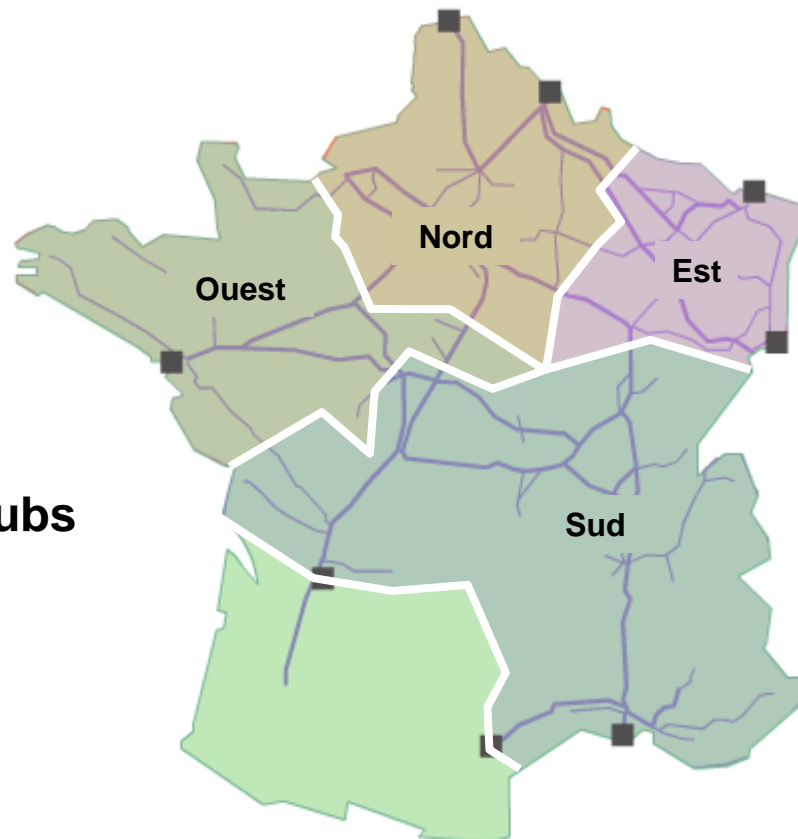


A progressive way towards a market-based regime

2004/2005

First French gas hubs implementation

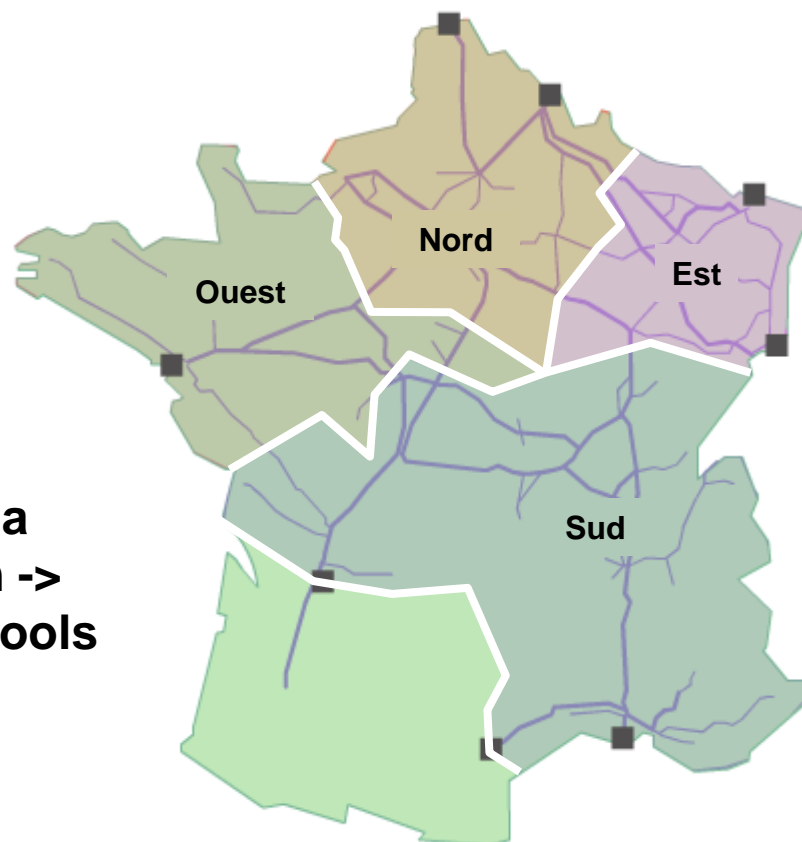


- 10 shippers
- Commercial IT system & commercial dispatching implemented
- Balancing services with SSO, imbalance tolerances with cumulative monthly accounts

A progressive way towards a market-based regime

2007/2008

Implementation of a
balancing platform ->
1st market-based tools



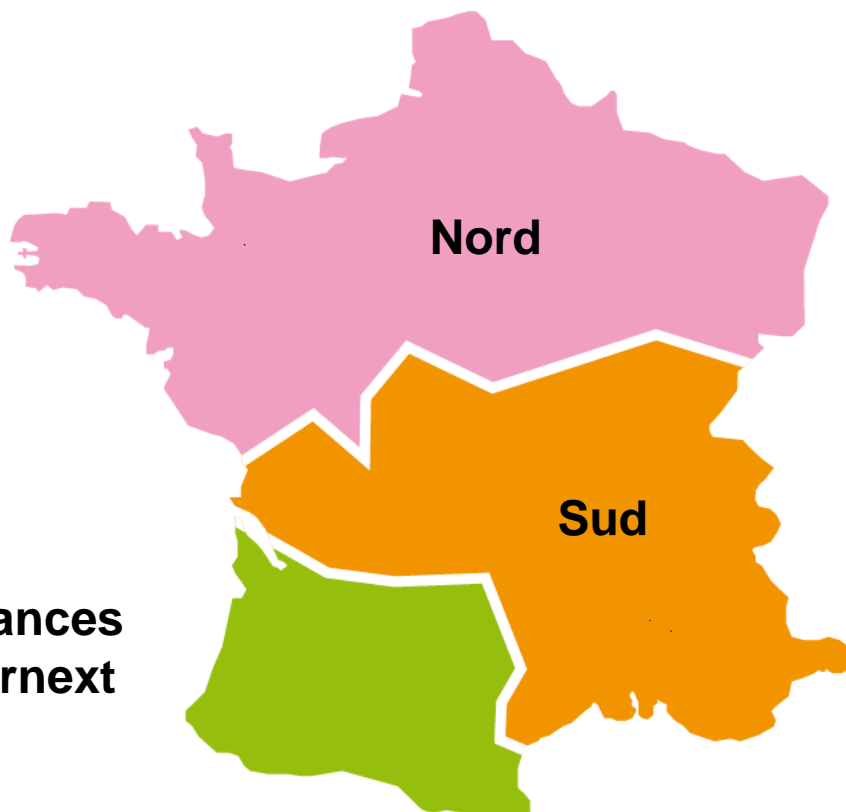
- 30 shippers
- Little part of imbalances traded on balancing platform
- Balancing services with SSO, imbalance tolerances with cumulative accounts

- ✓ Numerous workshops with shippers
- ✓ Hubs liquidity improving

A progressive way towards a market-based regime

2009/2010

3 zones merged
Trading of imbalances
directly on Powernext
market place



- 50 shippers
- More important part of imbalances traded via Powernext
- Balancing services with SSO, imbalance tolerances with cumulative accounts

- ✓ « Concertation Gaz »: continuous process re customer relationship
- ✓ Hubs liquidity increasing
- ✓ Improvement of quality of allocations

A progressive way towards a market-based regime

2011 -> 2015

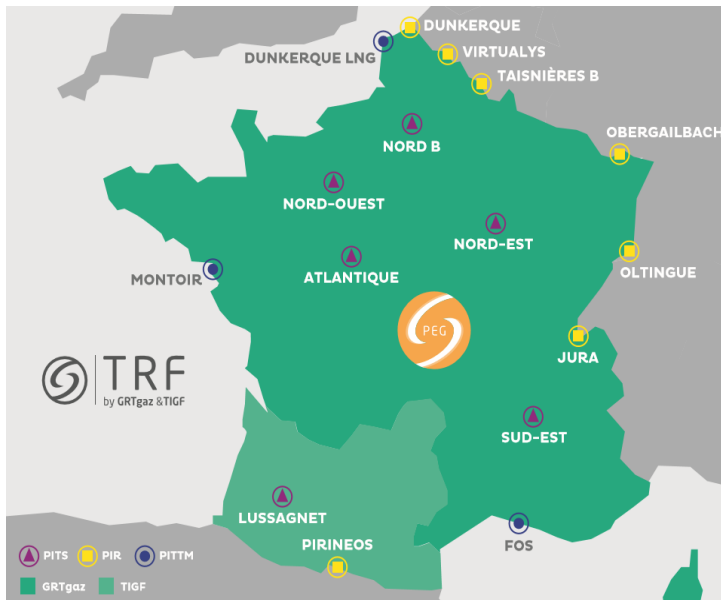
Balancing target project



- 130 shippers in 2015
- Annual milestones increasing the part of imbalances traded via Powernext
- No more balancing services nor tolerances in 2015
- Full compliance with BAL NC since 1st Oct 15

- ✓ « Concertation Gaz »
- ✓ Hubs liquidity increasing (particularly within-day)
- ✓ Achievement of projects in order to provide accurate information to shippers

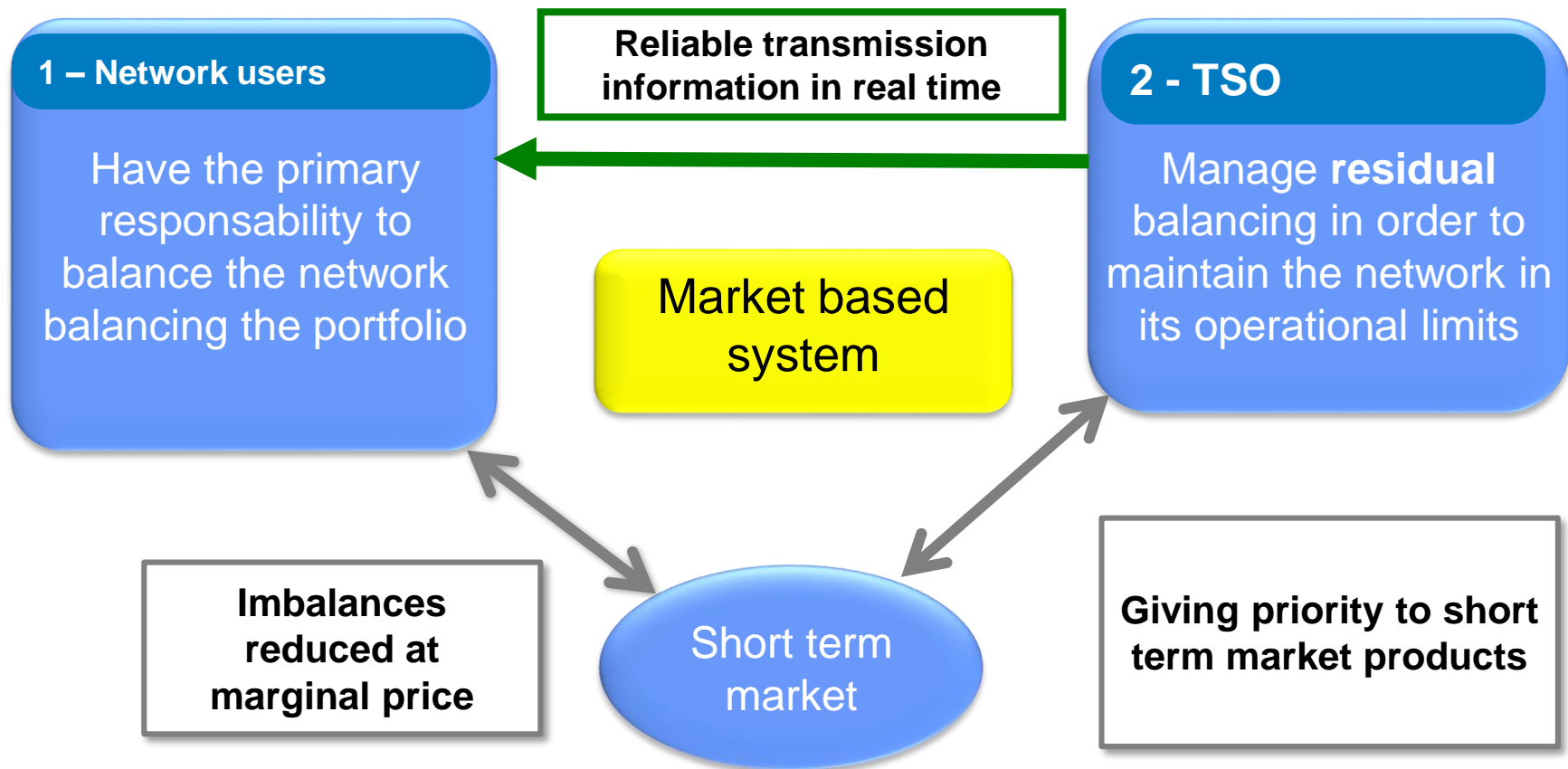
A single entry/exit system operated by both French TSOs GRTgaz and Teréga since 1st November 2018



+
1 Entry/Exit
zone: TRF
1 VTP: PEG

- Each TSO is managing the balancing of the system on its own network
- Balancing rules are similar for both TSOs

Balancing in a nutshell



+ GRTgaz balancing regime

-> **1 entry/exit system including 2 balancing areas**



GRTgaz area



Teréga area



Imbalance settlements made for the entry/exit system as a whole balancing zone

-> **« Base case » information provision system**

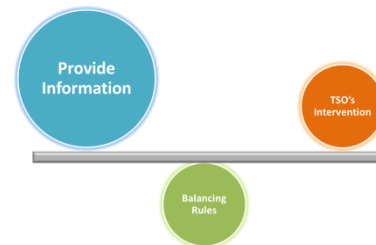
-> **No within-day obligations**

-> **No balancing services used**

-> **Linepack flexibility service offered**



Information provision



Personal information re shipper's portfolio:

- Every hour: intraday metered flows for delivery points to shipper's customers directly connected to GRTgaz network
- Updated twice a day: intraday metered flows for shipper's customers connected to DSO's networks (data sourced from DSO)
- Non-daily metered off-takes (profiled consumers on distribution networks): Forecast for the gas day D updated at every nomination cycle of D-1 and D

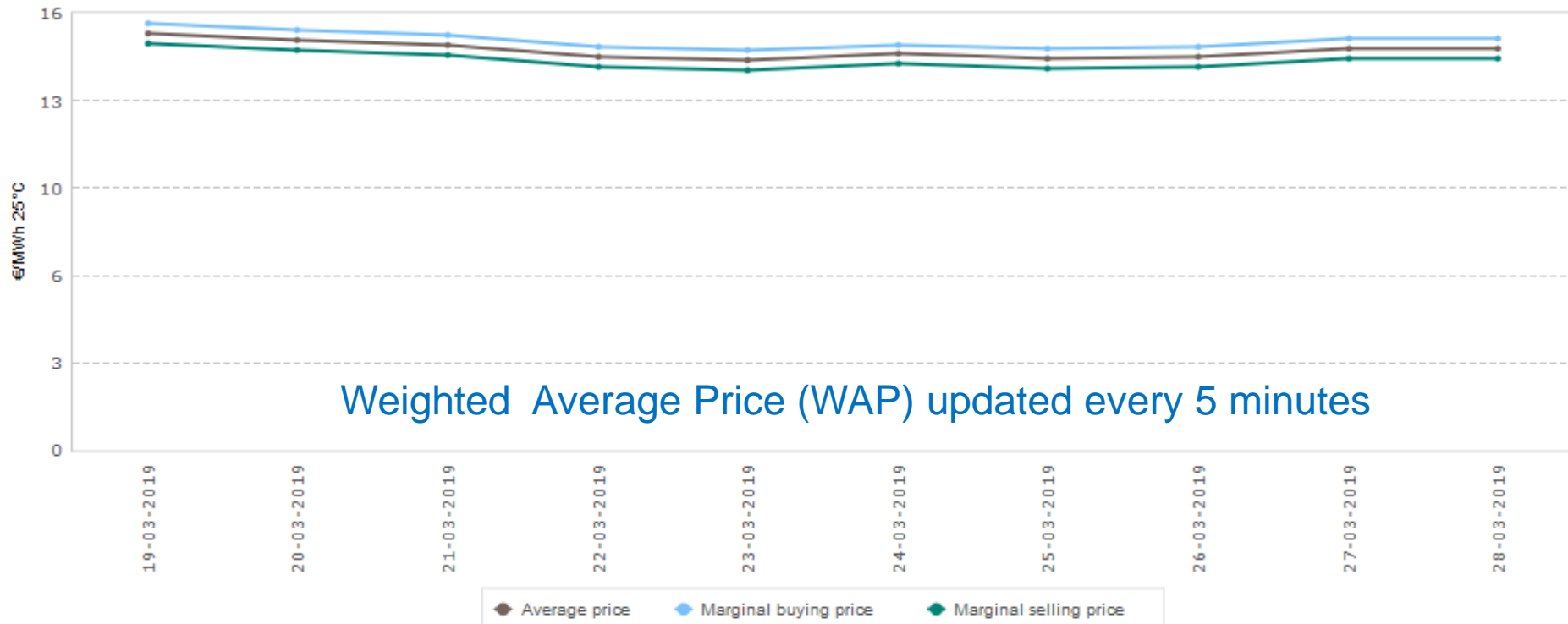
Via



Price of the last 5 days

Date	Average price (€/MWh 25°C)	D-1 evolution	Marginal buying price (€/MWh 25°C)	Marginal selling price (€/MWh 25°C)
25/03/2019	14.327	↘ -0.172	14.685	13.969
26/03/2019	14.398	↗ 0.071	14.758	14.038
27/03/2019	14.742	↗ 0.344	15.111	14.373
28/03/2019	14.690	↘ -0.052	15.057	14.323
29/03/2019	14.583	↘ -0.107	14.948	14.218

TRF - Trend of prices from 19-03-2019 to 28-03-2019

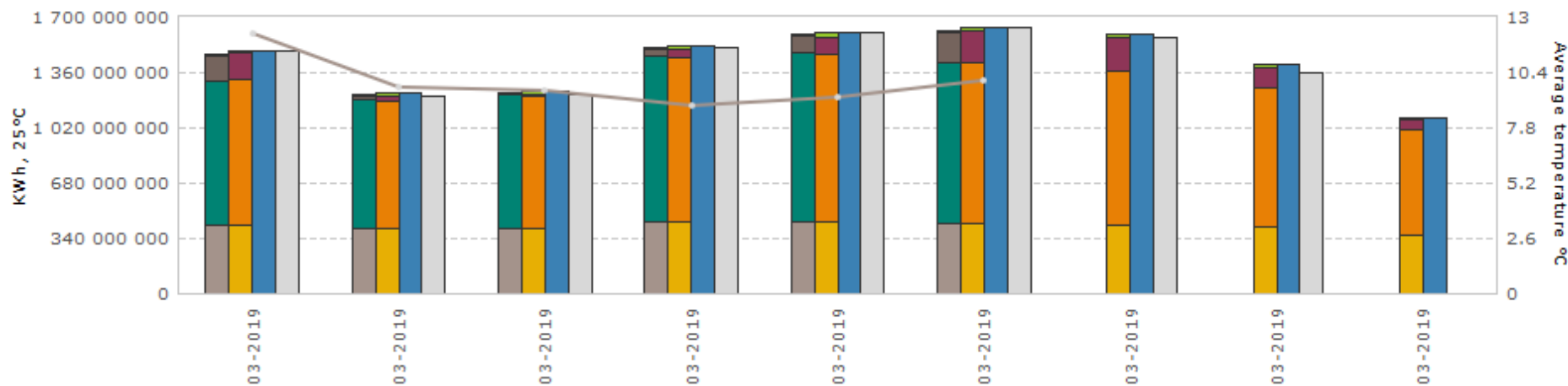


Consumption - Daily data

	All GRTgaz's customers			Industrial customers except HMS		HMS		Public distribution	
	GRTgaz's forecast	Shippers' forecast	Consumption	GRTgaz's forecast	Consumption	GRTgaz's forecast	Consumption	GRTgaz's forecast	Consumption
28/03/2019	1 592 956 778.0 (8)	1 573 812 260.0		420 392 606.0 (8)		199 846 892.0 (8)		947 417 828.0 (8)	
29/03/2019	1 405 883 336.0 (7)	1 354 951 662.0		405 274 196.0 (7)		125 931 743.0 (7)		858 107 399.0 (7)	
30/03/2019	1 075 470 283.0 (5)			360 128 619.0 (5)		53 614 087.0 (5)		648 863 800.0 (5)	

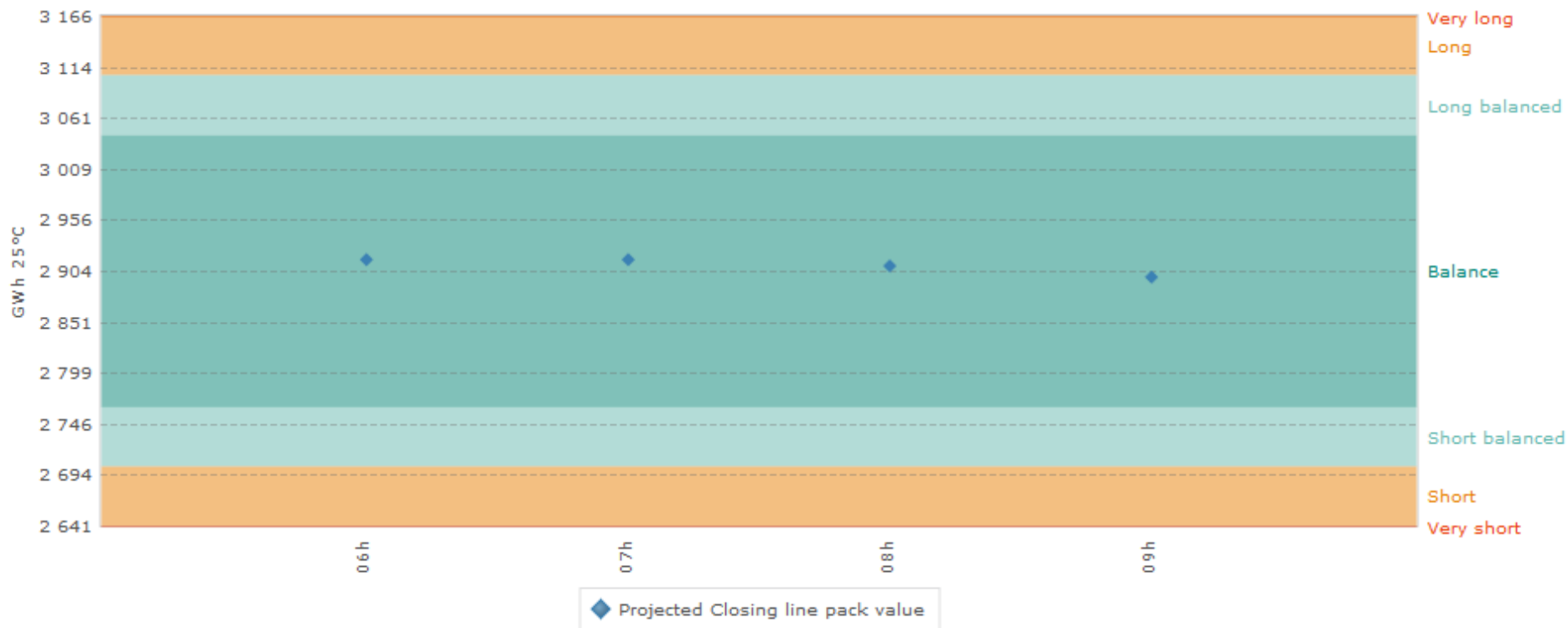
The number into brackets next to GRTgaz's forecast corresponds to the version of the forecast for a given gasday. More information on forecast publication can be found below.

Consumption > Daily data > GRTgaz - From 22-03-2019 to 30-03-2019

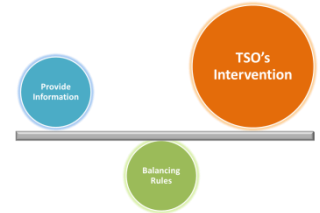


GRTgaz	Hour	Projected Closing line pack value (GWh)
Projected Closing line pack value at the end of current gasday (withinday)	09h	2 896,990
Projected Closing line pack value at the end of next gasday (dayahead)		

GRTgaz - Projected Closing line pack - From 29-03-2019



+ Principles of balancing actions



Why ?

Get the Closing Linepack in the admissible zone (« dark green zone »)

When ?

Within-Day balancing actions, **7 days a week**

Where ?

Trading on Powernext Exchange – Gas Spot Within-Day product

How ?

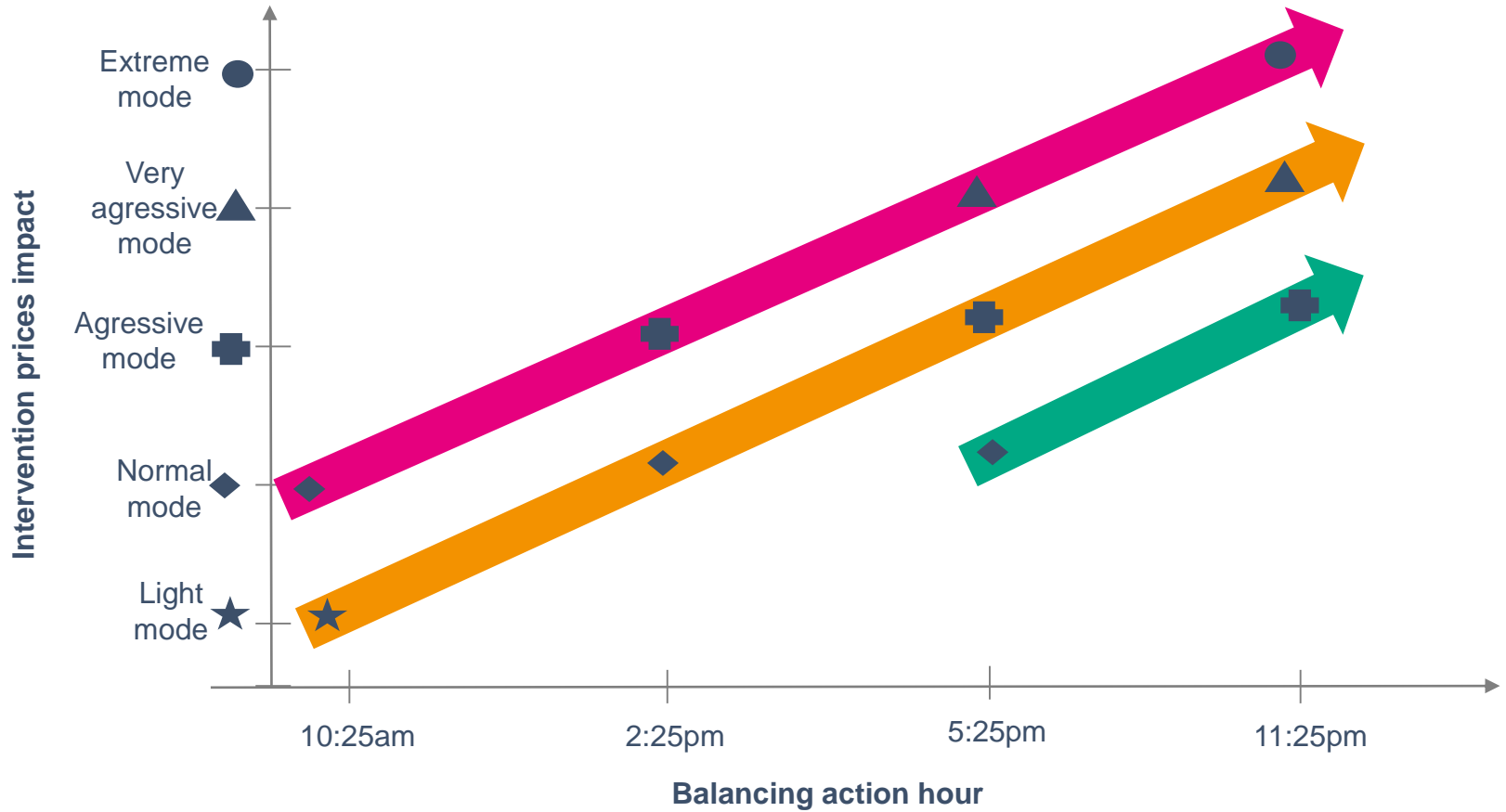
Gradual actions depending on Projected Closing Linepack position and schedule :

Projected Closing Linepack position

10:25 am	No action	No action	Action	Action
2:25 pm	No action	No action	Action	Action
5:25 pm	No action	No action	Action	Action
11:25 pm	No action	No action	Action	Action

+ Balancing

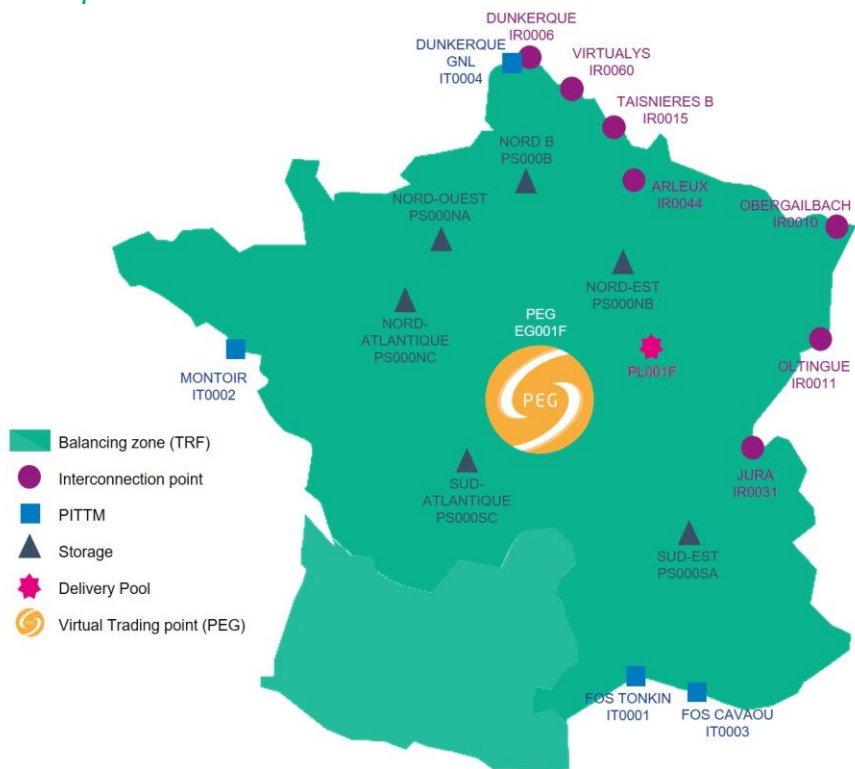
GRTgaz interventions



ALIZES: the linepack flexibility service offered by GRTgaz

- Service based on projected gas linepack
- **Total exemption of the marginal price** of imbalances settlement for the balance area concerned for each day where this service is applied (eligible day)
- Eligible day : day where GRTgaz did not have to engage balancing actions to maintain the system in its operational limits
- Monthly residual imbalance of each shipper (for the days when the service has been applied) audited to a baseline neutral price

+ GRTgaz's network



+ 1 balancing zone:

⇒ TRF

+ Entry / Exit points on each zone:

⇒ Interconnection with other grids (PIR)

⇒ LNG terminals (PITTM)

⇒ Storages (PITS)

⇒ Virtual Trading Point (PEG)

⇒ Delivery pools (PL)

⇒ Industrial customers connected to the network (LI)

⇒ Customers behind a distribution network (PITD)