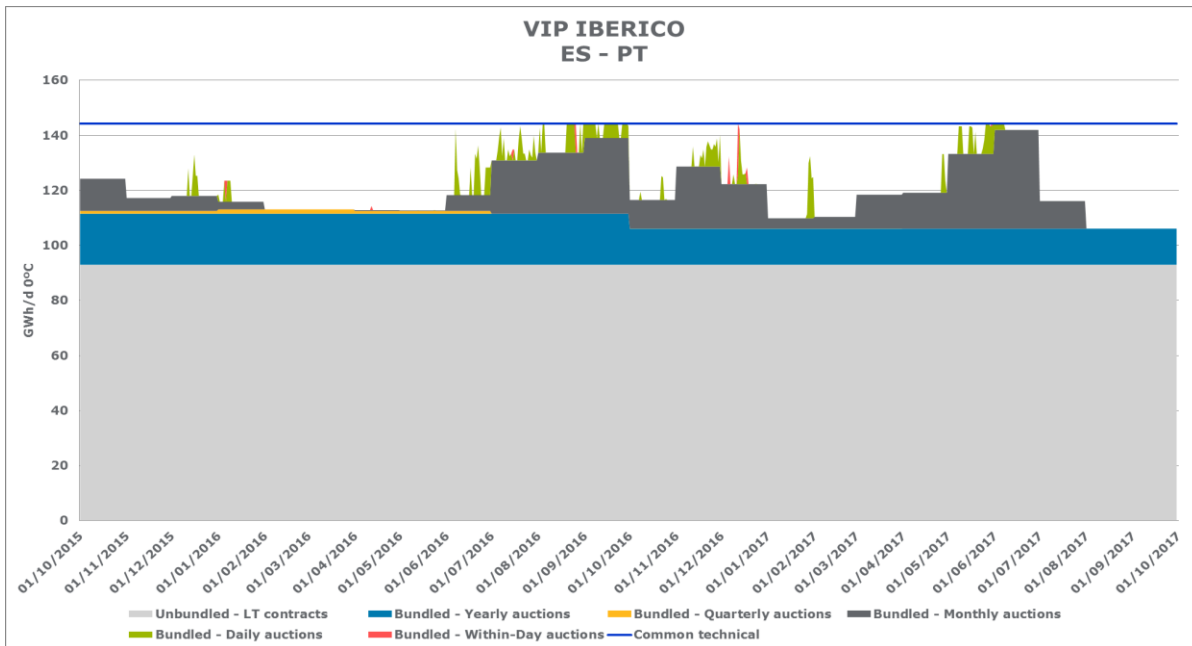
South North flow direction



**Figure 47. Booked capacity in VIP PIRINEOS, Spain to France direction**

**I.ii. VIP Ibérico**

Spain to Portugal direction



**Figure 48. Booked capacity in VIP IBERICO, Spain to Portugal direction**

## Appendix II: Details of secondary capacity trades

The 4 trades received at the VIP Pirineos, France to Spain direction were performed by two shippers (Shipper 1 the "seller" and Shipper 2 the "buyer"). Shipper 1 sold four monthly products from May 2015 to August 2015. The following figure shows these operations:

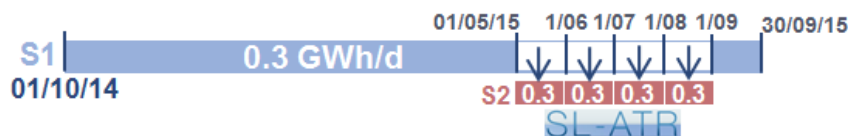


Figure 49: Secondary trades received at VIP Pirineos, France to Spain direction

The rest of the trades were among unbundled contracts at the VIP PIRINEOS, Spain to France direction, in which 4 shippers have offered part of their contracts.

Let's call Shipper 3 the owner of a 14 GWh/d contract of duration from the 1<sup>st</sup> October 2014 to 31<sup>st</sup> December 2023. Shipper 3 has agreed with Shipper 4 (a buyer), to sell five monthly products of 3 GWh/d capacity from May 2015 to July 2015 and 10 GWh/d and 7 GWh/d in August and September 2015, respectively. These operations have been performed via Bulletin Board and SL-ATR. One year after, Shipper 3 has sold 1 GWh/d for one month (August 2016) to another shipper (Shipper 5), via PRISMA Platform.

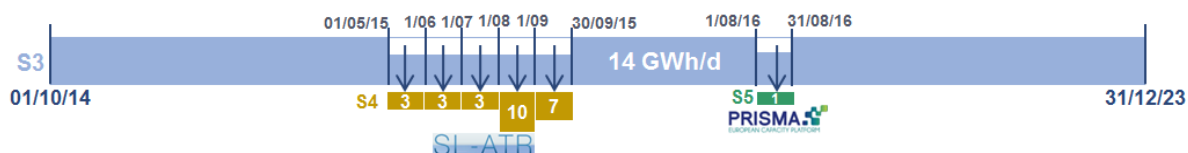
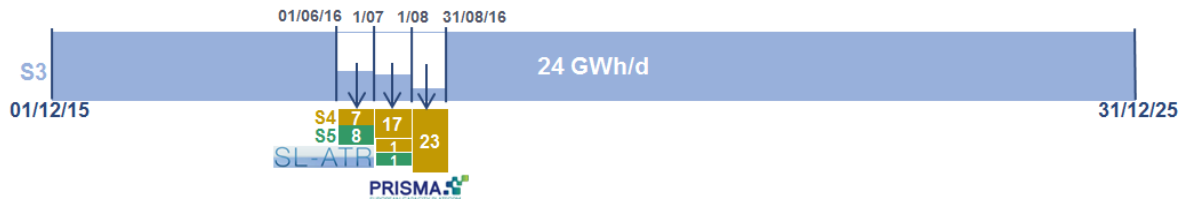


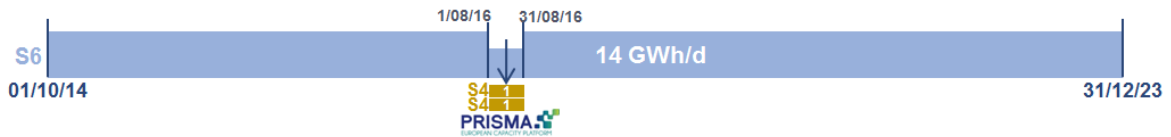
Figure 50: Secondary trades received at VIP Pirineos, Spain to France direction.

Same Shipper 3 has another contract of 24 GWh/d from the 1<sup>st</sup> December 2015 to the 31<sup>st</sup> December 2025. Again, capacity is sold to Shippers 4 and 5. In June 2016, 7 GWh/d were sold to Shipper 4 and 8 GWh/d to Shipper 5, via SL-ATR. Next two months were traded via PRISMA as shown on next figure:



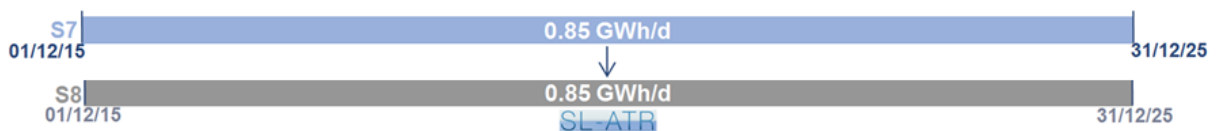
**Figure 51: Secondary trades received at VIP Pirineos, Spain to France direction**

Another shipper, let's call Shipper 6, has a 14 GWh/d contract from the 1st October 2014 to 31st December 2023, and sold 2 GWh/d in August 2016 to Shipper 4, via PRISMA.



**Figure 52: Secondary trades received at VIP Pirineos, Spain to France direction**

Finally, another shipper (Shipper 7) had a 0.85 GWh/d contract from the 1st December 2015 to the 31st December 2025. The same day this contract was booked on the SL-ATR it was sold to another shipper (Shipper 8) for its whole duration.



**Figure 53: Secondary trades received at VIP Pirineos, Spain to France direction**