# ACER – ENTSOG Joint Workshop on Gas Balancing Code implementation

## 9 November 2016

Polish Energy Regulatory Office, Al. Jerozolimskie 181,
02-222 Warsaw, Poland

entsog
european network
of transmission system operators
for gas

ACER
Agency for the Cooperation
of Energy Regulators

# ACER-ENTSOG Joint Worksop on Gas Balancing Code implementation

## Warsaw, 9 November 2016

| Agenda Topics | Duration | Timetable |
|---|---|---|
| **Welcoming coffee/ registration** | 30 min | 9.30-10.00 |
| Opening/ Welcome (Chairs/ Host) | 15 min | 10.00-10.15 |
| **Part I: Planning national implementation** | | |
| 1. ENTSOG introduction, based on the Balancing Network Code implementation monitoring report (ENTSOG)<br>1.1 Interim measures: planning to reach the goal (GAZ-SYSTEM, PL)<br>1.2 Regimes delivered in 2015 (Energinet, DK)<br>1.3 Recent update from a transitory country (Autorita, IT) | 45 min | 10.15-11.00 |
| 1.4 Discussion | 20 min | 11.00-11.20 |
| **2. Information provision (TSOs presentations)**<br>2.1 System status (an exemplary case) (GRTgaz, FR)<br>2.2 Aggregated imbalance position (an exemplary case) (GTS, NL)<br>2.3 TSO balancing action: (an exemplary case) (National Grid Group, UK)<br>2.4 Everything you always wanted to know in balancing markets* (*but never dared asking) (EFET) | 80 min | 11.20-12.40 |
| 2.5 Discussion | 20 min | 12.40-13.00 |
| **Lunch break** | **1 hour** | **13.00-14.00** |

| Agenda Topics | Duration | Timetable |
|---|---|---|
| **Part II: Daily imbalance charges: moving to a locally based reference price** | | |
| 4.1 Daily imbalance charge calculation (Sisman Energy Consultancy)<br>4.2 How the imbalance charge is calculated in a WDO regime? (Fluxys, BE)<br>4.3 Imbalance charge under interim measures (NC BAL – proxy prices & tolerances) - (CER, IE)<br>4.4 Transition to Trading Platform based pricing (Energy Agency, SI) | 50 min | 14.00-14.50 |
| 4.5 Discussion on daily imbalance charge | 30 min | 14.50-15.20 |
| **Coffee break** | **30 min** | **15.20-15.50** |
| 5. Neutrality: charging – who is targeted? (NCG, DE) | 20 min | 15.50 -16.10 |
| 6. Closing remarks with reflections from the ACER Report's findings on the implementation of the Balancing Network Code (ACER) | 20 min | 16.10-16.30 |

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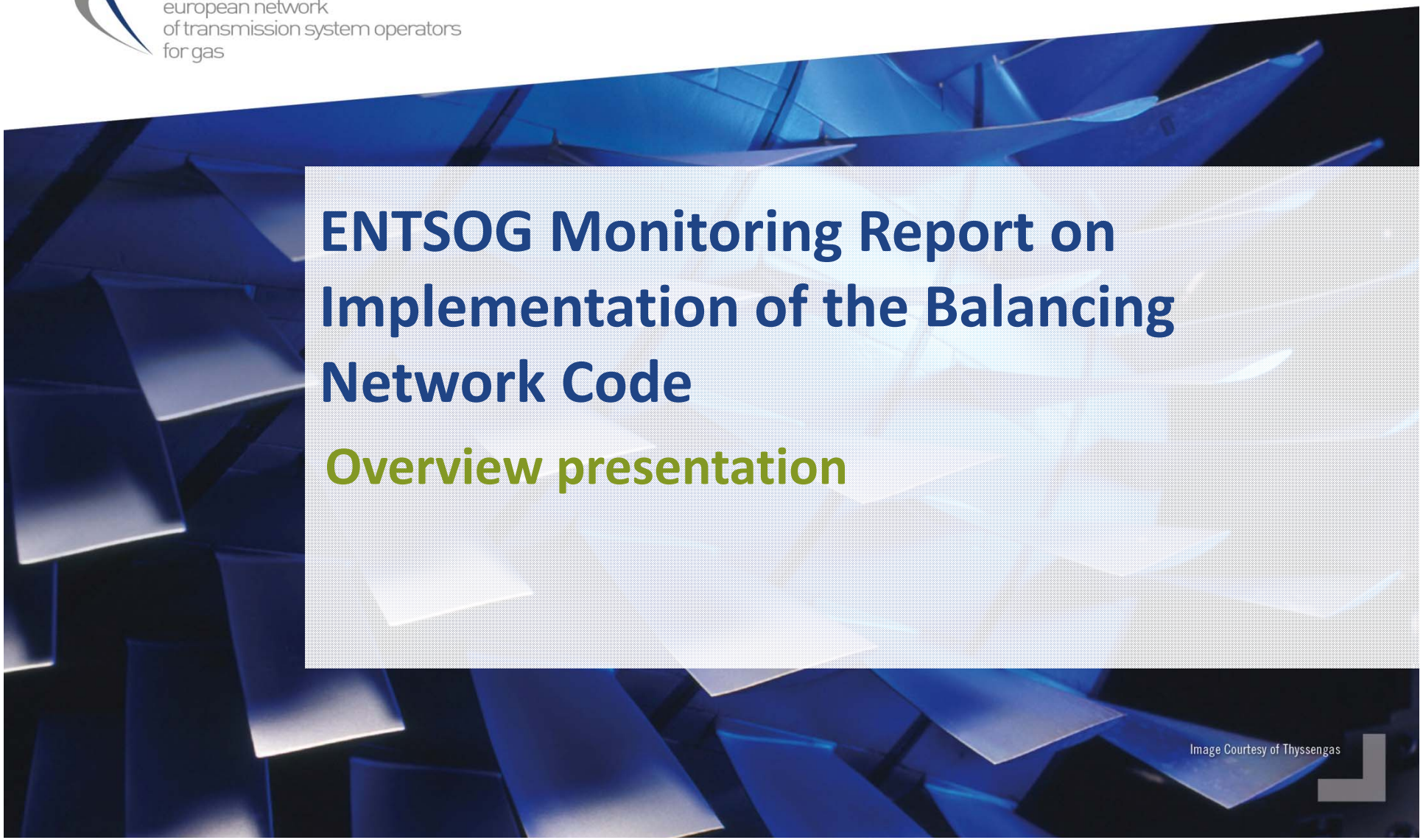
Warsaw, 9 Nov. 2016

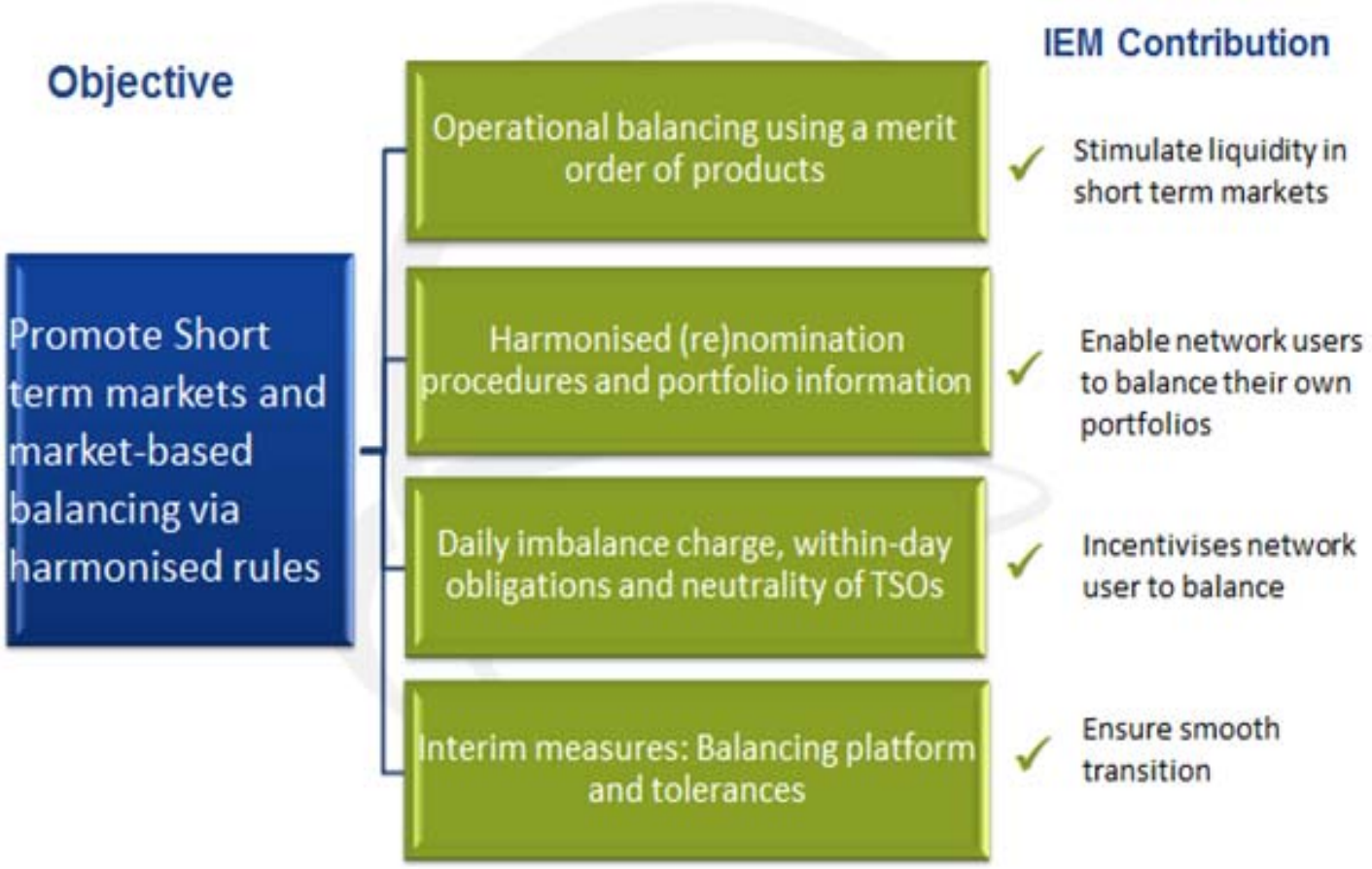
# ENTSOG Monitoring Report on Implementation of the Balancing Network Code

## Overview presentation

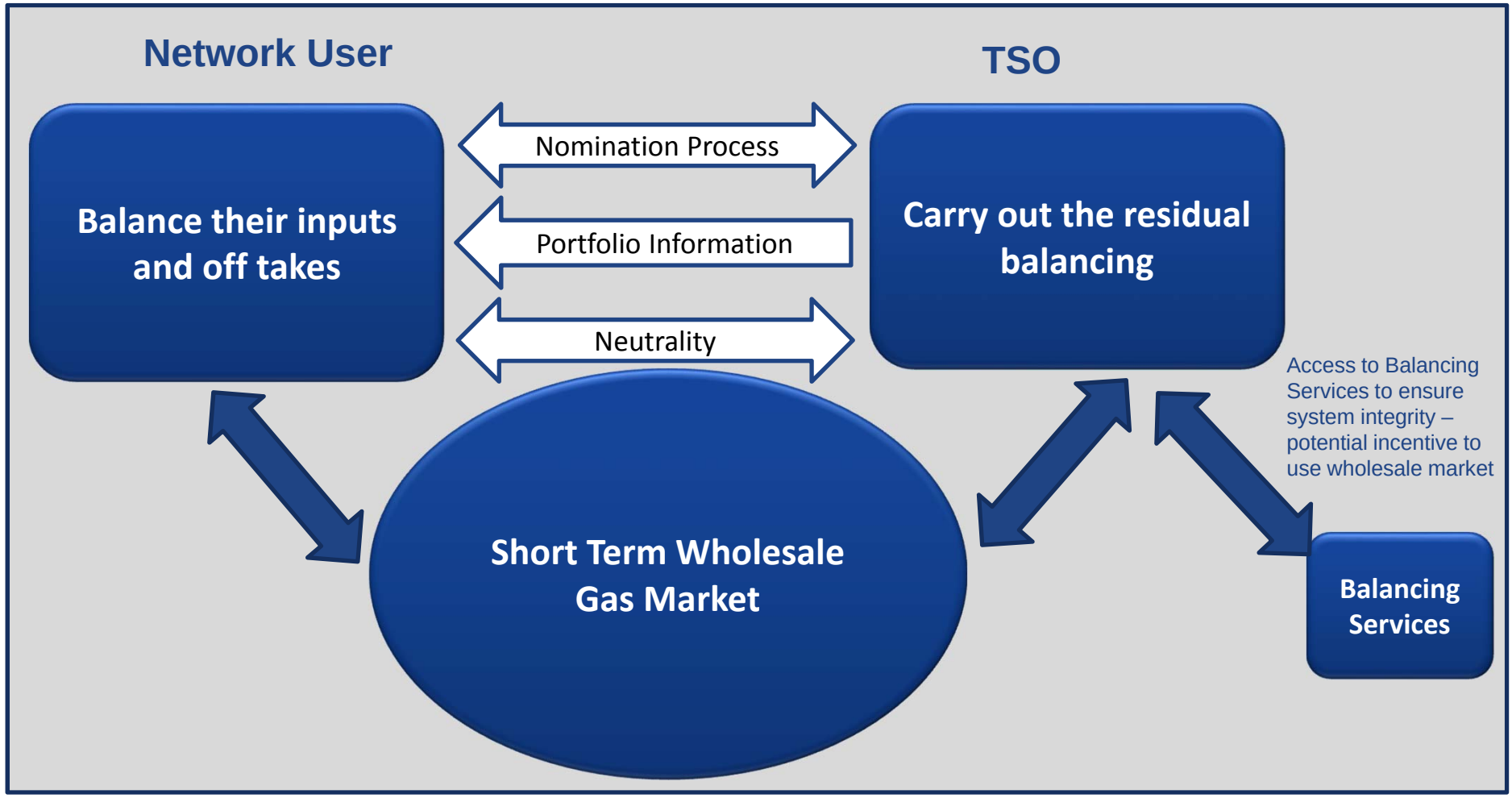


# Introduction –BAL NC

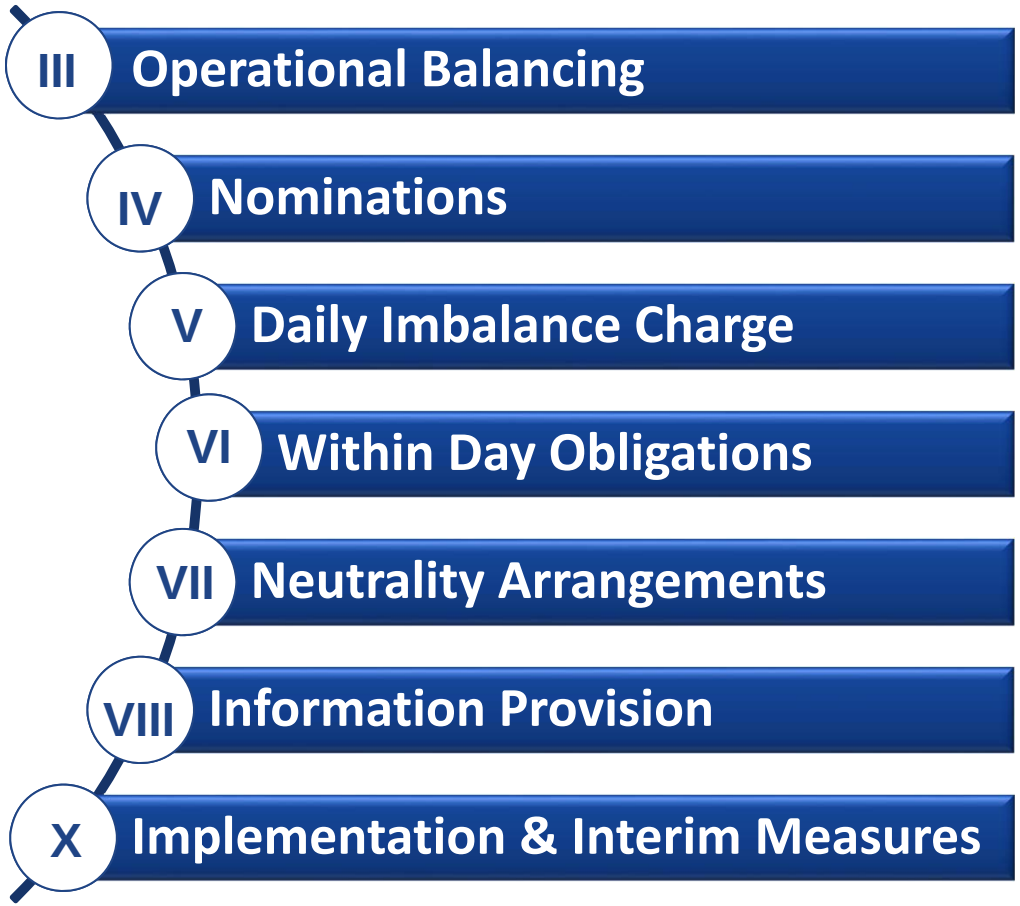
# What the BAL NC is aiming to achieve ?



# Delivering the "Balancing Target Model"



# BAL NC main tools enabling goals to be reached:



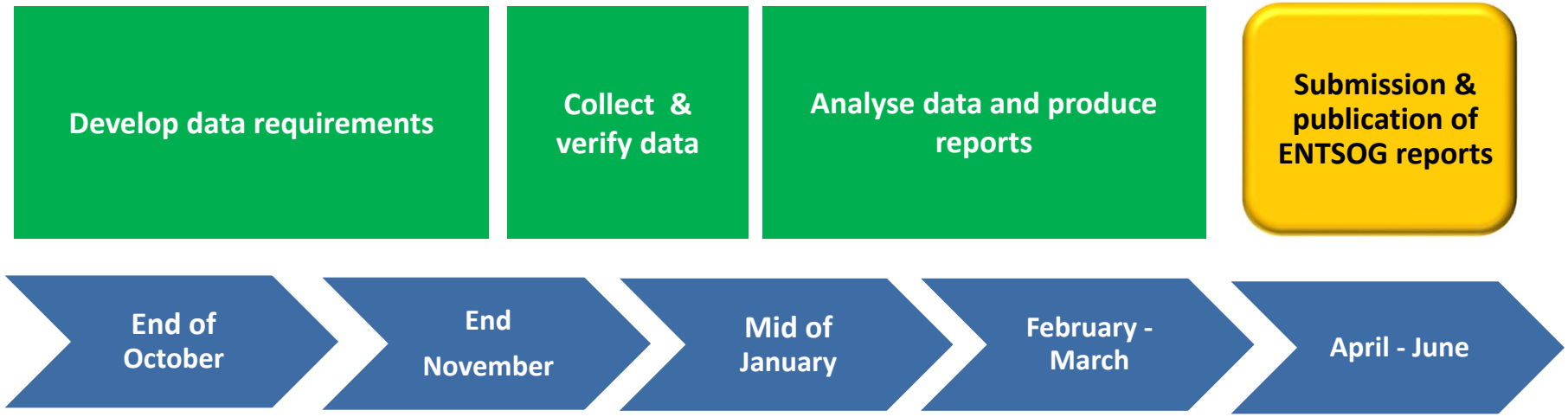
# ENTSOG Report - overview

# Background

- In the first BAL NC implementation report ENTSOG reports on its monitoring of the implementation of the Code as of 1 October 2015 following Article 8 (8) of Regulation (EC) No 715/2009 based on the responds received by TSOs.

- The majority of the TSOs responded for their country in cooperation with their respective NRA to the online surveys prepared by ENTSOG and the ACER jointly.

# Next monitoring process 2016/2017



# Implementation overview

# BAL NC – implementation deadlines

- The BAL NC provides a high degree of flexibility to NRAs and TSOs in their national implementation, as gas networks and markets differ from each other in their characteristics. *The Report illustrates the differences observed.*

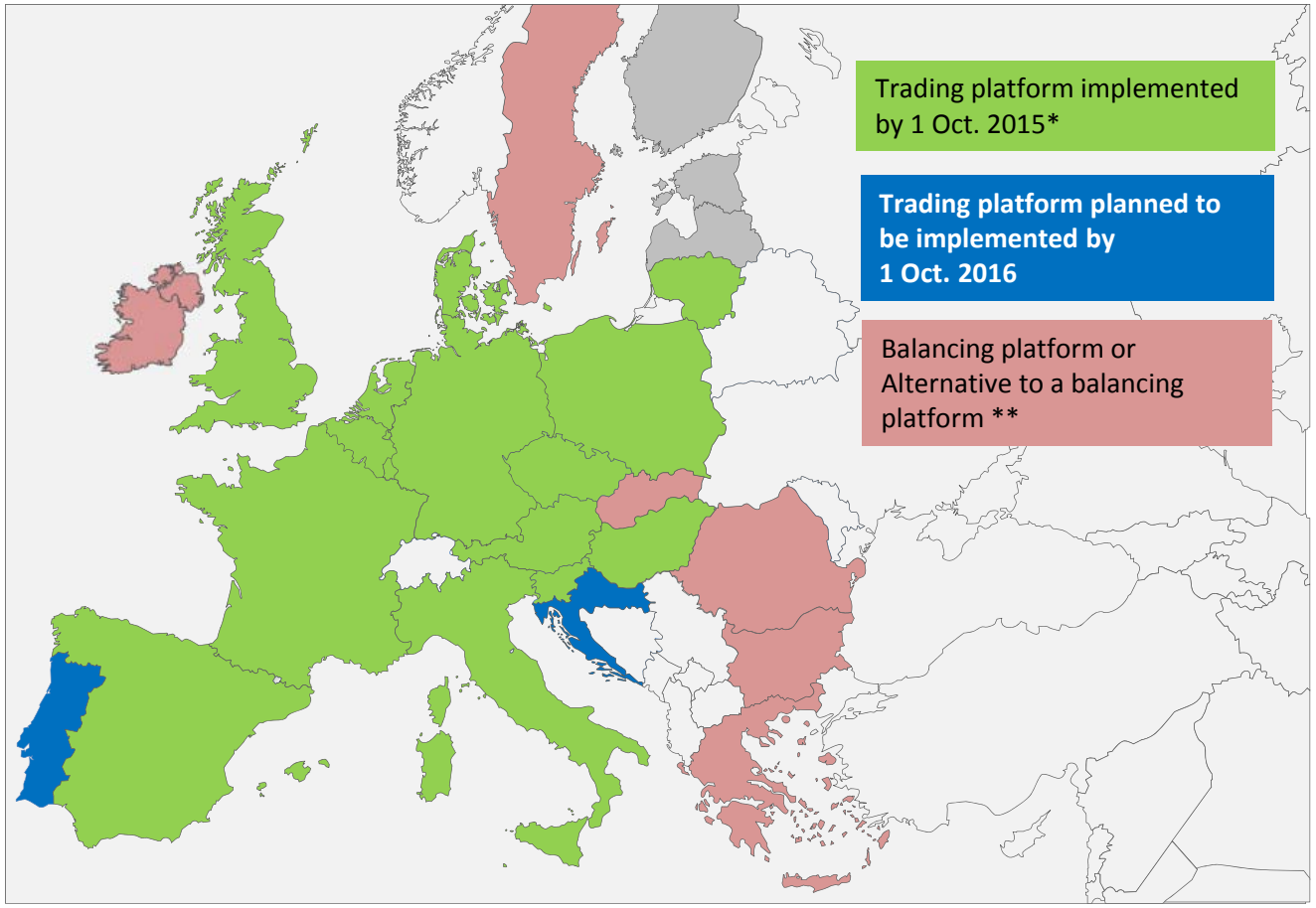
1. The BAL NC is applicable as of **1 October 2015**.
   - Implementation deadline for **10 countries.**

2. Instead of fully implementation, **interim measures** can be implemented for up to five years from the entry into force of the Code (i.e. until **16 April 2019**).
   - Implementation deadline for **11 countries**;
   - Except interim measures, **the rest of provisions** shall be implemented by **1 October 2015**.

3. Possibility to postpone its application until **1 October 2016 (transitory period option)** if allowed by the national regulatory authority ('NRA') following the TSO's justified request and in case that no interim measures are applied.
   - Implementation deadline for **5 countries.**

# Trading platform for balancing

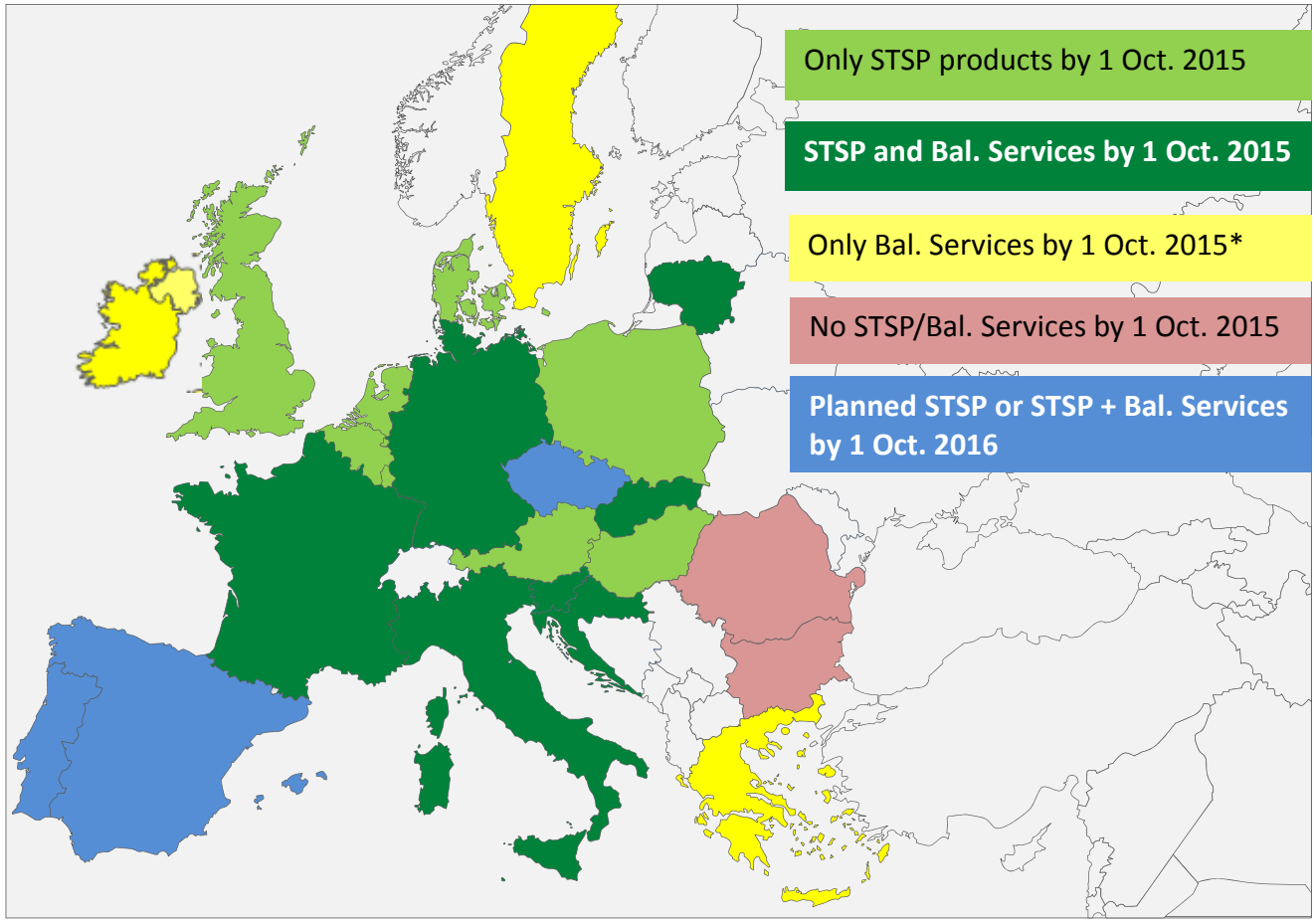
- 14 countries reported to have a trading platform in place;
- 2 countries (HR, PT) plan to establish it by 1 October 2016.
- 7 countries applying interim measures, have already implemented a balancing platform or alternative to a balancing platform;
- 2 countries (BG, RO) are planning to implement an alternative to a balancing platform in 2016.




* In Germany an additional balancing platform is in place.
* In Poland a trading platform is already in place for the H-Gas balancing zone. In addition, a balancing platform is in place for all 3 balancing zones .
* Spain implemented trading platform as of 16 December 2015;
** Countries applied Interim measures.

# Overview of STSPs and Balancing services

- 7 countries are using only STSPs;
- another 7 countries are using STSPs and Balancing services;
- 4 countries are using only Balancing services;
- 2 countries have not implemented STSPs/Balancing services by 1 Oct. 2015;
- 3 countries are planning to implement STSPs and STSPs and Balancing services by 1 Oct. 2016;




* In Greece, Ireland and Northern Ireland balancing services are operated under interim measures.
* Sweden stated the operation of a “weekly product” under interim measures.

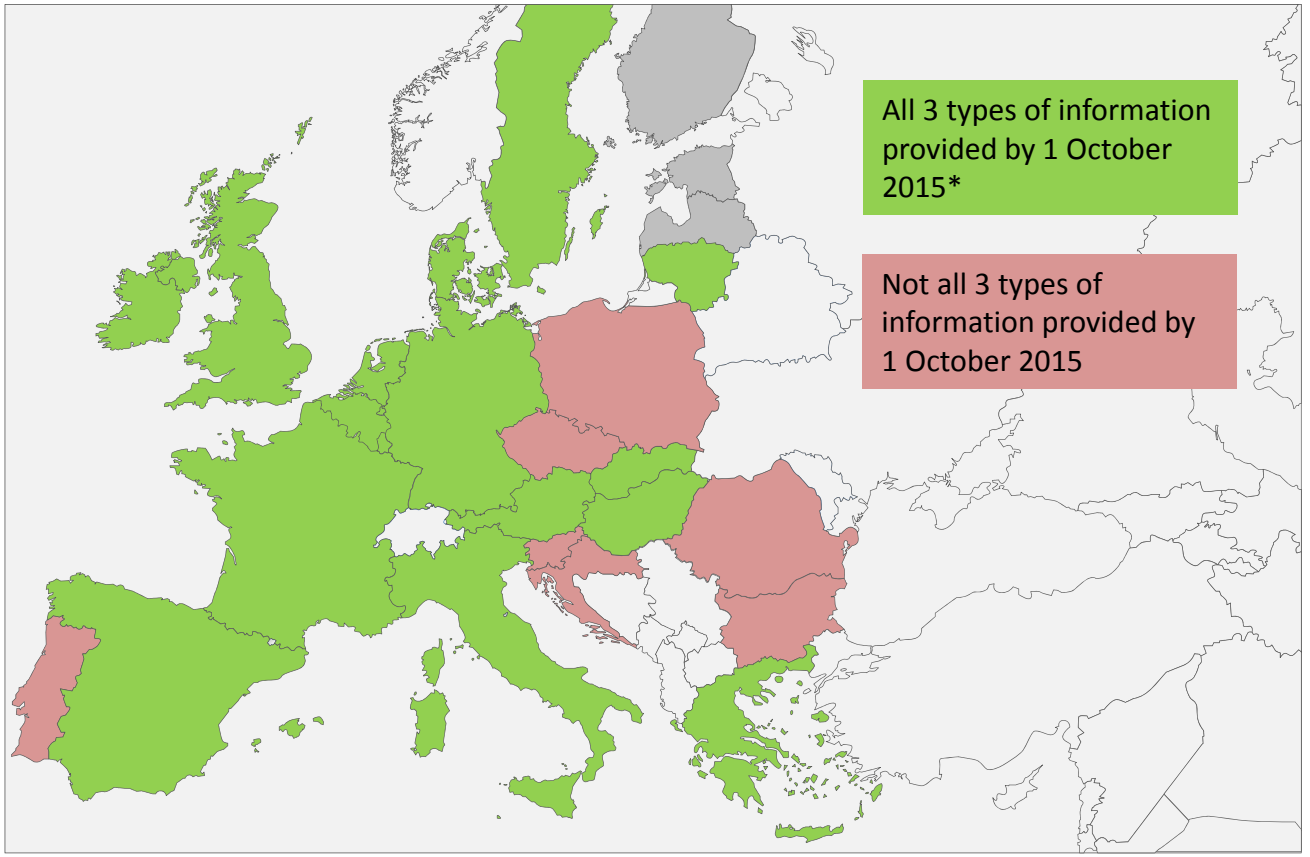
# Information provisions – types of information

The information provided to network users by the TSOs shall refer to:

(1) the overall status of the transmission network;

(2) TSO's balancing actions;

(3) the network user's inputs and off-takes for the gas day.




| Implementation of the information provisions | | |
|---|---|---|
| **All 3 types of information** | **2 types of information** | **1 type of information** |
| AT, BE, DE, DK, EL, ES*, FR, HU, IE, IT*, LT, LU, NL, SE, SK, UK-GB, UK-NI (17 countries) | CZ, RO (type 1 and 3) | BG, HR, PL, PT (type 1)<br>SI (type 3) |

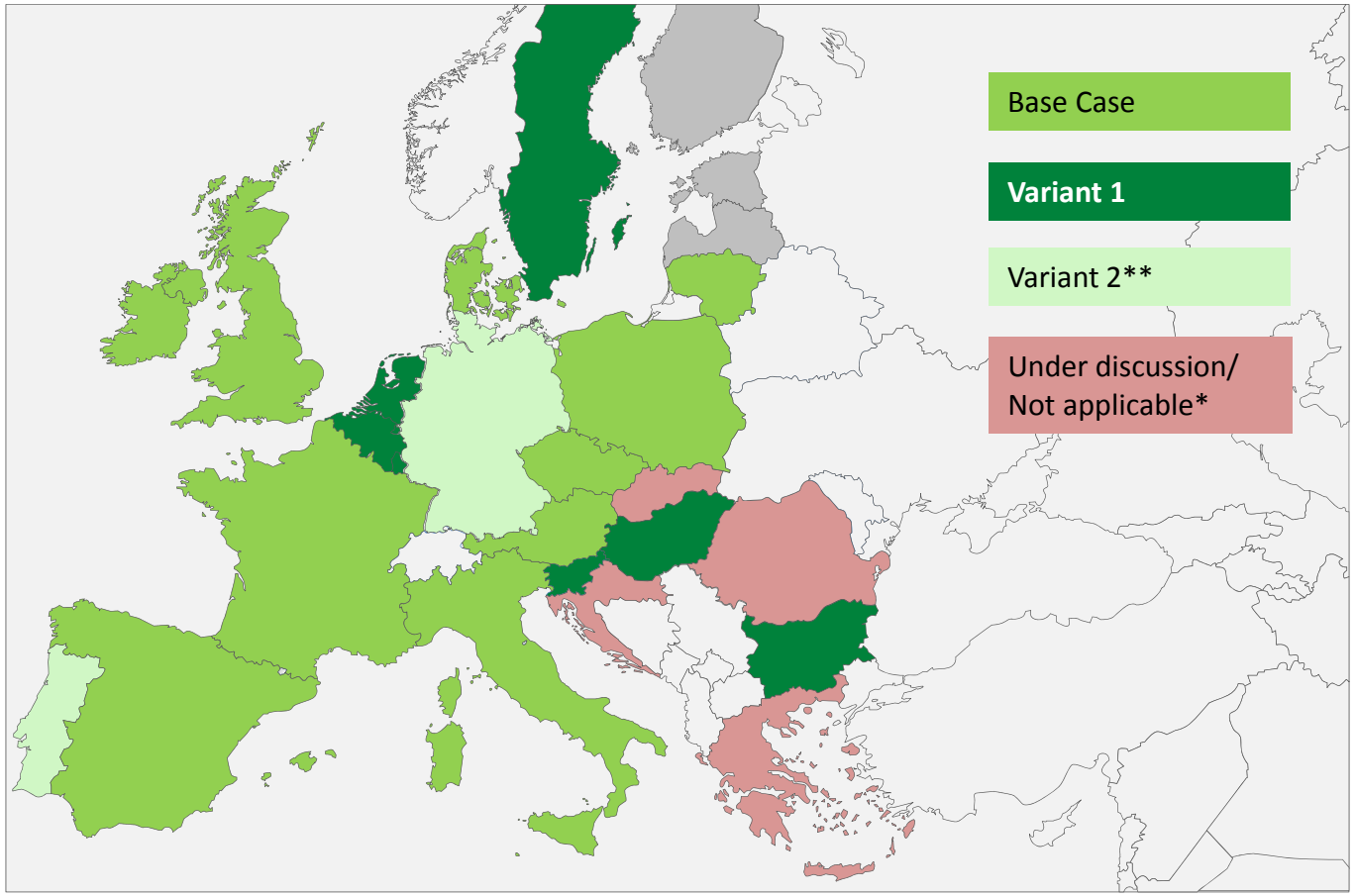
* In Italy the information provisions have been implemented as of 1 Nov. 2015 and in Spain as of 22 Dec. 2015.

# Information provisions – chosen models

**Base case**:
the information on non daily metered off-takes consists of a day ahead and within day forecasts (11 countries);

**Variant 1**:
the information on non daily metered and daily metered off-takes is based on apportionment of measured flows during the gas day (7 countries);

**Variant 2:**
the information on non daily metered off-takes is a day ahead forecast (2 countries).

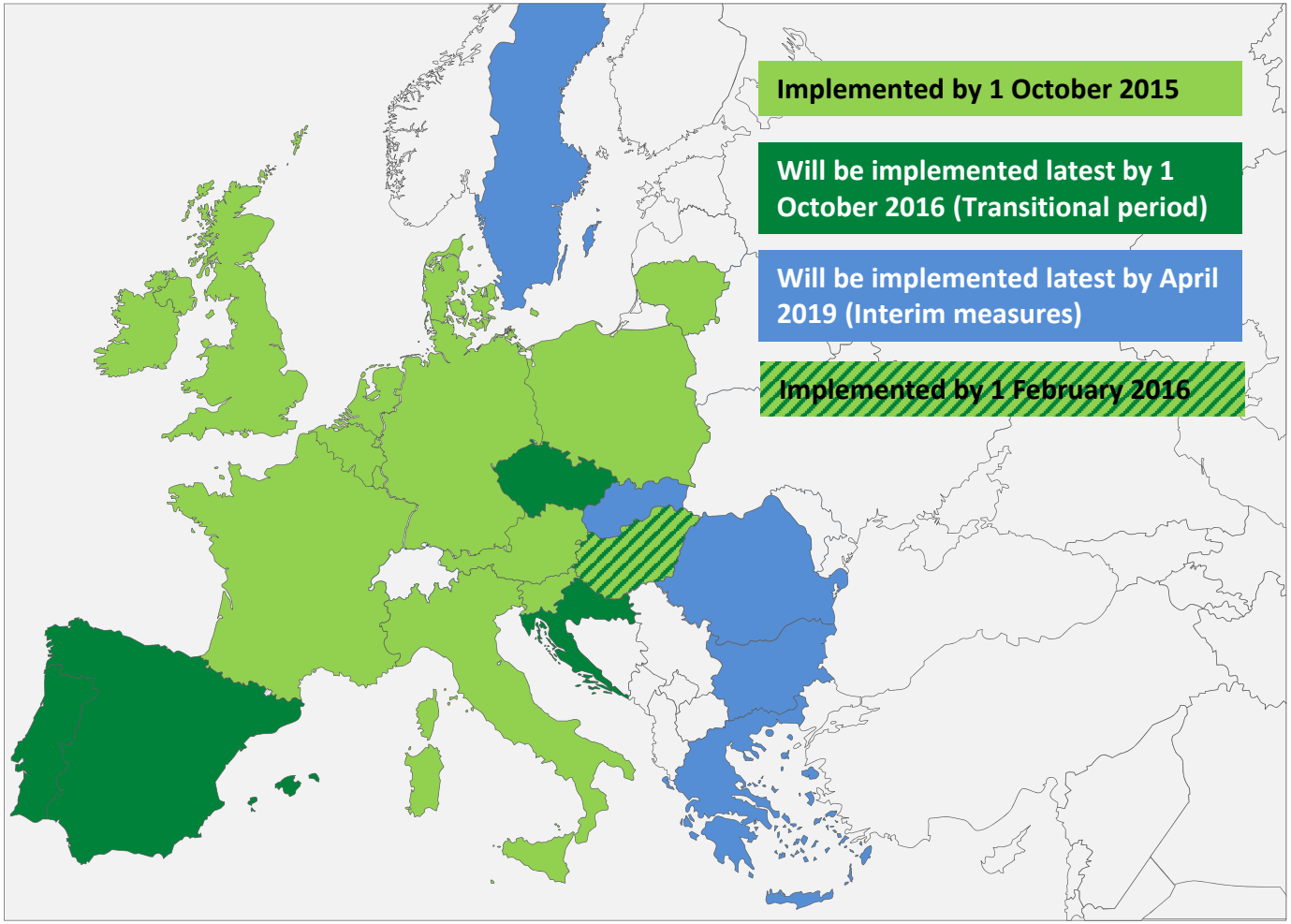



* Greece and Slovakia have not decided yet which information model will be prepared to be applied.

** In Portugal, Variant 2 has been identified by the market as preferred option, NRA decision is pending.

# Daily imbalance charge

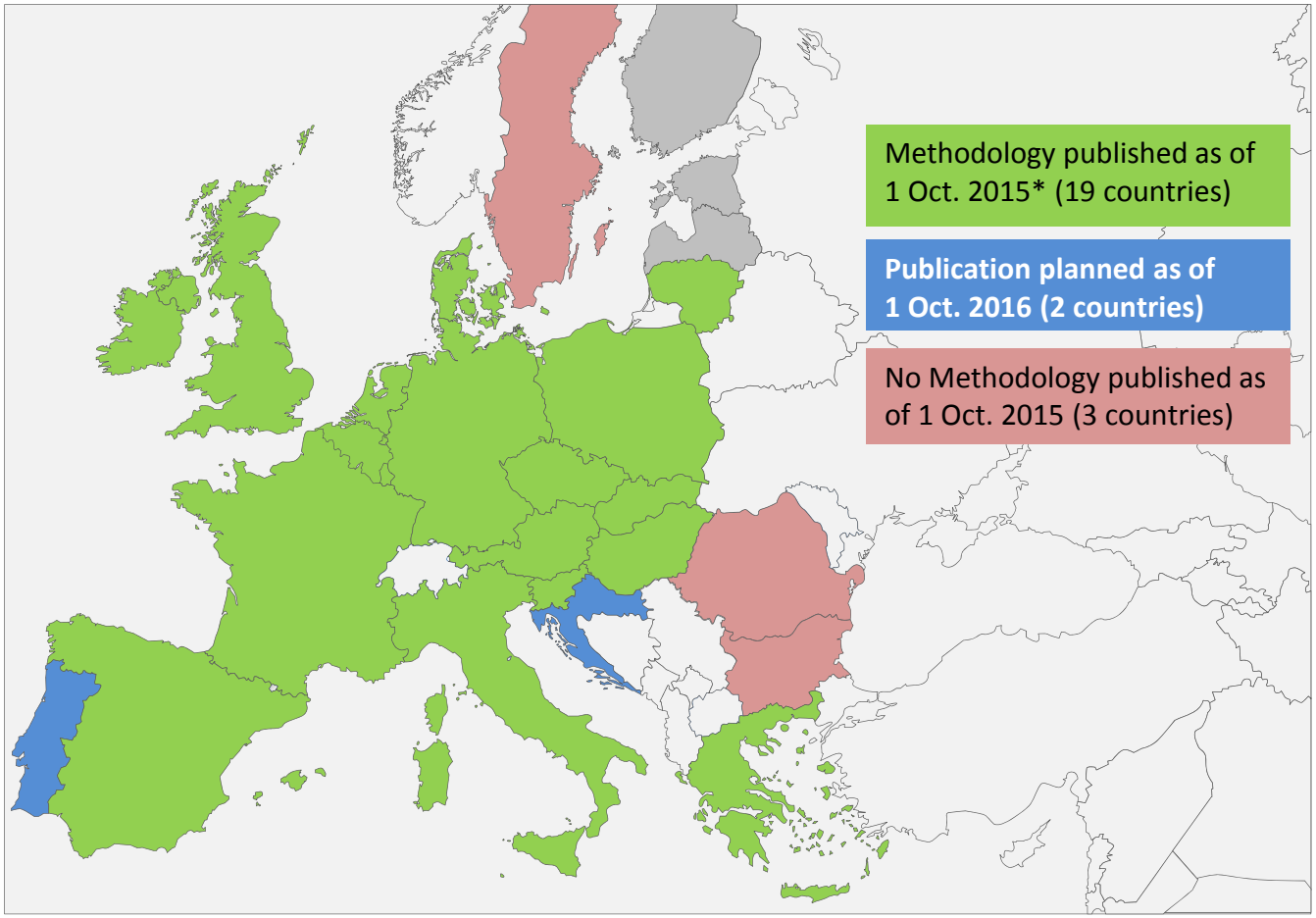
- 15 countries reported the implementation of Daily imbalance charge provisions by 1 Oct. 2015;
- 4 countries (CZ, ES, HR, PT) are planning the implementation latest by 1 October 2016 (transitional period);
- Out of 5 countries applying Interim imbalance charge:
  - 3 countries (EL, SE, SK) have already implemented it;
  - 2 (BG, RO) are planning to implement it in 2016.



# Neutrality

According to the principle of neutrality, TSOs shall not gain or lose by the payment and receipt of:

- daily imbalance charges, within day charges,
- balancing actions charges,
- or other charges related to balancing activities.




* In AT, DK and NL the neutrality provisions are not applicable due to other arrangements in place, approved by the NRAs, which meet the neutrality principle.

# Interim measures – overview

- 10 countries reported the application of interim measures;
- 3 countries reported the planned implementation of the interim measures.

| Country | Balancing platform | Alternative to a balancing platform | Interim daily imbalance charge | Tolerances | Other interim measures |
|---|---|---|---|---|---|
| **BG** | - | Q3/Q4 2016*** | Q3/Q4 2016*** | Q3/Q4 2016*** | - |
| **DE*** | In place | - | - | - | - |
| **EL** | Q1/2017*** | In place | In place | In place | - |
| **IE** | - | In place | - | In place | - |
| **LT** | - | - | - | In place | - |
| **PL**** | In place | - | - | In place | - |
| **RO** | 2017/2018*** | April 2016*** | April 2016*** | April 2016*** | - |
| **SE** | In place | - | In place | - | - |
| **SK** | In place | - | In place | - | - |
| **UK-NI** | - | In place | - | In place | - |

* In Germany, the balancing platform is used for locational products, as the existing local or point specific balancing gas requirements cannot be met with standardised exchange products.

** In Poland, an additional balancing platform is in place for all 3 balancing zones.

*** Reported planned implementation dates

# Next steps

- ENTSOG will continue to monitor the implementation of BAL NC after the end of the transitional period ( by 1 October 2016).
- ENTSOG will publish the next Monitoring Report on BAL NC by the end of Q2/2017.

# Interim Measures: planning to reach the goal

Warsaw, 9 November 2016

the system, that connects

# The Goal

## Liquidity
## of the short term wholesale
## gas market

# Interim measures as a bridge to the goal



- Oligopoly
  - at supply side of the gas market
  - at supply side of the wholesale gas market
- Bilateral contracts

- Competitive liquid gas market
- Most contracts at gas exchange

# Interim measures – legal framework



- Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks (NC BAL)

- Art. 45

„1. **In the absence of sufficient liquidity of the short term wholesale gas market, suitable interim measures** referred to in Articles 47 to 50 **shall be implemented by the transmission system operators**. Balancing actions undertaken by the transmission system operator in case of interim measures shall foster the liquidity of the short term wholesale gas market to the extent possible.

# Interim measures – tools



- Balancing platform
  - A trading platform where the transmission system operator is a trading participant to all trades
- Alternative to a balancing platform
- Interim imbalance charge
  - charge which calculation method substitutes the method of the calculation of a daily imbalance charge set forth in Chapter V of the Regulation
- Tolerance
  - the level of which defines the maximum quantity of gas that can be bought or sold by each network user in the settlement of the imbalance at a weighted average price

# Polish gas market – case study



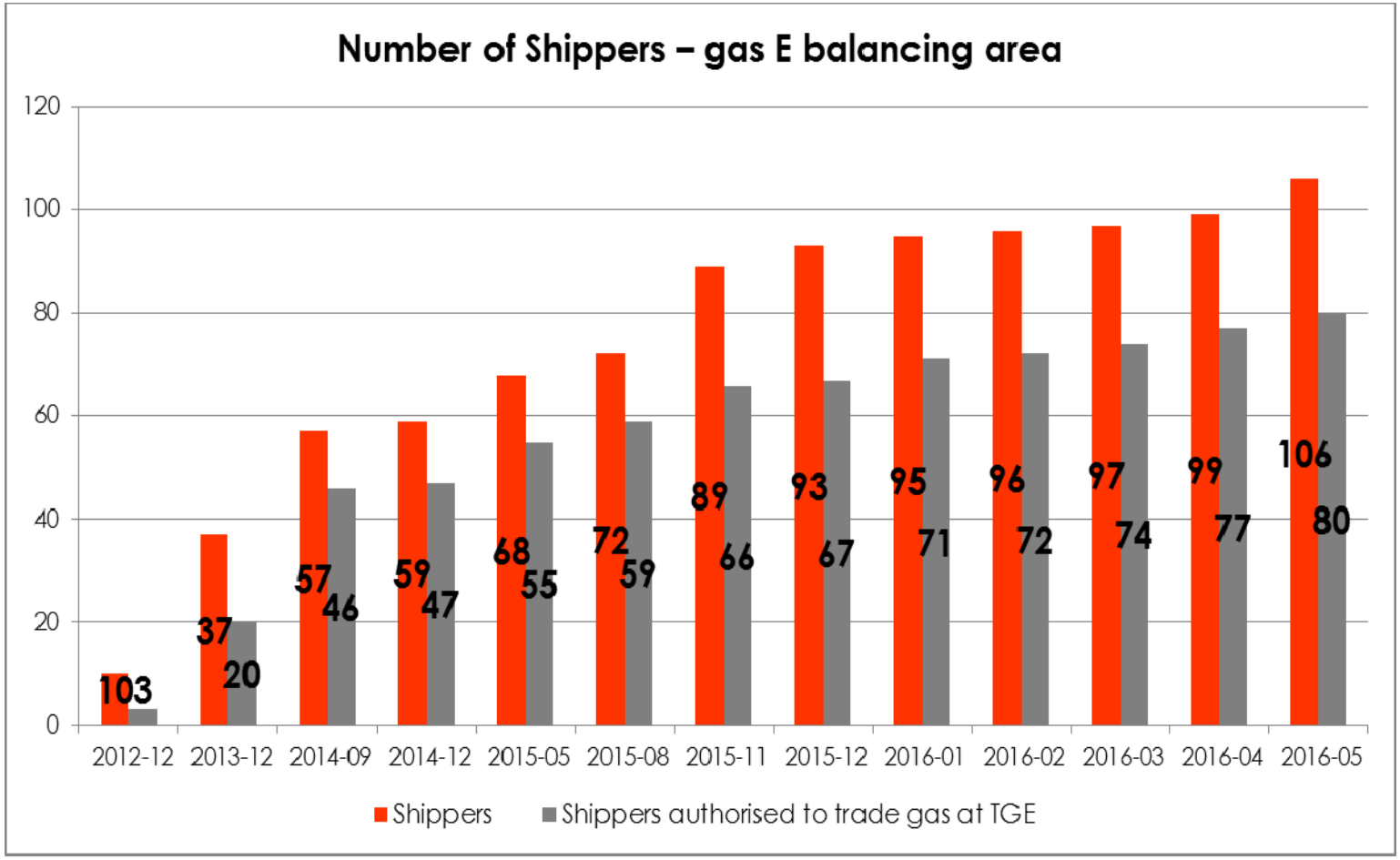
## Timeline

- 2006 August – 1st edition of Polish Transmission Network Code
- 2013 January – 4th edition
  - New Entry – Exit model and virtual trading point
  - nominations and allocations in Energy units, gas day 6/6
- *2014 March/April – publication of BAL NC*
- 2015 June – 1st Interim Measures Report approved by NRA
- *2015 October – BAL NC start of apply*
- 2016 March – current edition of Polish Transmission Network Code
- 2016 September – 2nd Interim Measures Report approved by NRA

# Polish gas market – case study



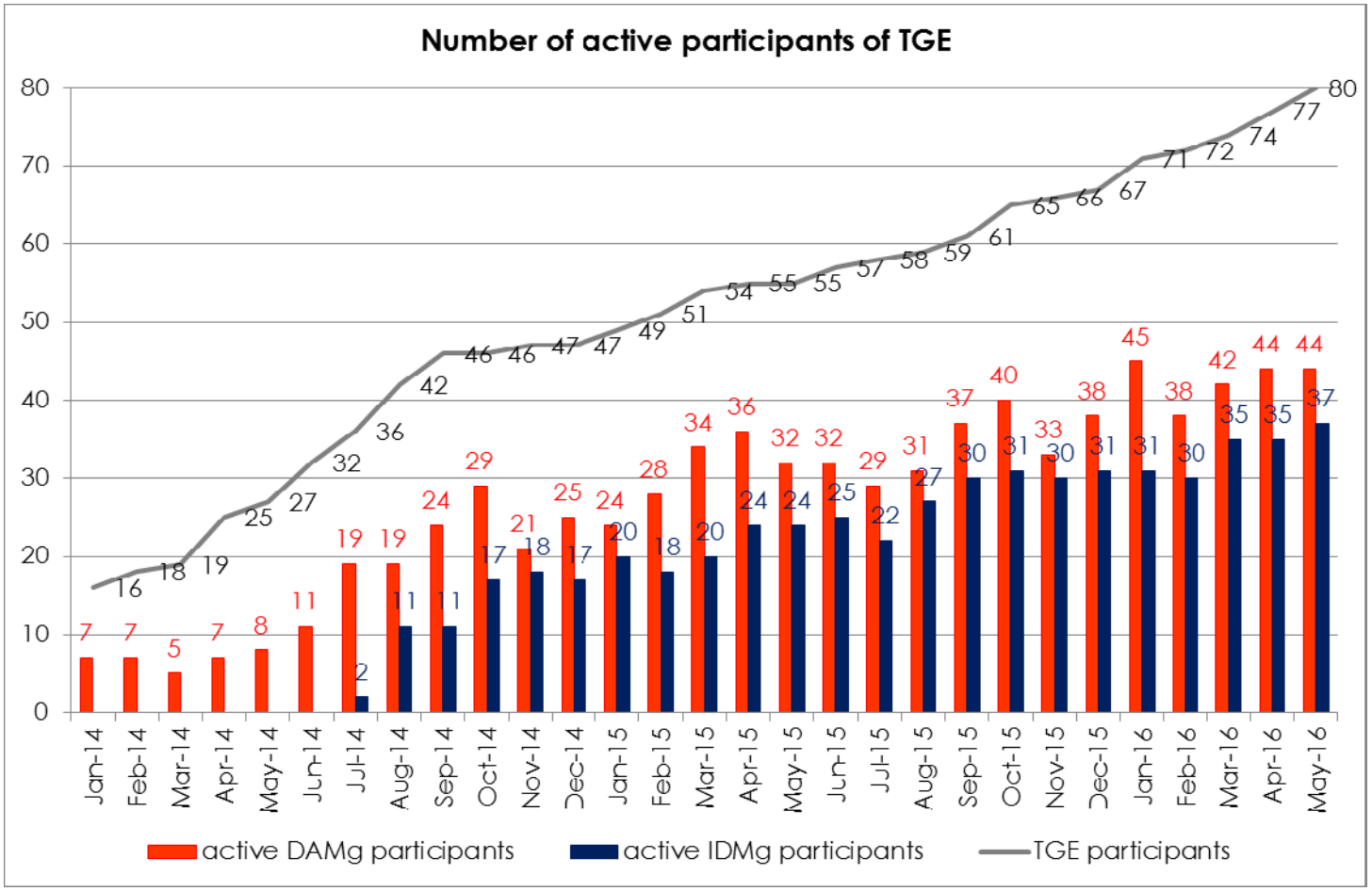
## Increase in the number of participants



# Polish gas market – case study



## Short term wholesale gas market development



# Polish gas market – case study



## Balancing Platform

- Short Term Standardised Products
  - high-methane gas balancing area: October 2015 – September 2016
  - low-methane gas balancing area: October 2015 – September 2017 – ?
  - TGPS (ISO): October 2015 – September 2017 – ?
- Locational products (EU border)
  - high-methane gas balancing area: October 2015 – September 2016
  - TGPS (ISO): October 2015 – September 2017 – ?
- Locational products (non – EU border)
  - high-methane gas balancing area: October 2015 – September 2016 – ?
  - TGPS (ISO): October 2015 – September 2017 – ?
- Locational products (internal points)
  - low-methane gas balancing area: October 2015 – September 2017 – ?

*After April 2018 only balancing services based on Art. 8 will be available*

# Polish gas market – case study



## Interim imbalance charges - Low-methane gas balancing area

- Time of application:
  - October 2015 – September 2017 – ?
- Prices based on transactions on Balancing Platform (Balancing Services Market):
- Marginal sell price is determined as the lower of the two following prices:
  - lowest price recorded in transactions concluded on the Balancing Services Market for low-methane gas balancing area,
  - weighted average price of gaseous fuel in transactions concluded on the Balancing Services Market in respect to that gas day, reduced by 10%.
- Marginal buy price is determined as the higher of the two following prices:
  - highest price recorded in transactions concluded on the Balancing Services Market for low-methane gas balancing area,
  - weighted average price of gaseous fuel in transactions concluded on the Balancing Services Market in respect to that gas day, plus 10%.

# Polish gas market – case study



## Interim imbalance charges – TGPS area

- Time of application:
  - October 2015 – September 2017 – ?
- Prices based on Day Ahead Indexes for EEX and TGE

- Marginal sell price ($KCS_{SGT}$):
  - $\mathrm{KCS_{SGT}} = \min[(\mathrm{DAM_{TGE}} - \mathrm{KP_{PWP}}), (\mathrm{DAM_{EEX}} + \mathrm{KP_{M}})] \cdot 0{,}9$

- Marginal buy price ($KCK_{SGT}$):
  - $\mathrm{KCK_{SGT}} = \max[(\mathrm{DAM_{TGE}} - \mathrm{KP_{PWP}}), (\mathrm{DAM_{EEX}} + \mathrm{KP_{M}})] \cdot 1{,}1$

Where:

$DAM_{TGE}$ – a volume-weighted average price from all transactions of TGE session of Day Ahead Market

$DAM_{EEX}$ – a volume-weighted average price from all transactions of EEX session of Day Ahead Market (Daily Reference Price – GPL)

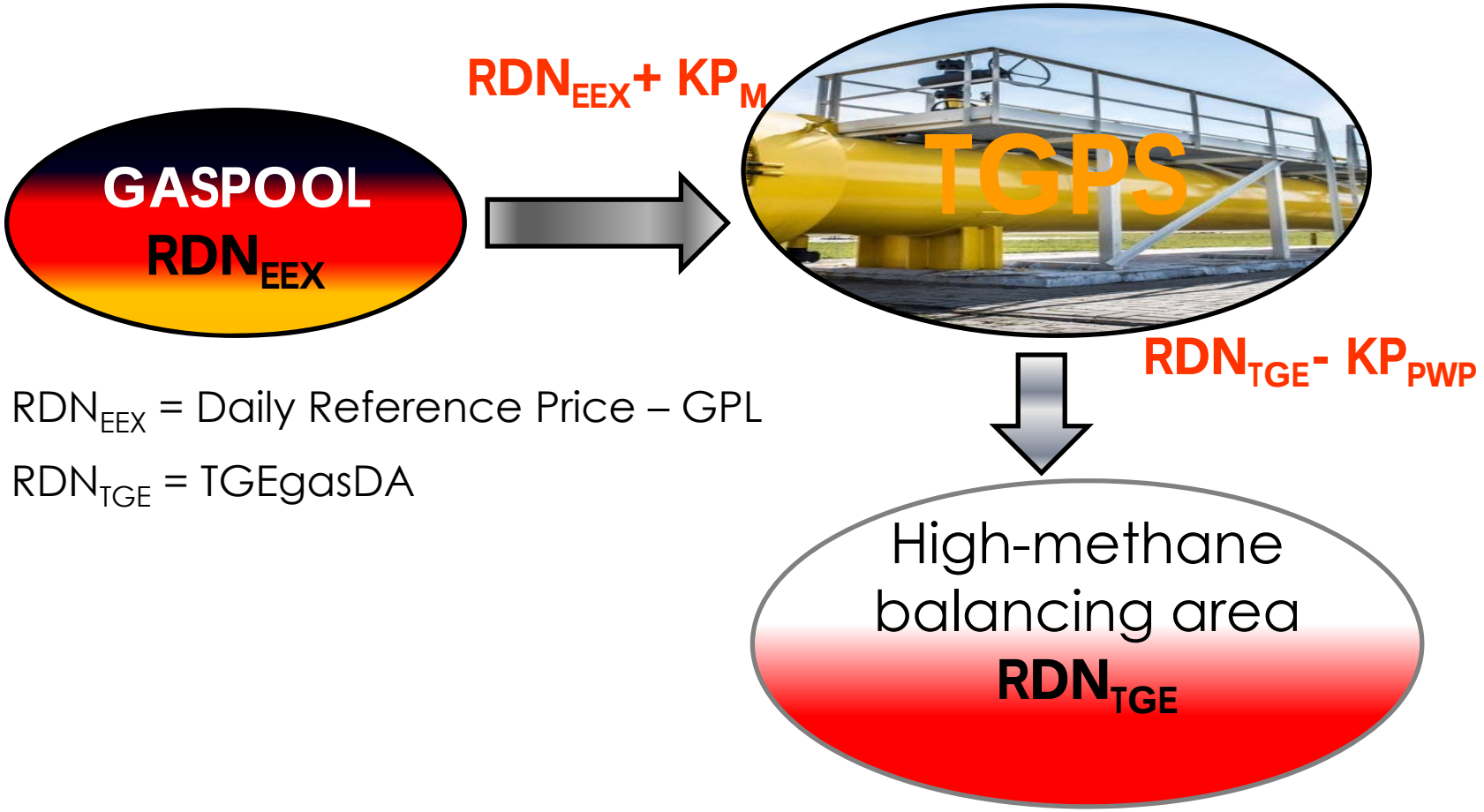
$KP_{PWP}$ – transportation costs under the daily product on a firm basis from TGPS to KSP through PWP

$KP_{M}$ – transportation costs under the daily product on a firm basis to TGPS through Mallnow point.

# Polish gas market – case study



## Interim imbalance charges – TGPS area




$RDN_{EEX}$ = Daily Reference Price – GPL

$RDN_{TGE}$ = TGEgasDA

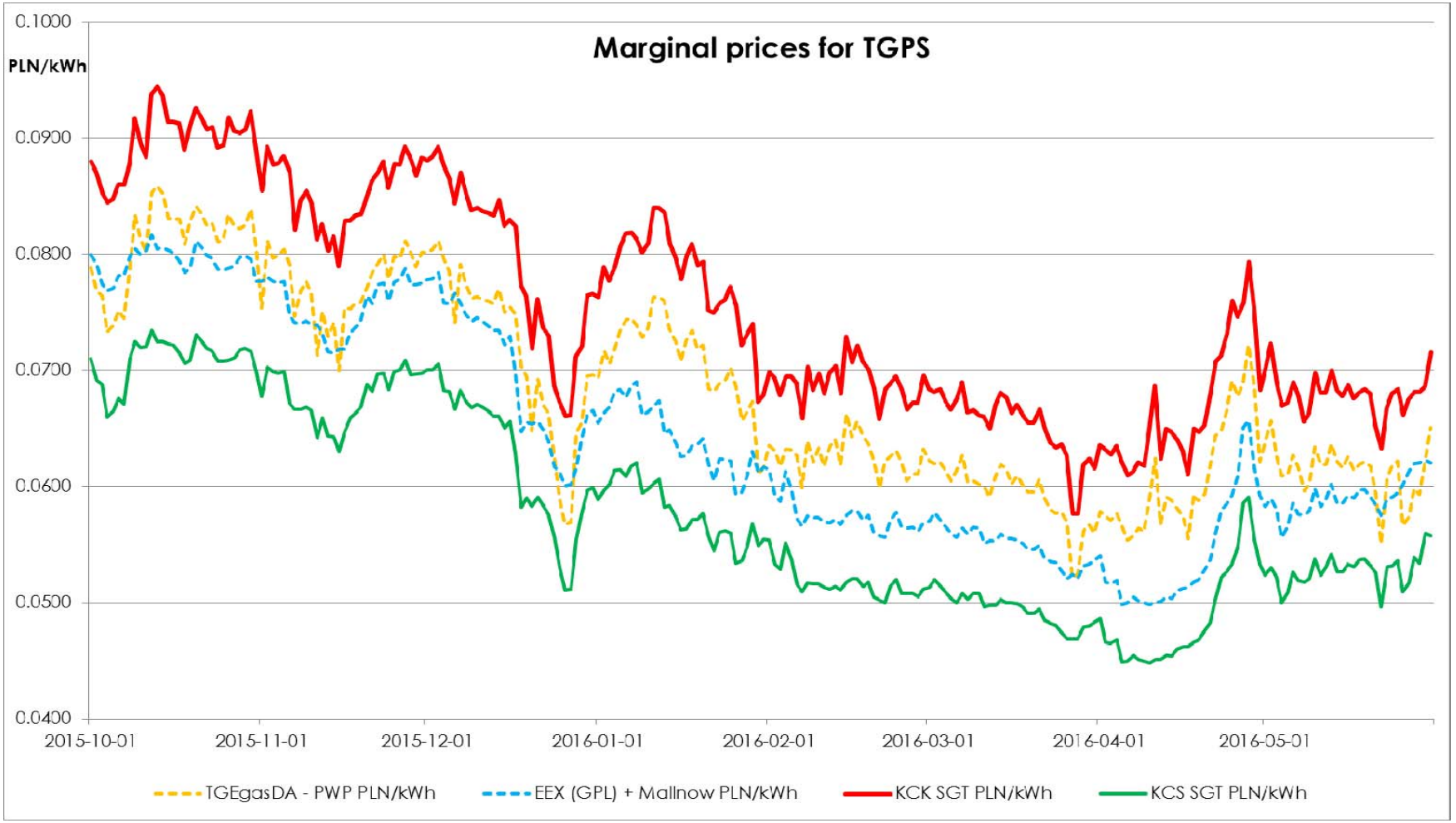
$$\mathbf{KCK_{SGT} = max[(RDN_{TGE} - KP_{PWP}), (RDN_{EEX} + KP_M)] \cdot 1,1}$$

$$\mathbf{KCS_{SGT} = min[(RDN_{TGE} - KP_{PWP}), (RDN_{EEX} + KP_M)] \cdot 0,9}$$

# Polish gas market – case study



## Interim imbalance charges – TGPS area



# Polish gas market – case study



## Tolerances - High-methane gas balancing area

- Time of application:
  - October 2015 – September 2017 – ?

- Tolerance is determined according to the following method:

$$\mathbf{DLN} = 5\% * \mathbf{MAX}\left[\frac{(\mathbf{R_{PWE}}+\mathbf{R_{PWY}})}{\mathbf{2}}; \mathbf{R_{PWY}}\right];$$

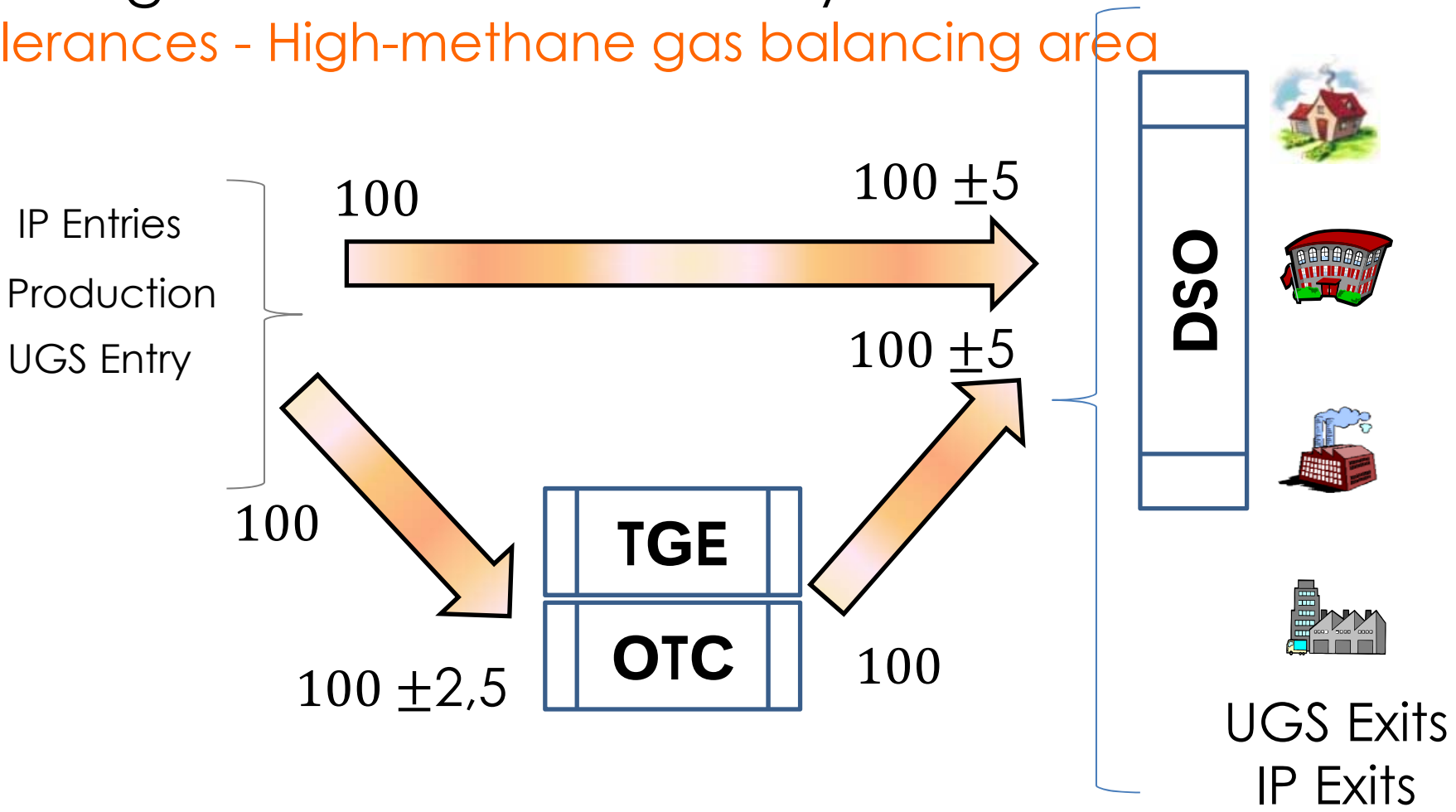
where

R – means the quantities of gas delivered/offtaken, as appropriate, at Entry/Exit Points (excluding virtual entry/exit points – Gas Exchange, OTC, Balancing Services Market)

5 % is the **current** level of tolerance

# Polish gas market – case study

## Tolerances - High-methane gas balancing area

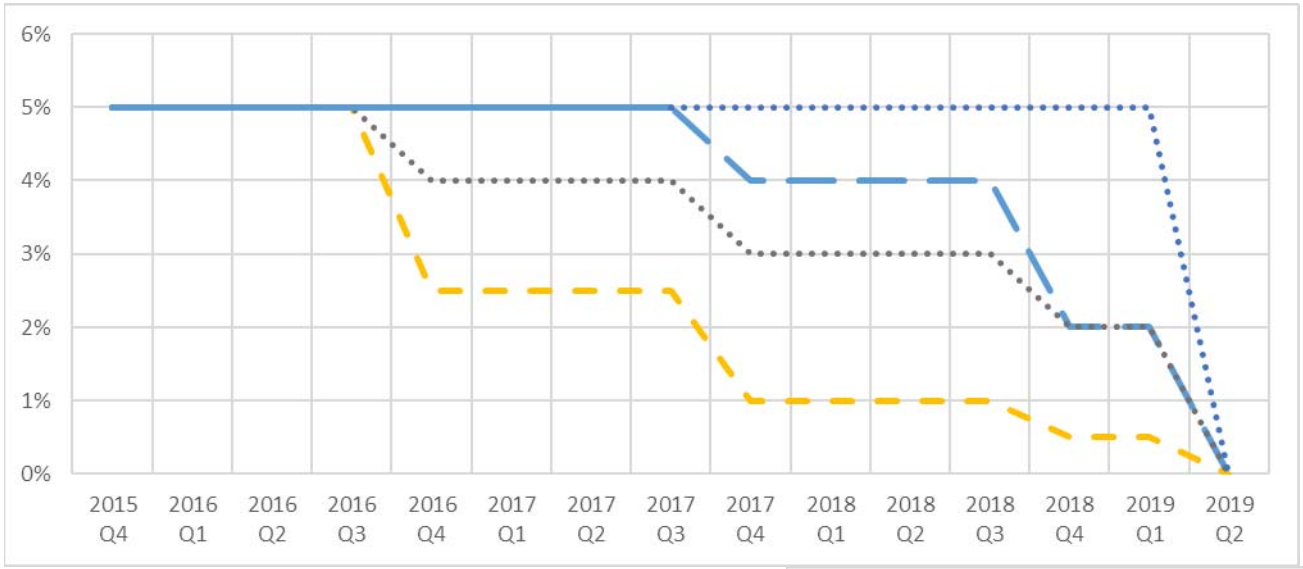


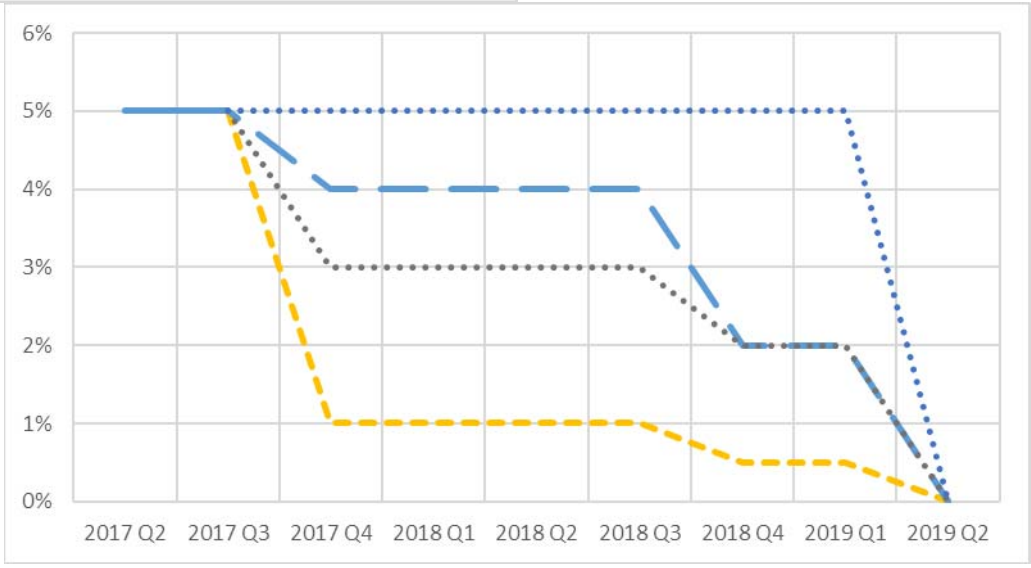

$$\mathbf{DLN} = \mathbf{0,05} * \mathbf{MAX}\left[\frac{(\mathbf{R_{PWE}} + \mathbf{R_{PWY}})}{\mathbf{2}}; \mathbf{R_{PWY}}\right]$$

# Polish gas market – case study



## Tolerances – Timeline

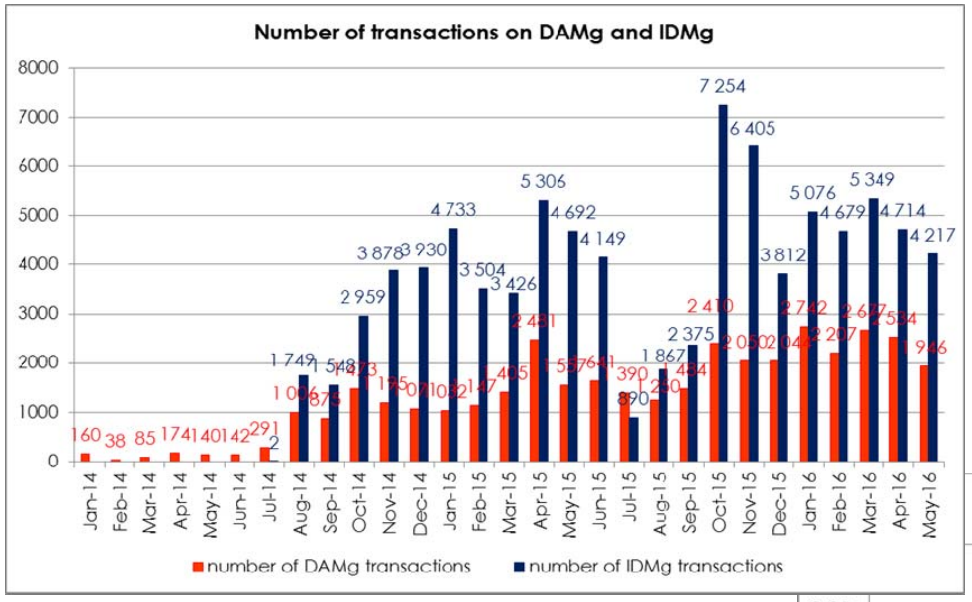


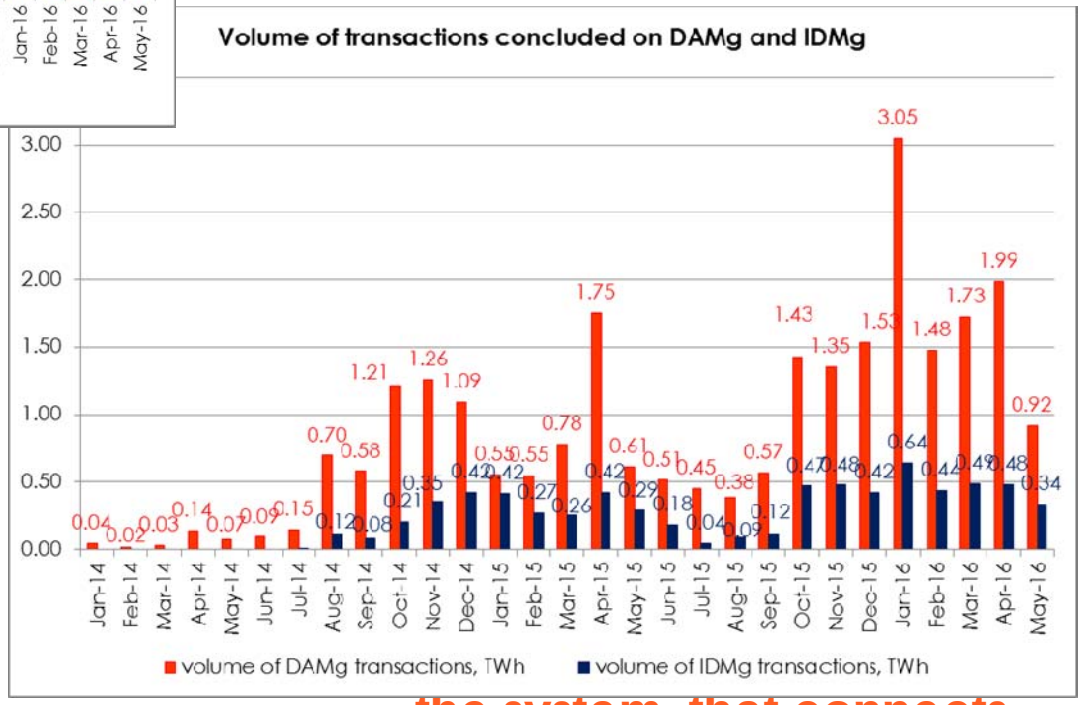



# Polish gas market – case study



## Interim measures - results



# *Interim measures*
## Summary

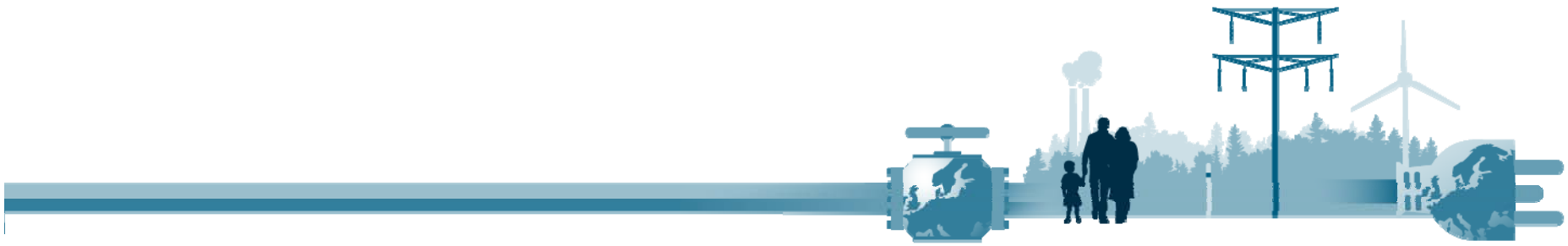


- What is the goal:
  - Liquid and competitive market or
  - Implementation of BAL NC
- Planning should take into consideration all local market circumstances
- Most important is the market players' behavior
- Creation of the completive market in administrative way is beyond the power of TSO

# Balancing in Denmark

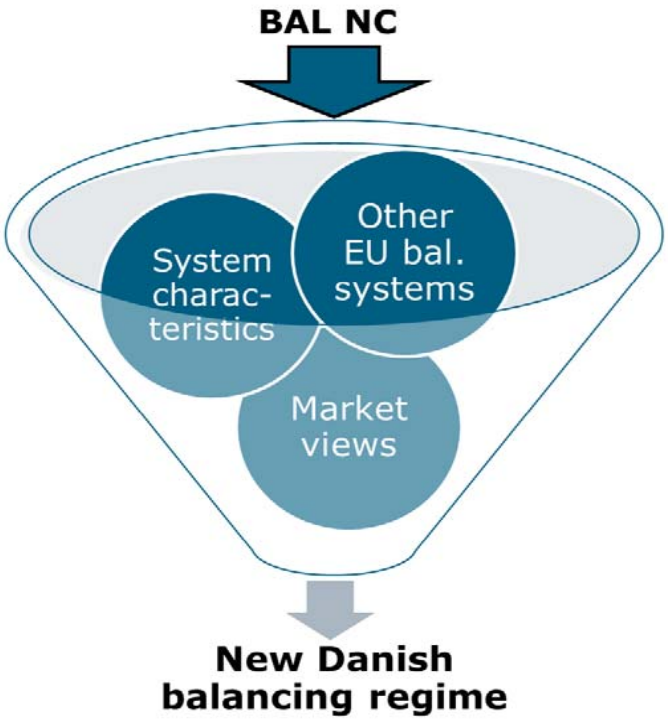
## ACER/ENTSOG workshop on balancing 9 November 2016

*Customers and Market Development, Energinet.dk*



# Chicken or egg?

# Approach


BAL NC
System charac-teristics
Other EU bal. systems
Market views
New Danish balancing regime

# Evolution

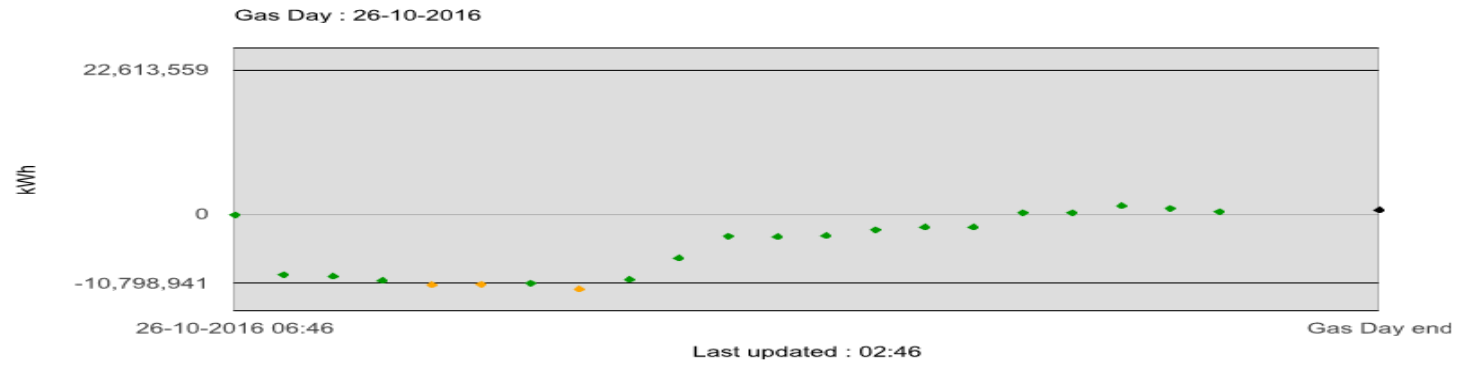
- Before 2013: small steps towards balancing code
- 1 October 2013: daily metered data 2 times a day
- 1 October 2014: THE BIG BANG: the green zone, E(SCB) and 95 per cent compliance with code
- November 2014: adjustment of green zone
- 1 October 2015: nDMS forecasts in place 100 per cent compliance; asymmetric green zone
- 1 October 2016: adjustments based on evaluation (within-day pricing, yellow zone trade behavior)

# The green zone & system commercial balance

**System Commercial Balance Chart**

**Choose Gas Day**

Gas Day  Prev  26-10-2016  Next  OK




◆ : 27-10-2016 11:21, SCB, Non valid ordinary, Balance kWh : 751,247

**Energinet.dk Yellow Zone trade list**

**Energinet.dk yellow zone marginal prices**

**Created (time for last calculation) :** 27-10-2016 12:00

**Marginal selling price Eur/MWh :**

**Marginal purchase price Eur/MWh :** 17.350

# Achievements so far

- Flexible daily-based balancing system
- No intra-day restrictions or settlements
- Hourly data on total market- balance position
- Market-based settlement end-of-day
- Lowest possible small adjustment (0.5 %)
- Within-day data on hourly metered sites and forecast on non-daily metered 5 times during the gas day
- **Market based balancing**

# Chicken or egg – answer (?)

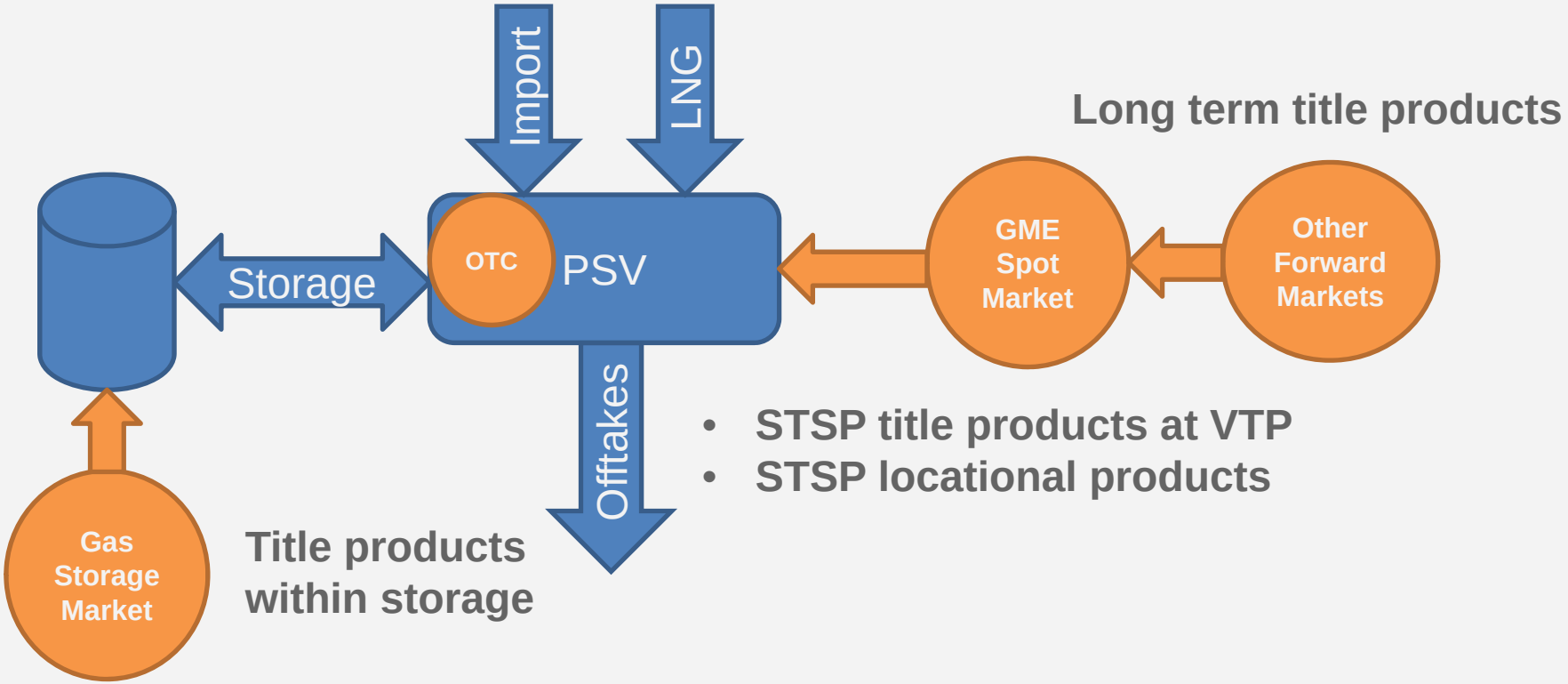
Autorità per l'energia elettrica il gas e il sistema idrico

# Balancing Network Code implementation First results

*Wholesale Gas Market Unit*

This presentation is not an official document of Autorità per l'energia elettrica, il gas e il sistema idrico

# Market structure



# Implementation of BAL NC in Italy

- Starting date: 1st October 2016
- Switch from the old system to the new regime in one day
- No interim measures, full implementation

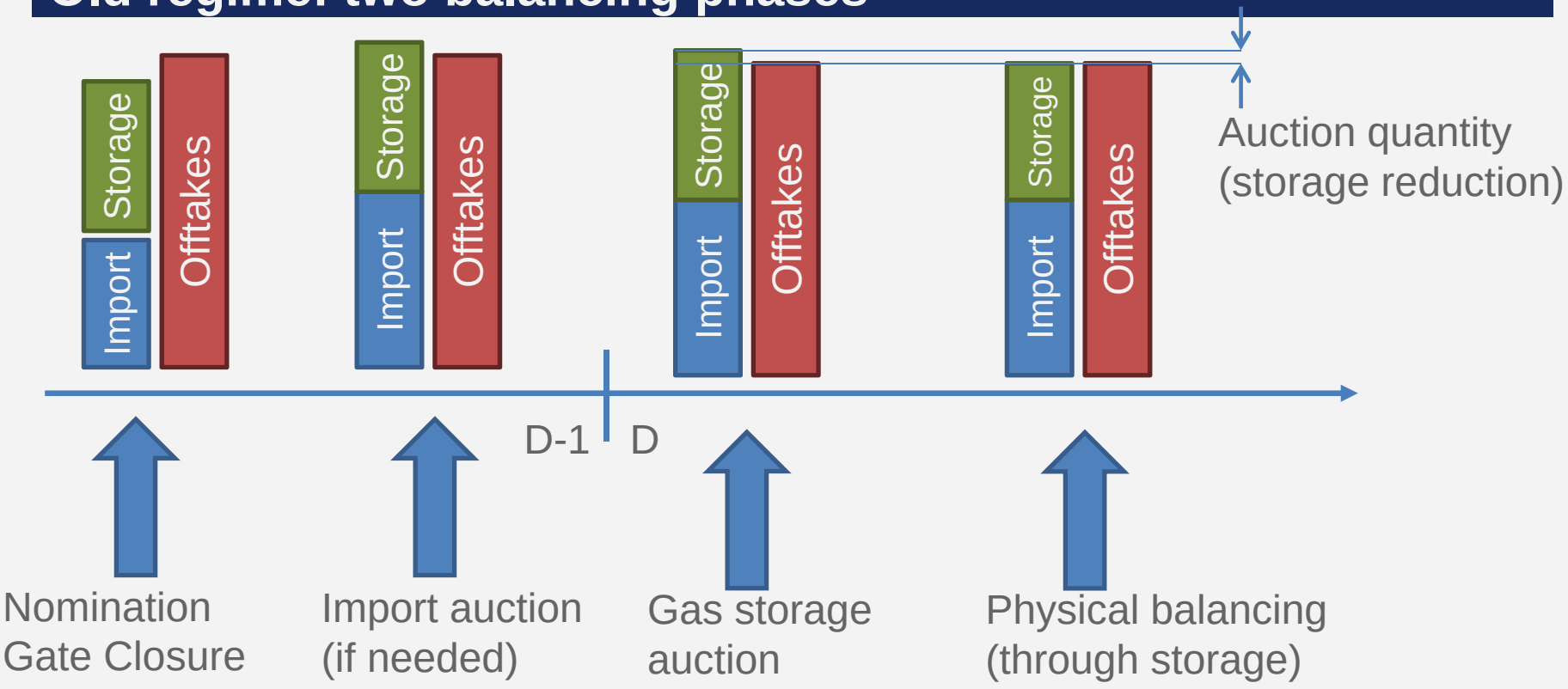
This was possible because of:

- pre-existing market based balancing regime
- pre-existing short-term products market

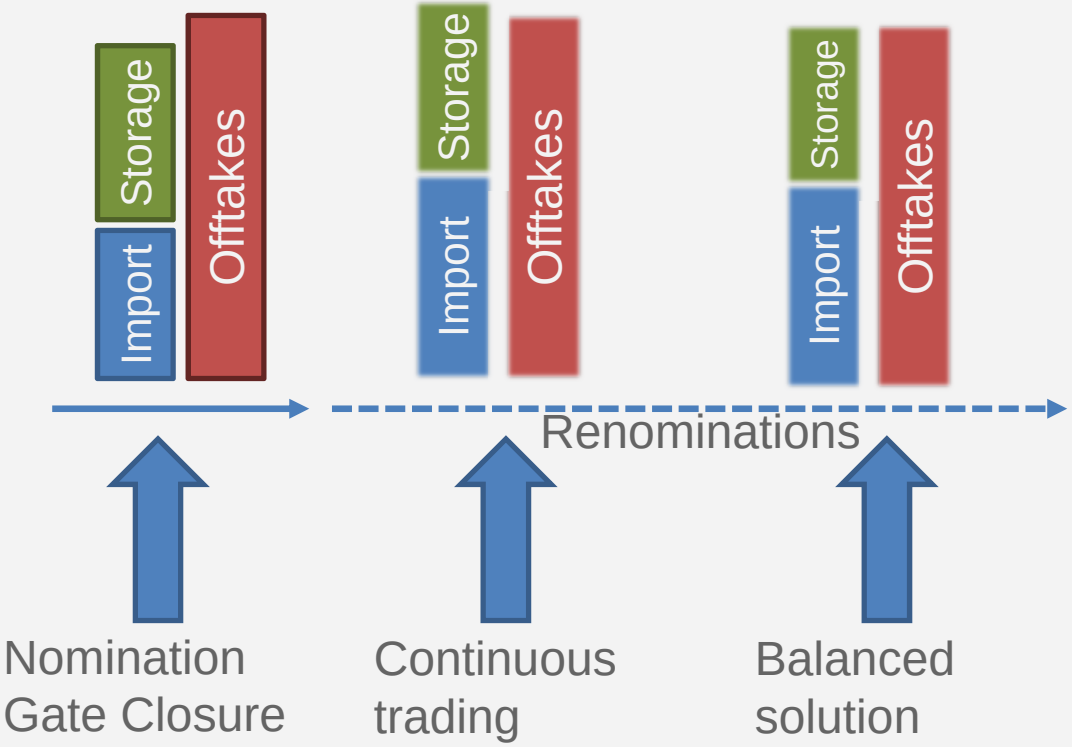
# Main features

- Title and locational products
- Balancing services foreseen but not yet implemented
- Dual price: SMPbuy or SMPsell or SAP ± Small Adjustment
- Base case information provision model
- Hourly information about:
  - ✓ intakes and offtakes
  - ✓ line-pack trend
  - ✓ end-of-the-day forecast
- Hourly rinomination and trading notifications

# Old regime: two balancing phases



# New regime




- Competition among gas sources during the gas-day

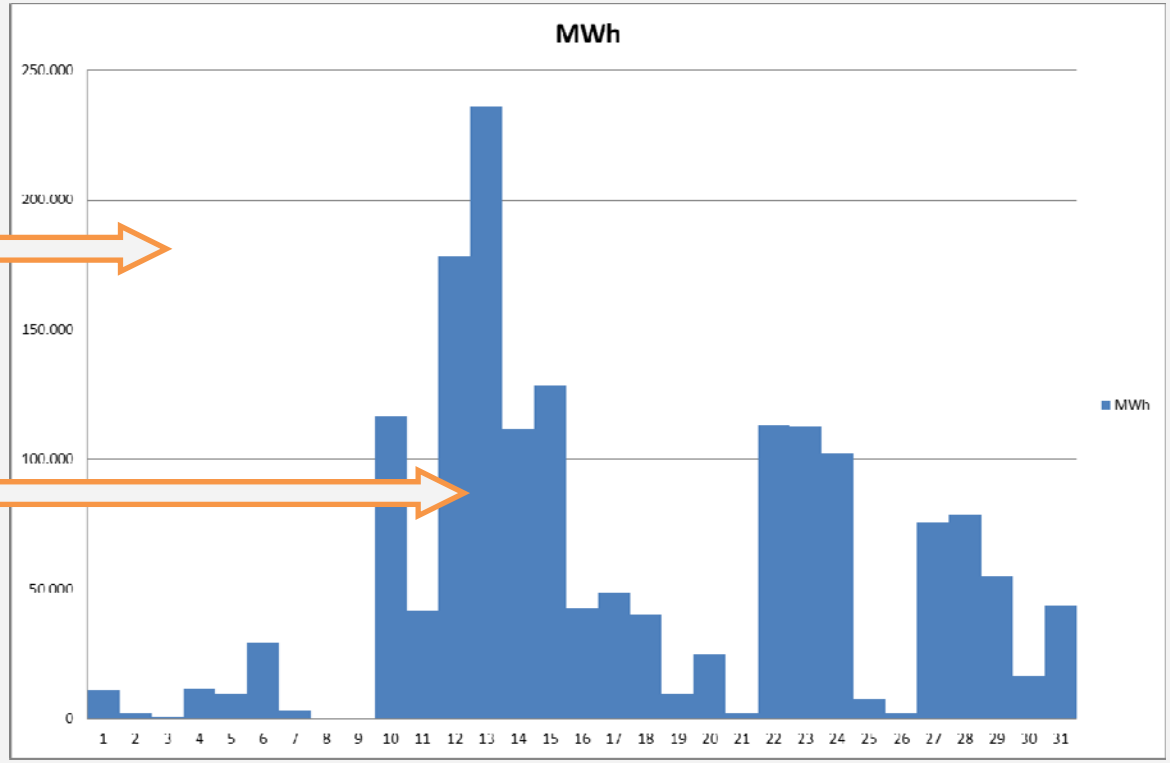
- needs an explicit congestion management mechanism

# First month of operation – preliminary observations

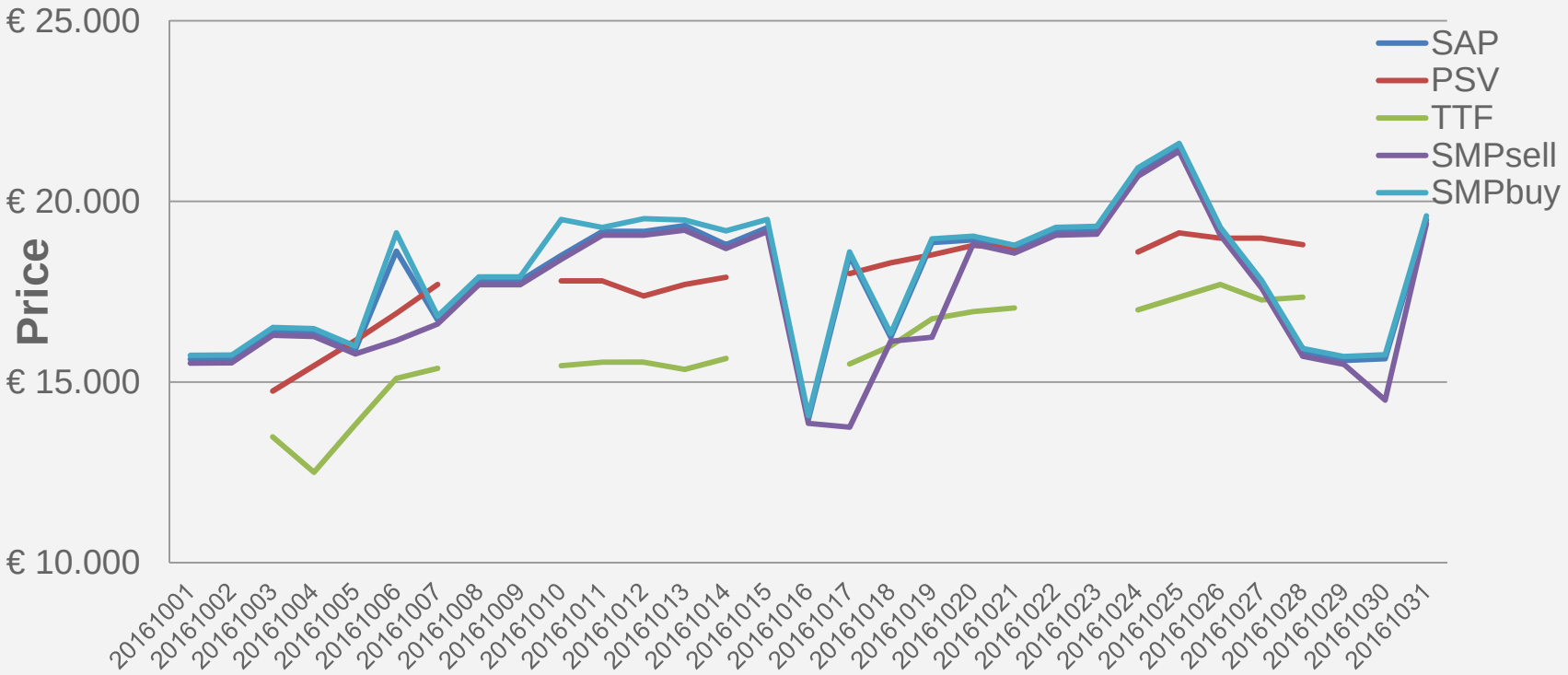
## Infraday market quantities

**Very first days**
- Balanced network
- No TSO intervention
- Shippers acted with caution

- Lowering temperature
- Increasing activity
- Residual role of the TSO



# Prices - infraday market



# Incentives

TSO neutrality with incentives

1. Network offtakes forecast (forecast vs. actual)
2. Efficient balancing actions (difference between SMPbuy SMPsell vs. SAP)
3. Line-pack + operational storage (use of them within a predefined range)

- Floor to yearly overall incentive: -5 million euros
- First revision and fine tuning after six months

# Conclusions

- Full implementation of the new regime since the 1st October 2016
- Competition among sources of flexible gas
- Daily capacity auctions for congestion management

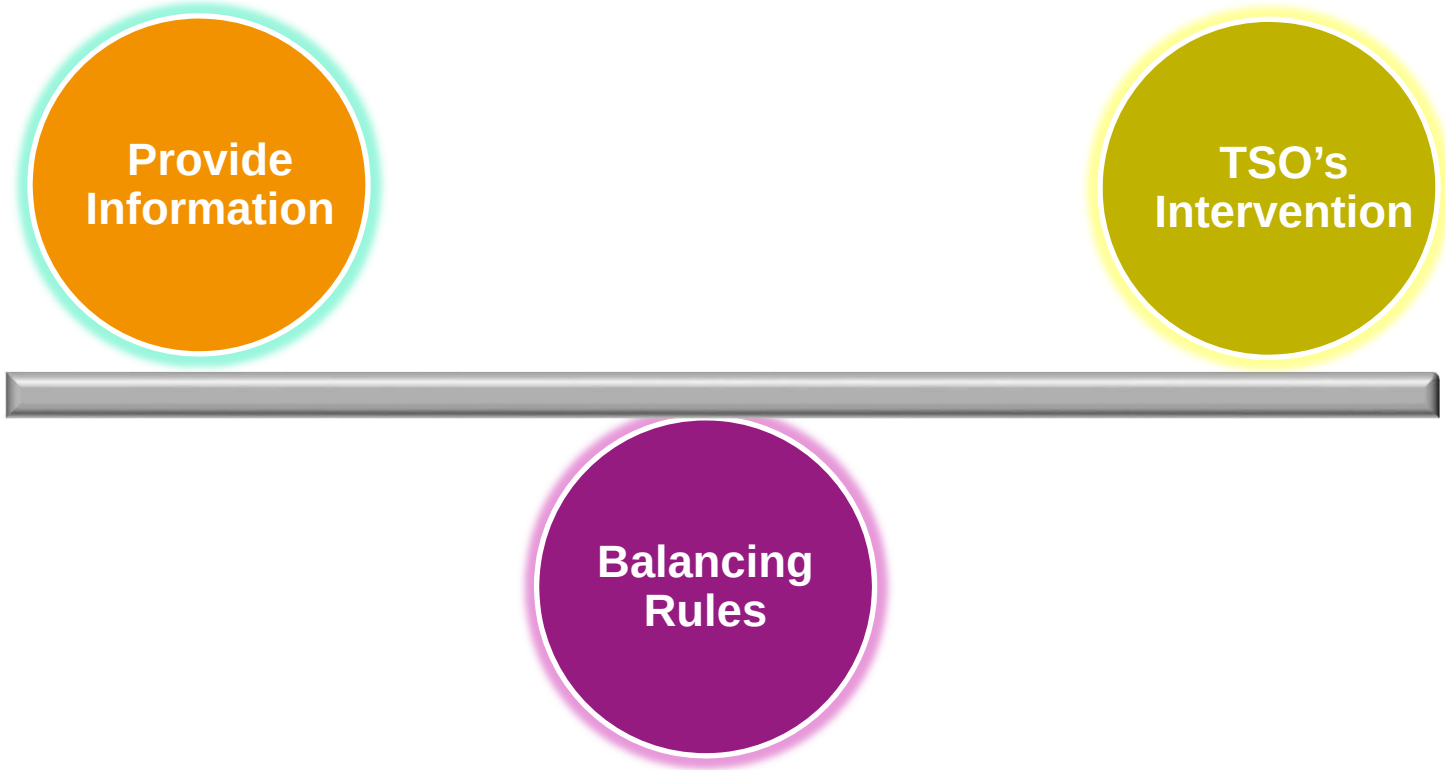
Points of attention

- System not yet under stress conditions (mild weather)
- Start-up period with limited exchanges in the market (but not limited liquidity of gas: users still prefer OTC)


# Balancing

## Gas system information provision

9 nov 2016




# A market-oriented balancing regime as per BAL NC since 1st October 2015

# GRTgaz balancing in a nutshell


**-> 2 balancing areas including 3 balancing zones**

- ✓ North area (= GRTgaz North balancing zone + PEG nord VTP)
- ✓ TRS area (= GRTgaz South balancing zone + TIGF balancing zone + TRS VTP)
- ✓ Imbalance settlements per balancing zone (GRTgaz North & GRTgaz South)

**-> « 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 TRANS@ctions

GRTgaz

# Information provision


**Information published per balancing zone related to the status of the system:**

*Every hour*: ***End-of-Day Projected Closing Linepack*** (indicator of the network's tension)

*Hourly publication* of the ***Weighted Average Price*** and the ***Marginal Price***

*Updated every hour*, the ***global consumption forecast***, categorized by type of consumers.

Via Smart GRTgaz Transparency, every day

Via TRANS@ctions

*Last refresh : 26/10/2016 10:40*

Definitions

| South | Projected Closing line pack value (GWh) |
|---|---|
| **Projected Closing line pack value at the end of current gasday (withinday)** | 797,091 |
| **Projected Closing line pack value at the end of next gasday (dayahead)** | |

## South - Projected Closing line pack - From 25-10-2016

*Last refresh : 26/10/2016 11:16*

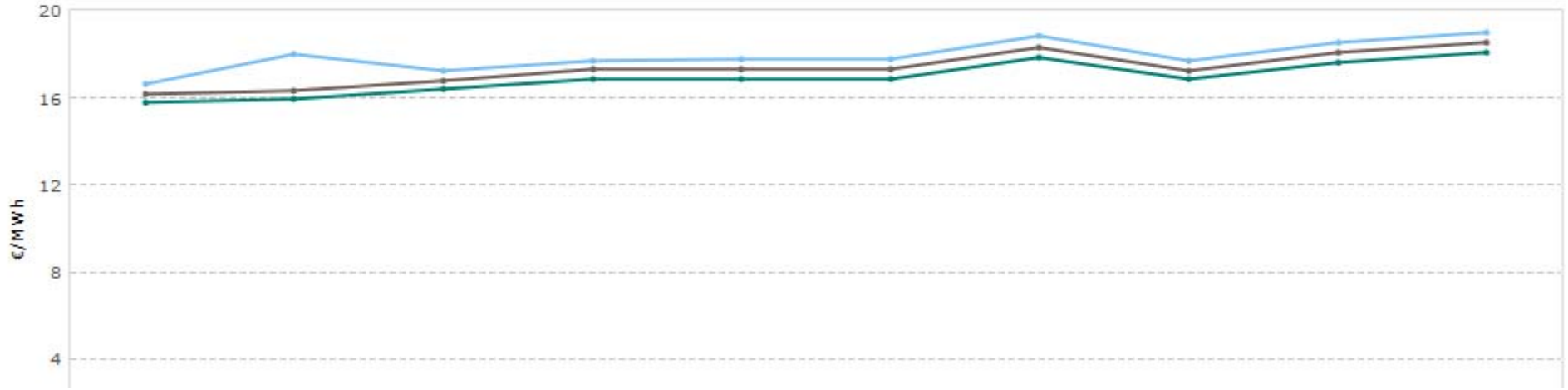
Definitions

## Price of the last 5 days

| Date | Average price (€/MWh) | | D-1 evolution | | Difference | Marginal buying price (€/MWh) | | Marginal selling price (€/MWh) | |
|---|---|---|---|---|---|---|---|---|---|
| | North | South | North | South | North/South | North | South | North | South |
| 22/10/2016 | 16.913 | 18.305 | -0.165 | 0.994 | -1.392 | 17.336 | 18.825 | 16.490 | 17.847 |
| 23/10/2016 | 16.889 | 17.251 | -0.024 | -1.054 | -0.362 | 17.311 | 17.682 | 16.467 | 16.820 |
| 24/10/2016 | 17.662 | 18.061 | 0.773 | 0.810 | -0.399 | 18.104 | 18.513 | 17.220 | 17.609 |
| 25/10/2016 | 17.662 | 18.560 | 0.000 | 0.499 | -0.898 | 18.104 | 19.024 | 17.220 | 18.096 |
| 26/10/2016 | 17.654 | 18.519 | -0.008 | -0.041 | -0.865 | 18.095 | 18.982 | 17.213 | 18.056 |

*Last update of the price : 26/10 à 03:04*

## South - Trend of prices from 16-10-2016 to 25-10-2016



Balancing › Non daily meter forecast › South

*Last refresh : 26/10/2016 11:11*

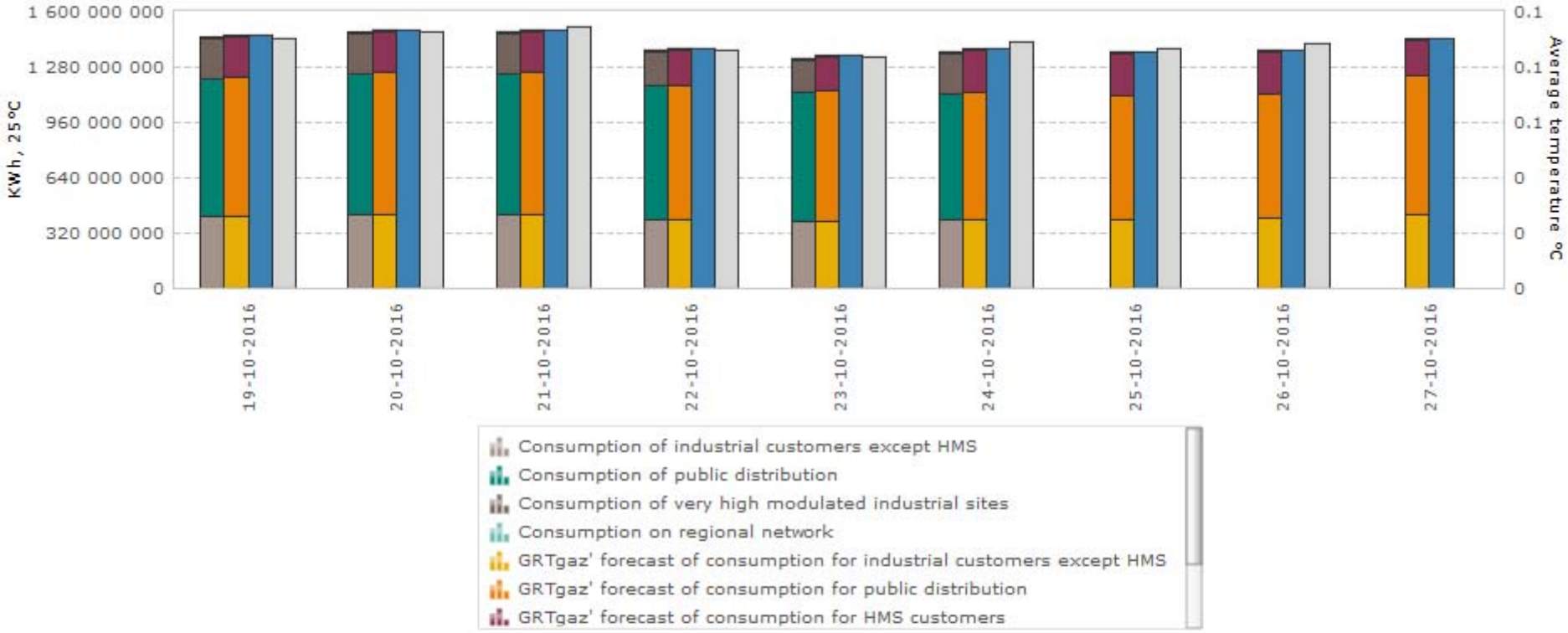
Definitions

| Gas day | k0 value |
|---|---|
| Current | 1.108527 |
| Coming | |

## South - Public network data - From 26-10-2016 to 27-10-2016

| Data concerning selected gas day | | | | |
|---|---|---|---|---|
| Gas day | Forecast of consumption on public distribution network | Forecast of consumption of profiled clients on public distribution network | Forecast of consumption of unprofiled clients on public distribution network | k0 |
| **26/10/2016** | 176805653 | 127837616 | 48968037 | 1.108527 |
| **27/10/2016** | | | | |

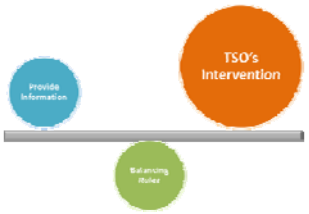
## Consumption > Daily data > All areas - From 19-10-2016 to 27-10-2016




For a given gasday, GRTgaz updates its forecast of consumption for each category of clients (industrials excluding HMS, HMS, PIRR, distribution) up to 8 times.

- **Forecast 1** is estimated on **D-5**
- **Forecast 2** is estimated on **D-4**
- **Forecast 3** is estimated on **D-3**
- **Forecast 4** is estimated on **D-2**
- **Forecast 5** is estimated on **D-1 before 5pm**
- **Forecast 6** is estimated on **D-1 after 5pm**
- **Forecast 7** is estimated **intraday before 3pm**
- **Forecast 8** is estimated **intraday after 3pm**

# Trade of title products by GRTgaz

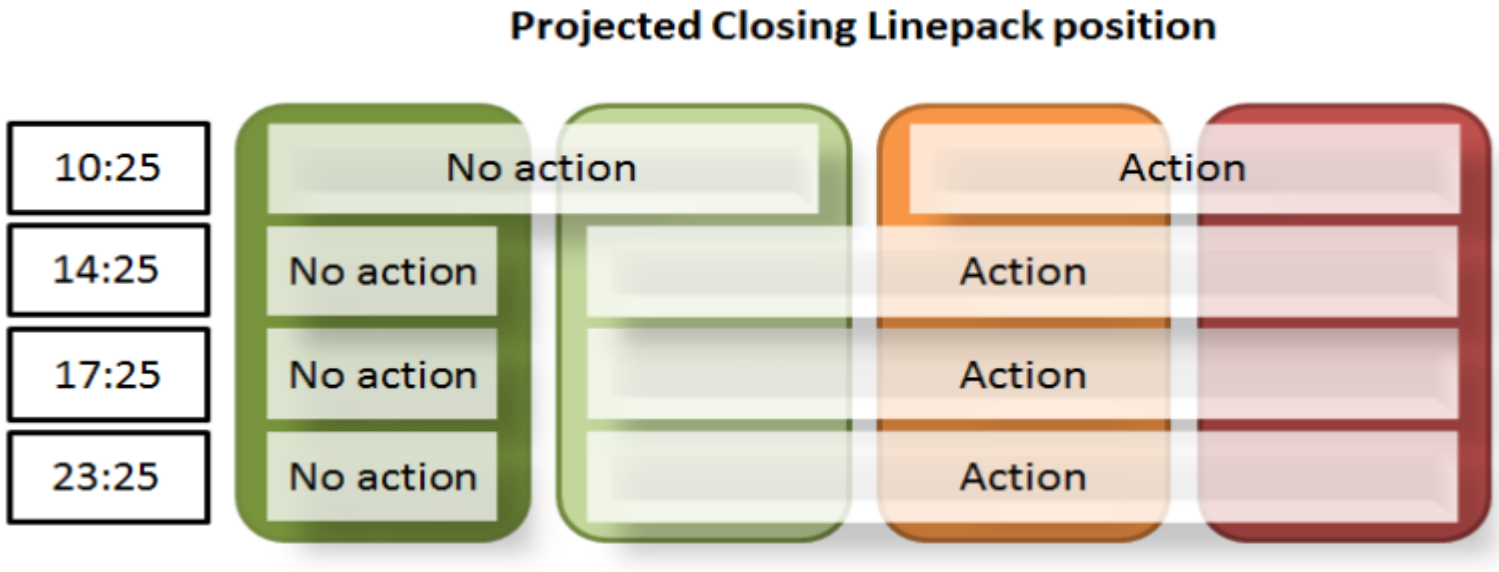



**Why ?** Incentivize, by initiating price variations in order to keep the EOD Projected Closing Linepack in the Dark Green area

**When ?** 24/7, intervention windows, currently 4/day

**Where ?** PEGAS Gas Spot : Within-Day product

**How ?** Progressive actions depending on the EOD planned linepack and the time:



# Trade of locational products by GRTgaz

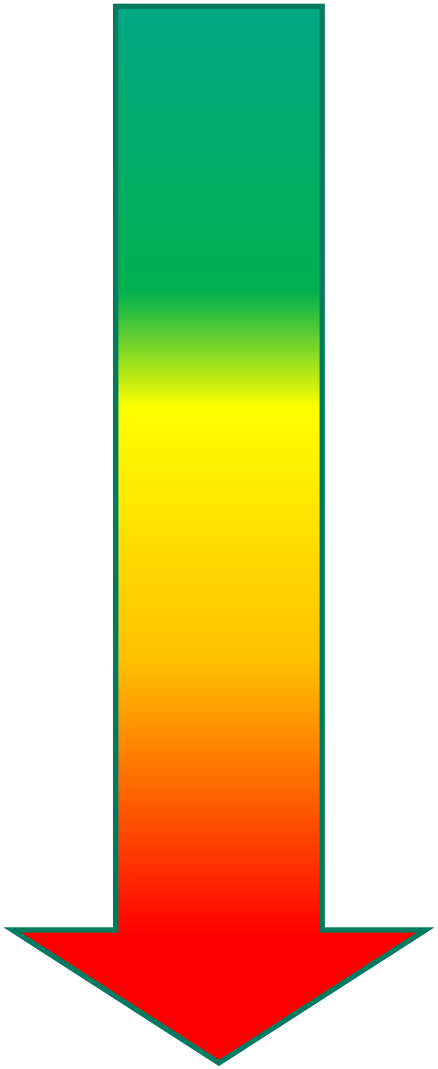

**Why ?** Keeping the EOD Projected Closing Linepack in the Dark Green area if imbalance persists and remains critical

**When ?** Every day, 2 windows end of afternoon and beginning of night

**Where ?** PEGAS Gas Spot : Locational Product

**How ?** Tender for qualified shippers bidding in 30 minutes

# Summary



## Scheduling

*For the network most efficient operation*

## Information provision

*On the status of the system (global information), on metered off-takes of consumers (personal information for shippers)*

## Incentivize

*By trading title products in order to influence the marginal price if the system tends to go out of its operational limits*

## Interventions

*Via locational products if incentive is not sufficient (merit order)*


GRTgaz
Connecter les énergies d'avenir
grtgaz.com

gasunie transport services

Warsaw, 9 November 2016

# Aggregated imbalance position (an exemplary case)

## ACER-ENTSOG Joint Workshop on Gas Balancing Code implementation

# Agenda

- The obligation from the Network Code: information provison
- Individual shipper POSition and System Balance Signal
- Method of delivering the information: Gasport
- How do we calculate the DM and NDM position per shipper?
- Programmes and damping to lower the risc for Network users' to be exposed to TSO balancing actions

# Information Provision

- To allow the shippers **to balance their portfolios**,
  information is provided to them regarding their inputs and off-takes

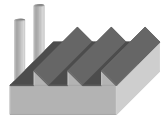
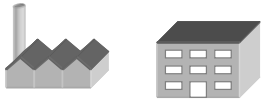
- **Allocation** information provided in order to calculate daily imbalance quantity
  - reconciliation between the allocations is out of scope

- **3 classes of information** available
  - intraday metered
  - daily metered
  - non daily metered

- One of **3 information models** must be applied within each balancing zone:
  - base case, variant 1 and variant 2

# Information Provision

GTS has chosen to use variant 1

| | day ahead | within day | after the day |
|---|---|---|---|
| intra day metered  | not applicable | measured flows at least twice per day | meter reading |
| daily metered  | not applicable | not applicable<br>except variant 1: apportionment of measured flows at least twice per day | meter reading |
| non daily metered | | | |
| base case  | forecast | forecast at least twice per day | final forecast |
| variant 1  | not applicable | apportionment of measured flows at least twice per day | not applicable |
| variant 2  | forecast | not applicable | not applicable |

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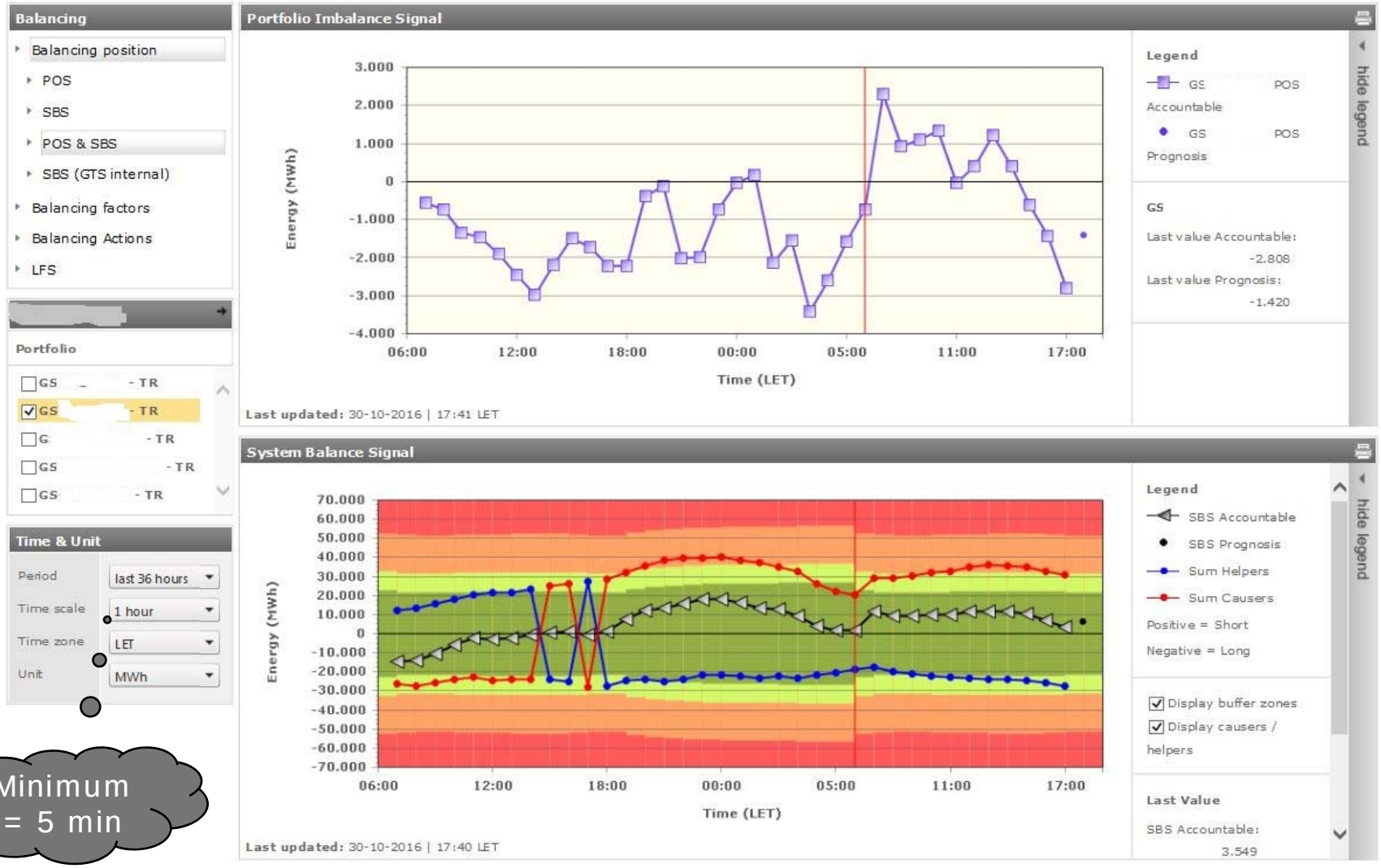
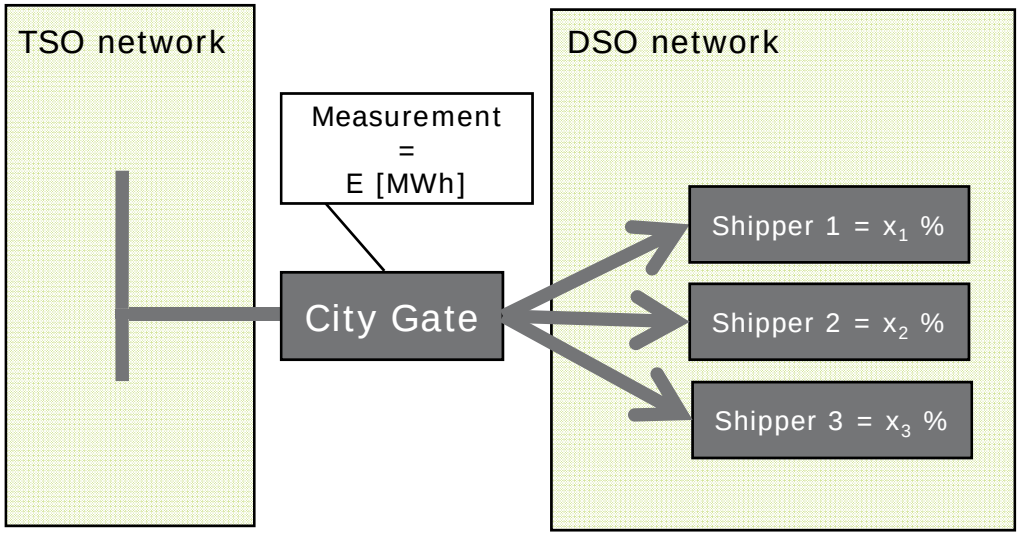
# Individual shipper Position and System Balance Signal

- POS = **PO**rtfolio imbalance **S**ignal
  - accumulation of hourly imbalances
- SBS = **S**ystem **B**alance **S**ignal
  - sum of POSs
  - SBS is the signal that is used to determine whether GTS will take balancing actions
- (Both) based on energy, not on volume

# Method of delivering the information: Gasport or B2B



# Calculation of the DM and NDM position at City gates




- Percentages differ per hour
- Percentages based on categories and number of connections per shipper
- Categories indicate relation between temperature and gas consumption

$$\text{Allocation for shipper } i = E * \frac{x_i}{x_1 + x_2 + x_3}$$

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# Programmes and damping to lower the risc for Network users' to be exposed to TSO balancing actions

All parties that are feeding and/or off-taking gas have to submit a **programme**

- Programmme = the hourly gas flow ***prediction*** (entry/exit) for next day of the shipper
- per day, volume neutral over the day
- The imbalance of the shipper is calculated per hour as the deviation from the programme:

$$Imb_h = Entry_h - Entry_{prog,h} - (Exit_h - Exit_{prog,h})$$

- Because programme is volume neutral over the day, the daily imbalance = $Entry_{day} - Exit_{day}$

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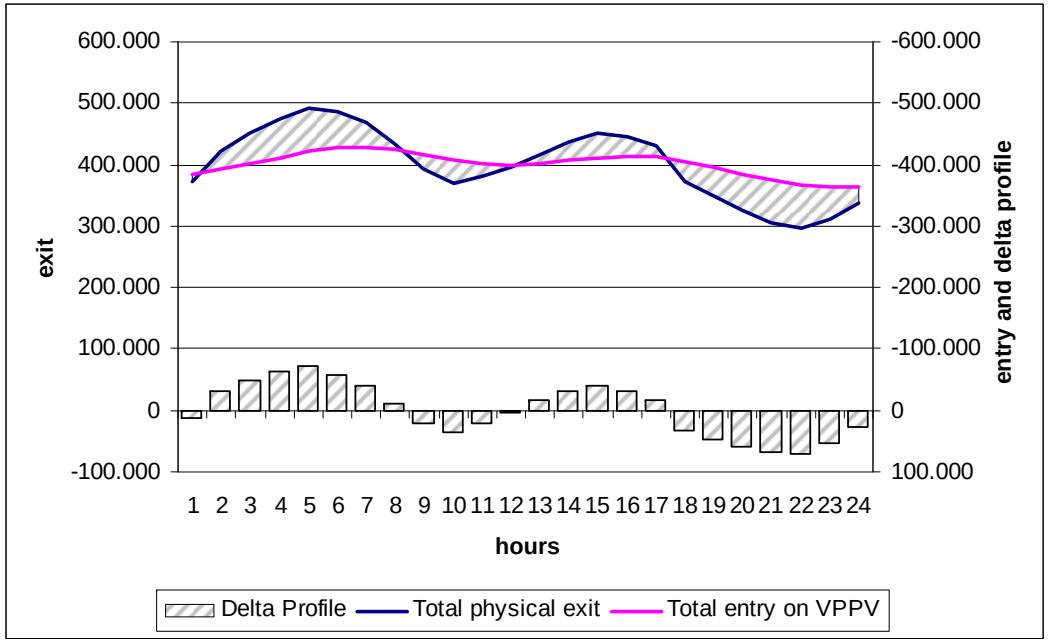
Programmes and damping to lower the risc for Network users' to be exposed to TSO balancing actions

# Damping

- Damping formula makes sure that for every hour the combination of entry and exit "matches" with the physical conditions of the gas transport network.



# Wrap up

- GTS implemented the information provision obligation by delivering a POS (individual imbalance) and SBS (system imbalance) on an 5 minute basis to network users
- NDM and DM information is covered in the same information stream by distributing the measurement at the city gate amongst the shippers that are delivering in the DSO system
- Damping is used in the calculation of the hourly imbalances and will increase the green zone. This increase will lower the risk for network users to be exposed to balancing actions.

# TSO Balancing Actions

9th November 2016

# Gas Transmission in Great Britain

## One of Europe's Largest Markets

- ~8,200km pipeline
- Operating pressure 70 - 94bar

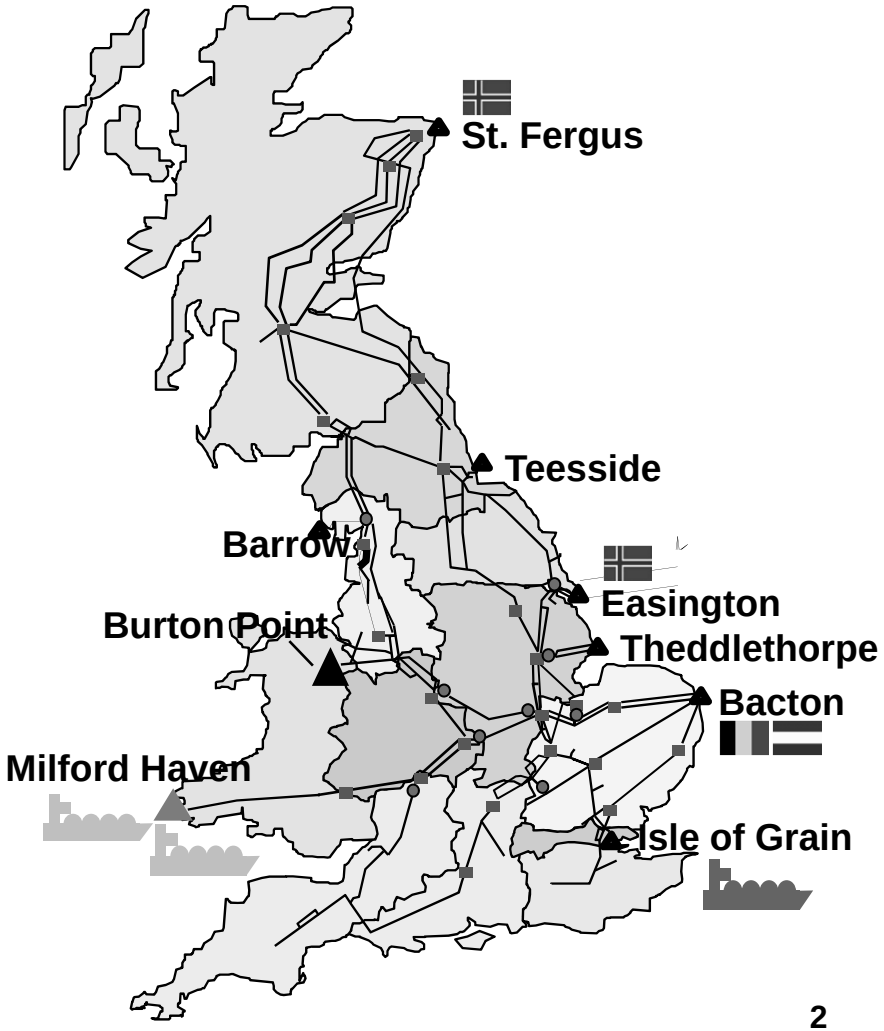
- 7 Beach Reception Terminals
- 3 LNG Importation Terminals
- 3 Interconnectors
- 10 storage sites
- 23 compressor stations

- 200+ Exit Points
- 12 Distribution Networks

**Highest Demand Day: 465mcm (~4600GWh, 16bcf/d)**

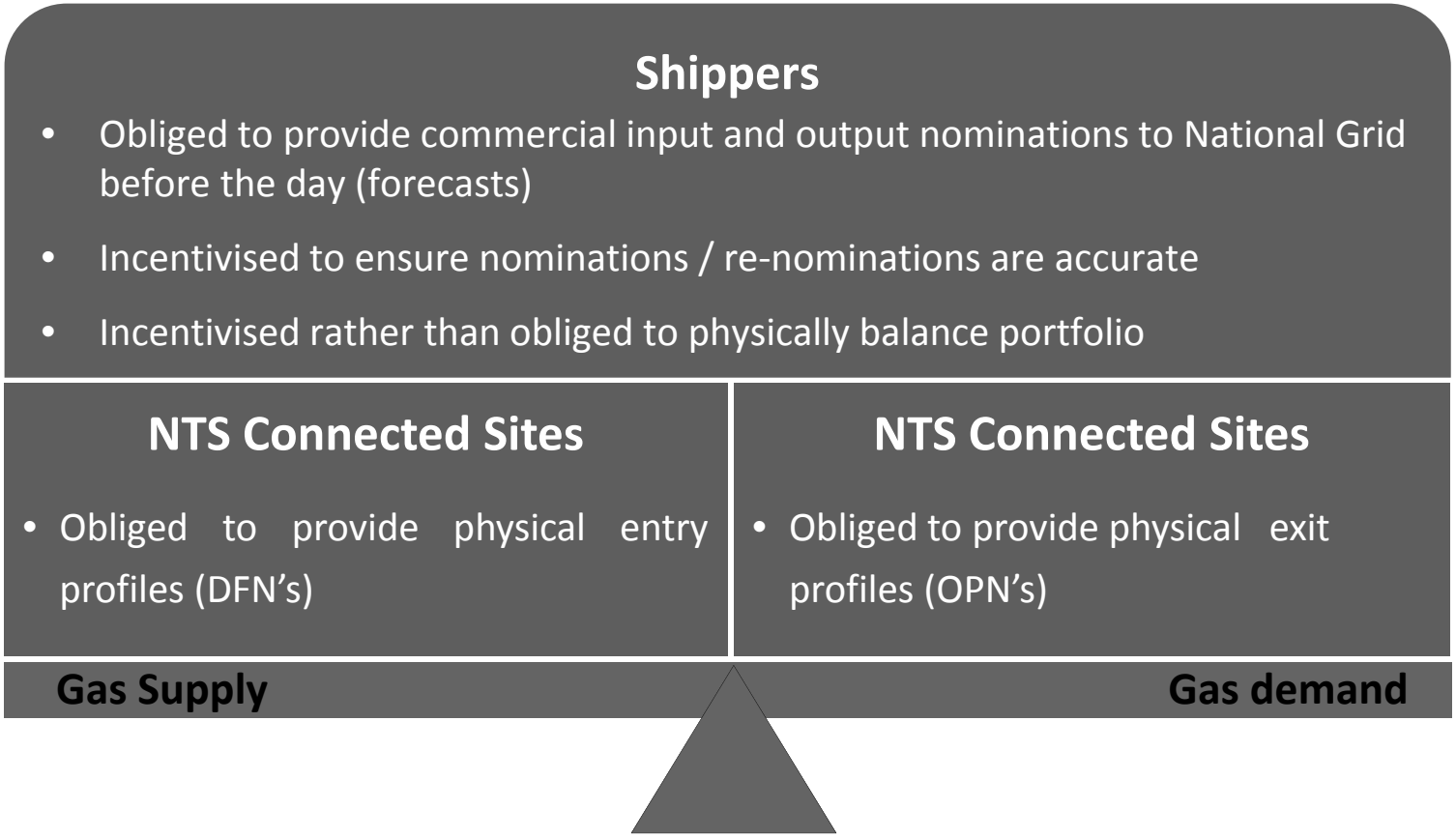
**Lowest Demand Day: 117mcm (~1165GWh)**

**Annual Throughput: 85bcm (~830TWh, 3000 bcf)**



# GB Balancing Regime

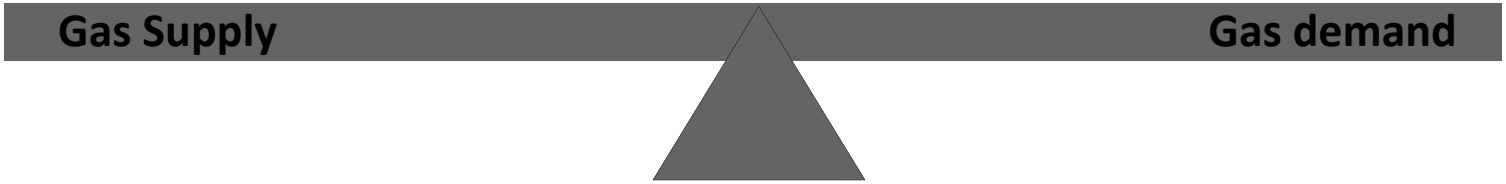
# Balancing Responsibilities



# Balancing Responsibilities

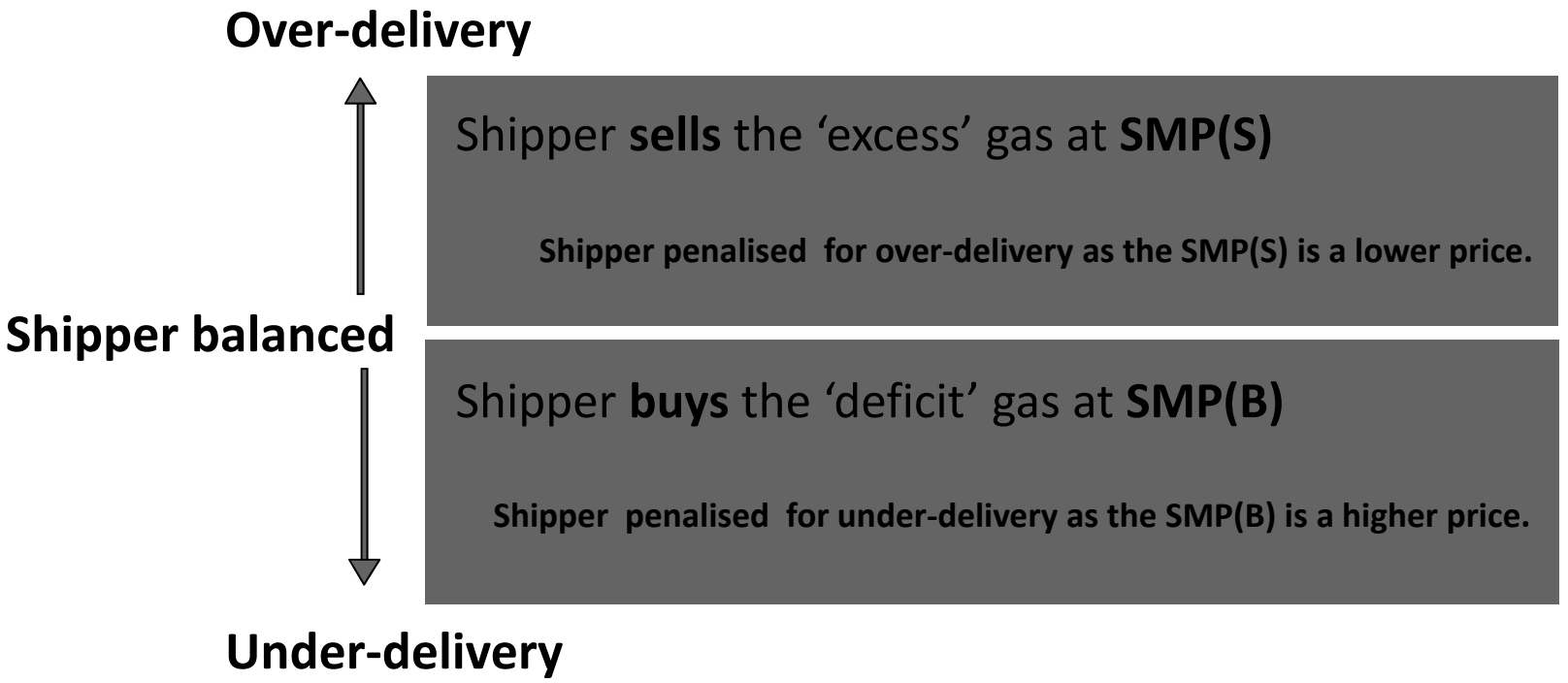
## National Grid's Role – Residual Balancer

- Ensure NTS balance is within safe operating limits
  - NG balancing trade actions at times of forecast imbalance
  - Cannot 'instruct' users
  - NG neutral to direct costs of system balancing, but
  - NG incentivised to ensure
    - Daily change in line pack < 2.8mcm
    - Impact of actions taken on price is minimised



# Shipper Imbalance Cashout

Shippers incentivised to **balance** through the **Imbalance Cashout** process:



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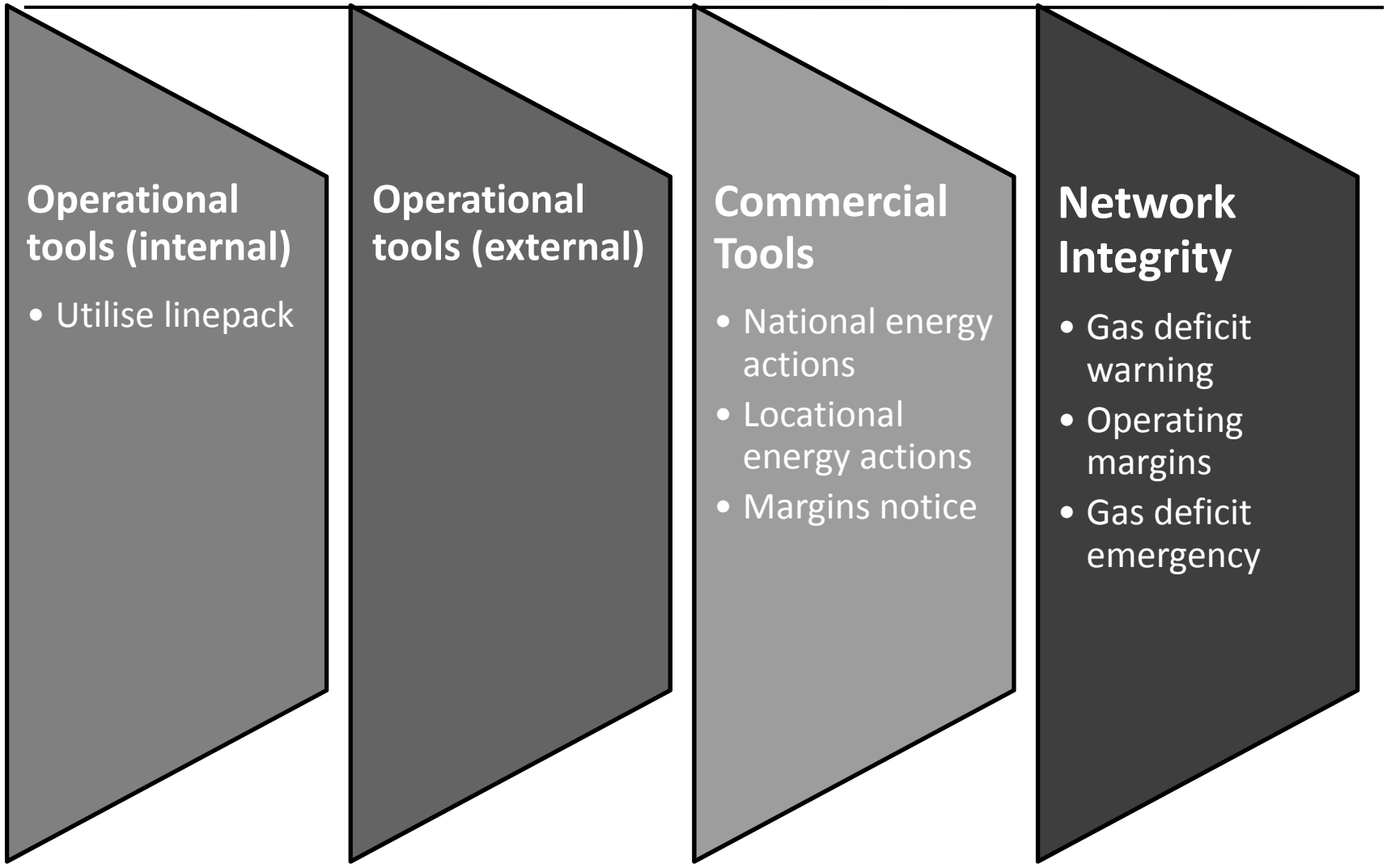
# System Operator Actions Balancing



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# TSO Residual Balancing Action Trends

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# Key themes

The TSO is taking residual balancing actions on fewer days

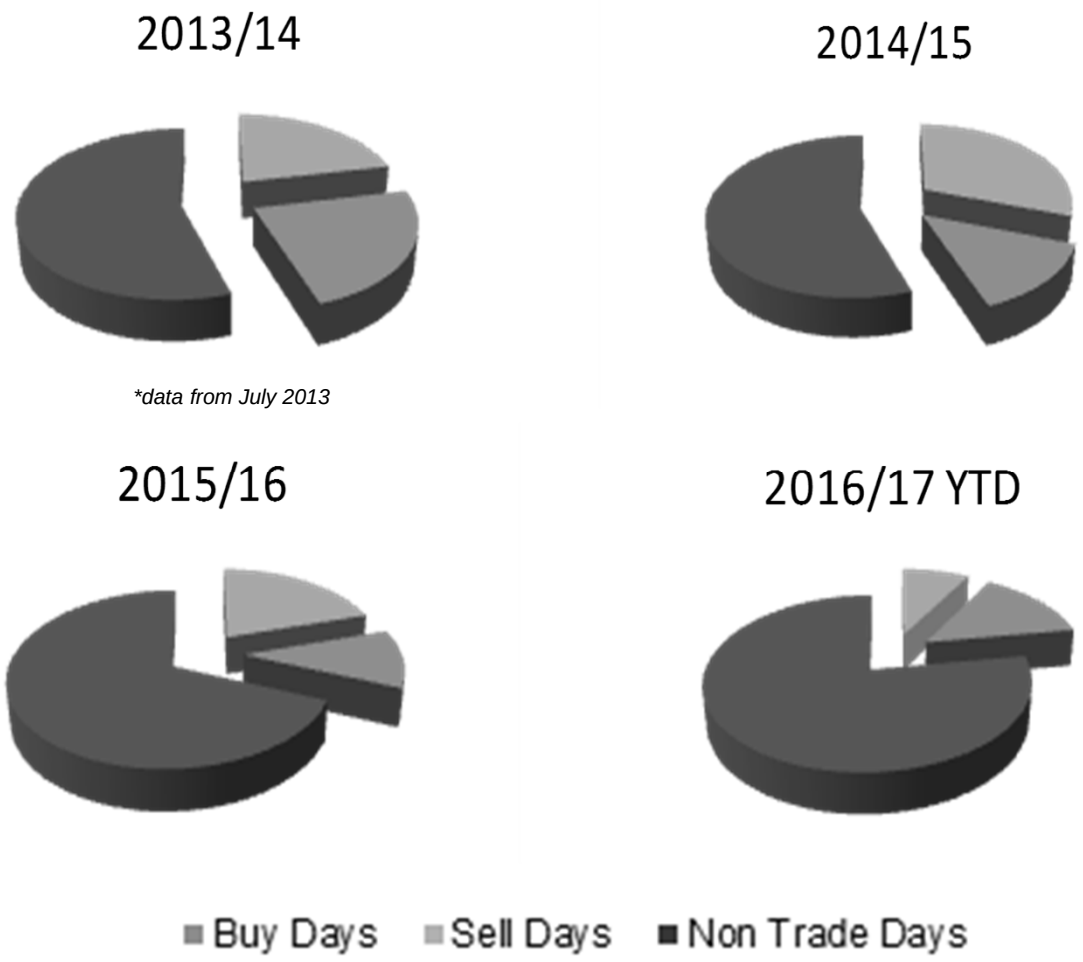
Volumes traded are becoming less

Average Predicted Closing Linepack (PCLP) has grown wider

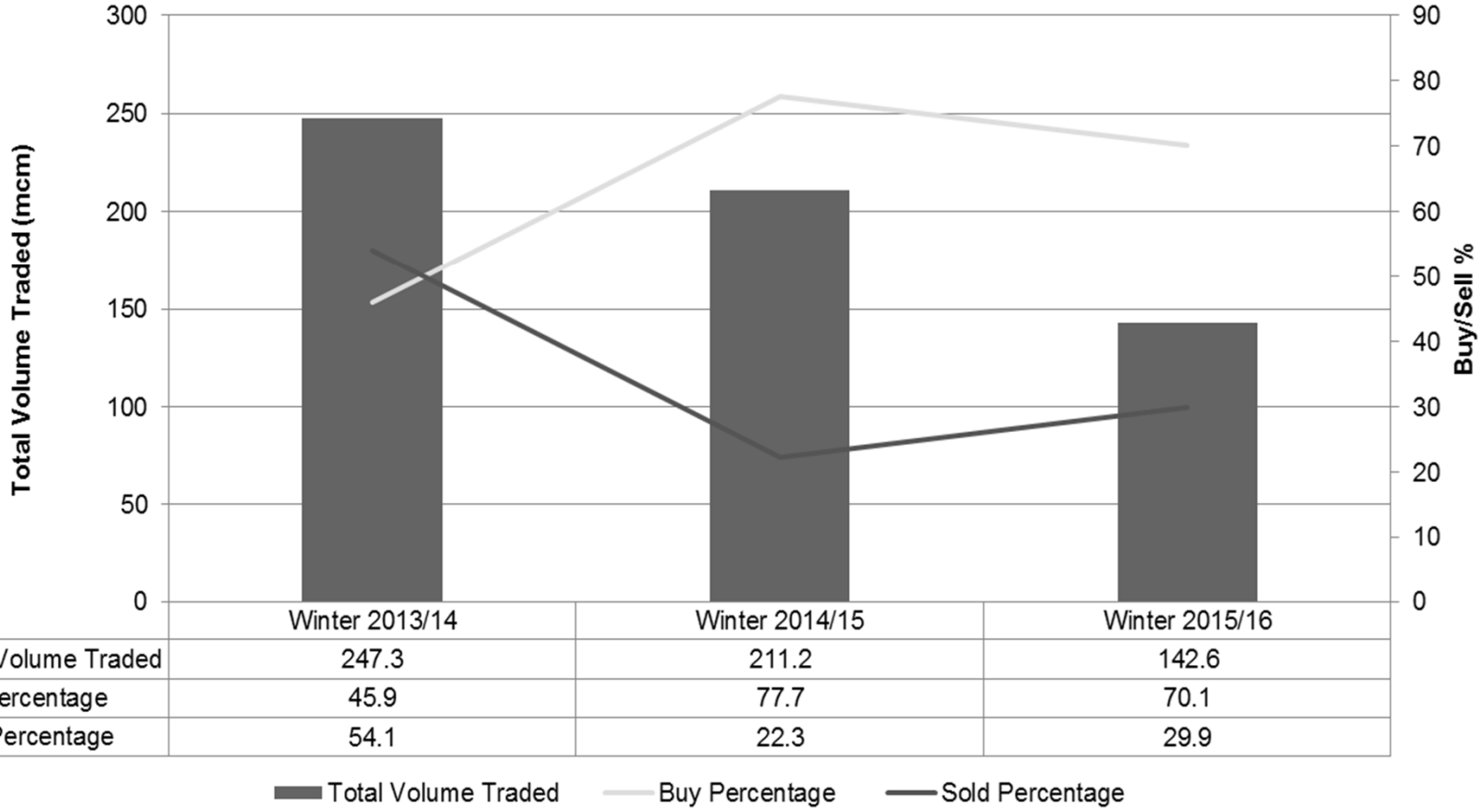
There is a greater percentage of buy actions being taken rather than sell actions

The TSO tends to take residual balancing actions towards the end of the gas day

# Percentage of gas days the TSO traded

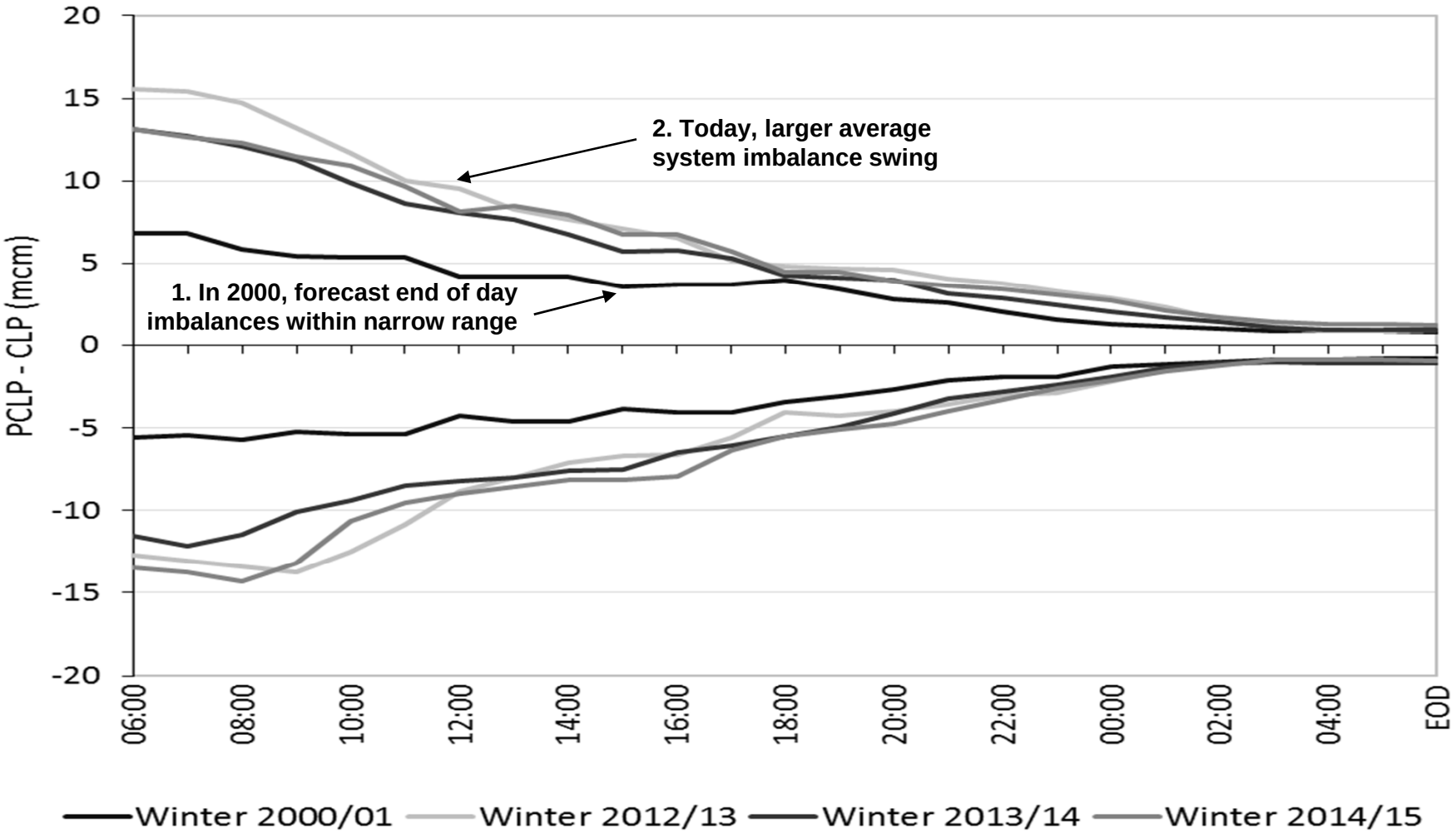


# Volume Traded and Percentage Buy/Sell actions

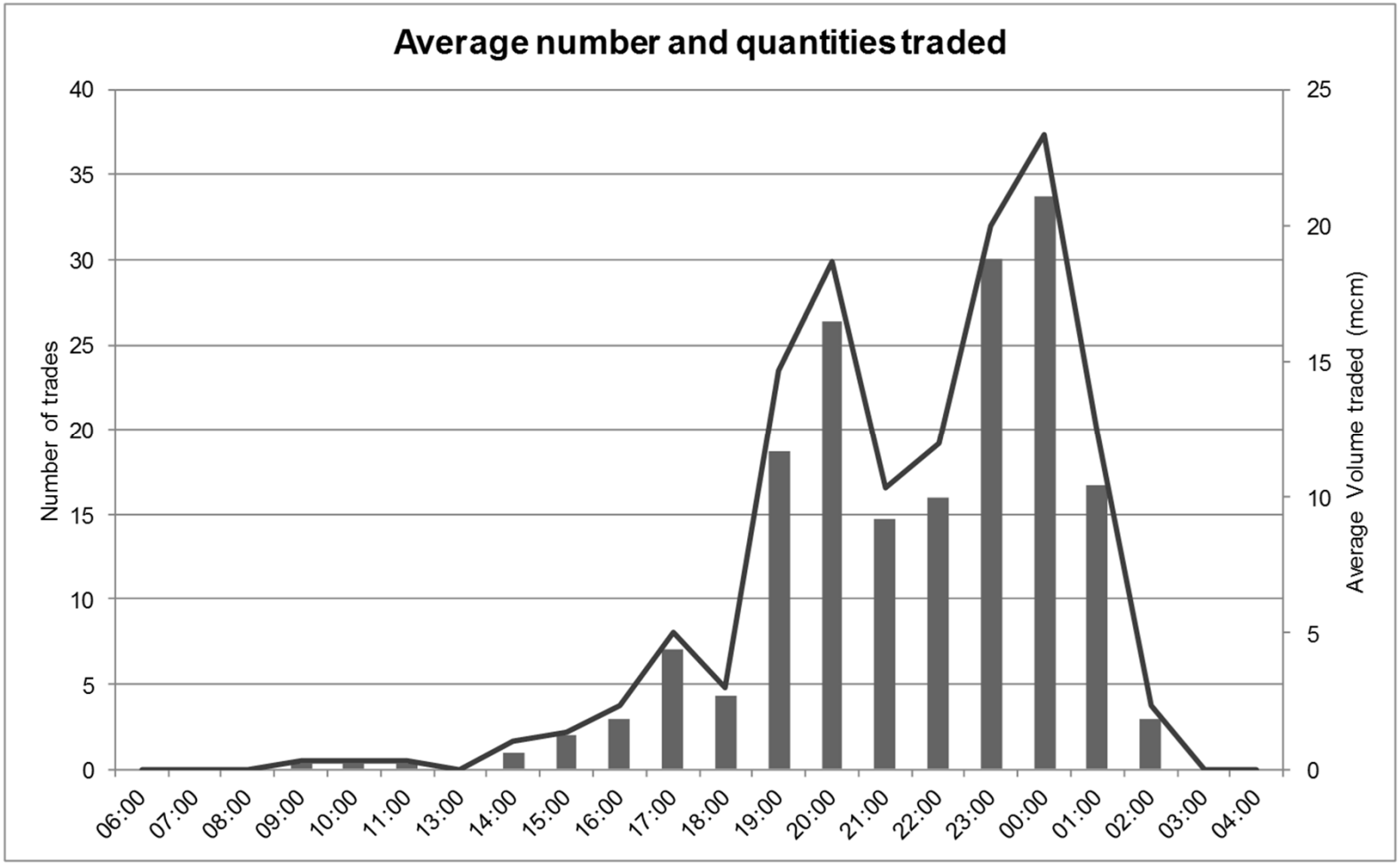



| | Winter 2013/14 | Winter 2014/15 | Winter 2015/16 |
|---|---|---|---|
| Total Volume Traded | 247.3 | 211.2 | 142.6 |
| Buy Percentage | 45.9 | 77.7 | 70.1 |
| Sold Percentage | 54.1 | 22.3 | 29.9 |

# Average predicted closing linepack swing has grown wider



# Average number of trades and volume traded per hour bar



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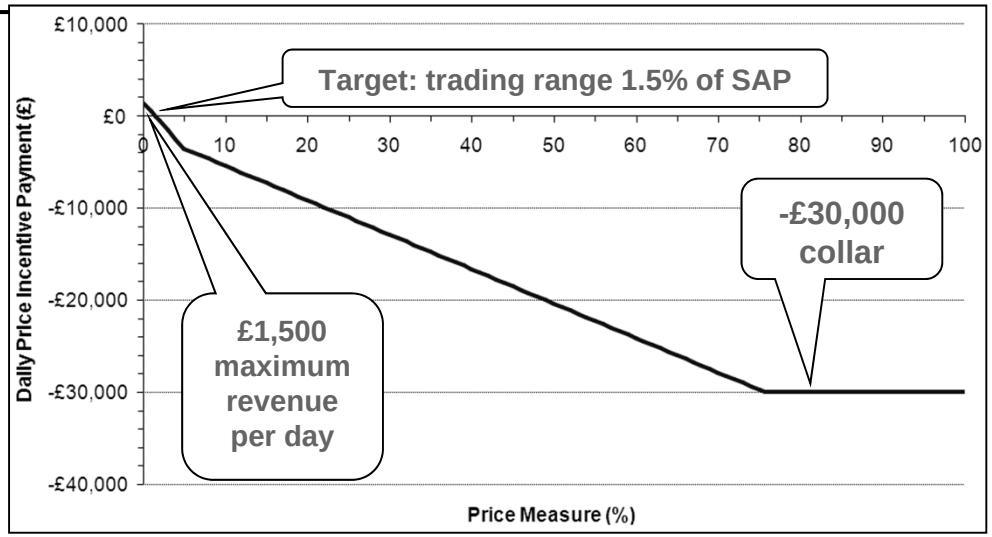
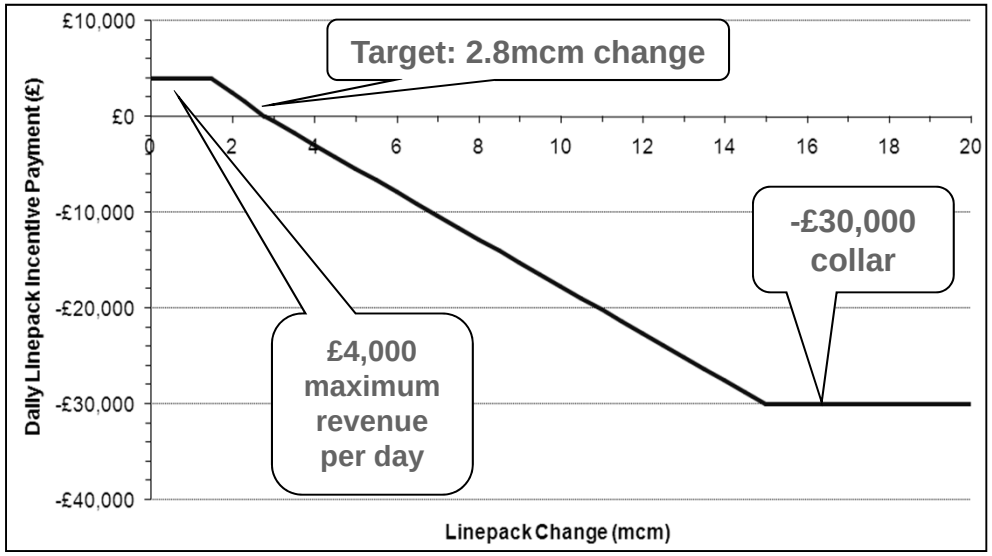
# Residual Balancing Incentive Scheme

# Residual Balancing Incentive

Price Performance Measure incentivises minimal price spread of residual balancing trades




Linepack Performance Measure incentivise minimal linepack change between gas days



# Information Provision

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# Information Provision

- When National Grid, as the TSO, takes a residual balancing action we publish details of these on our Market Information Provision Initiative (MIPI) website and also at our Gas Operational Forum

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# MIPI

| | | D-1 | D0 0-6 hours of gas day | D0 6-12 hours of gas day | D0 12-18 hours of gas day | D0 18-24 hours of gas day | Total |
|---|---|---|---|---|---|---|---|
| NBP Title | Buy Quantity | | | | 20[L] | 13[L] | |
| | Buy Price (£) | | | | 314,365[L] | 202,357[L] | 516,722 |
| | Sell Quantity | | | | | | |
| | Sell Price (£) | | | | | | |
| NBP Physical | Buy Quantity | | | | | | |
| | Buy Price (£) | | | | | | |
| | Sell Quantity | | | | | | |
| | Sell Price (£) | | | | | | |
| Loc St Fergus | Buy Quantity | | | | | | |
| | Buy Price (£) | | | | | | |
| | Sell Quantity | | | | | | |
| | Sell Price (£) | | | | | | |
| Loc Teesside | Buy Quantity | | | | | | |
| | Buy Price (£) | | | | | | |
| | Sell Quantity | | | | | | |
| | Sell Price (£) | | | | | | |
| | Buy Quantity | | | | | | |
| | Buy Price (£) | | | | | | |

**Cost of balancing actions: £516,721.75**

**Highest SAP in last 18 months: 1.6248**

**System Marginal Incentive Buy Price (SMIBP): 1.5730**

**System Marginal Incentive Sell Price (SMISP): 1.5559**

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# Energy Balancing: 1st April 2016 to 31st August 2016

| NGG Balancing Actions | Apr 16 to Aug 16 | Apr 15 to Aug 15 | Comments |
|---|---|---|---|
| Buy Actions | 6 (11%) | 49 (64%) | • Sell actions still predominant for period and up on same period last year. |
| Sell Actions | 47 (89%) | 28 (36%) | |
| Buy Actions [Volume: Gwh] | 83 | 624 | |
| Sell Actions [Volume: Gwh] | -960 | -503 | |
| Number of Balancing Actions | 53 | 77 | |
| Number of Material Breaches | 0 | 0 | |
| Number of Non - Material Breaches | 0 | 0 | |
| NGG set Default Marginal Prices [SMPB: Average %] | 1% | 7% | |
| NGG set Default Marginal Prices [SMPS: Average %] | 6% | 4% | |

## ICE Endex Market Prices Min / Max

| | SAP | SMPB | SMPS |
|---|---|---|---|
| **Apr 16 to Aug 16** | 23.4 – 37.7 | 24.6 – 39.0 | 20.5 – 36.6 |
| **Apr 15 to Aug 15** | 36.7 – 52.4 | 37.7 – 55.0 | 35.7 – 51.1 |

## Net Balancing Costs

| | Imbalance | Scheduling | OCM | Net |
|---|---|---|---|---|
| **Apr 16 to Jul 16** | £664,742 **(DB)** | £1,317,399 **(CR)** | £7,507,291 **(CR)** | £8,159,949 **(CR)** |

ACER Balancing NC implementation workshop
Warsaw, 9 November 2016

# What we always wanted to know…

EFET

European Federation
of Energy Traders

SO YOU CAN RELY ON THE MARKET

# Contents

## What is it that we want to achieve?

A place where gas can easily be transported to and from, and where buyers and sellers can (with minimum risk of frustration or damages) exchange it at fair prices.

## Key to a ‚fair' market price is accurate information on supply and demand.

The balancing risk is the characteristic feature of power and gas markets: balancing demand and supply in a given period, both on system and portfolio level is what ultimately creates a market price.

Accurate and update information on the supply-demand balance - inputs and offtakes - on individual network users' and on aggregate system level is key to manage the balancing risk, and key to creating balancing markets.

# Supply | Demand

# Inputs | Offtakes

**The code is surprisingly clear on what it expects from TSOs.**

# Article 32 - Information obligations of TSOs towards network users

The information provided to network users by the TSO operator shall refer to:

(1) the overall status of the transmission network in accordance with point 3.4(5) of Annex I to R 715/2009;

(2) the transmission system operator's balancing actions […];

(3) the network user's inputs and off-takes for the gas day referred to in Articles 33 to 42.

# a. portfolio level

## On portfolio level, information accuracy/frequency determines level of supply competition

**Input**

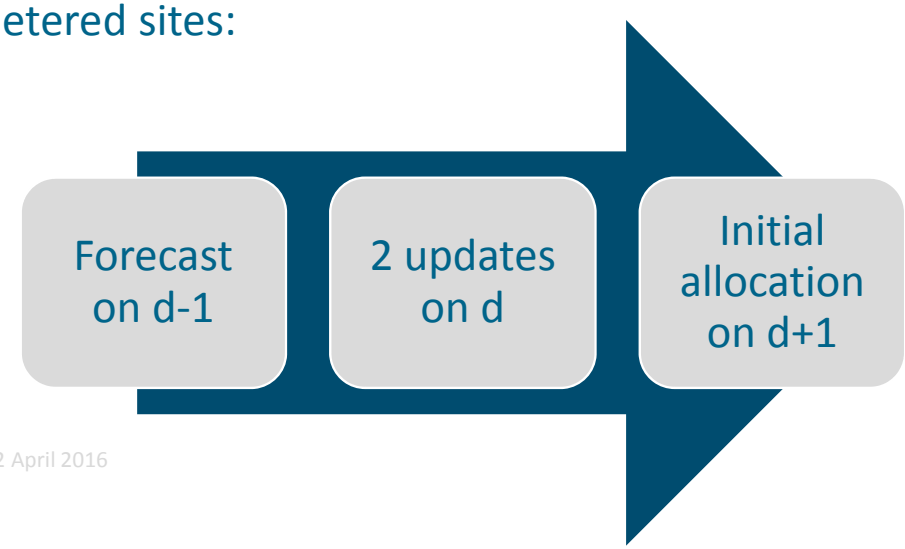
Nomination = Allocation

**Offtake**

1. Nomination = Allocation OR trade notification

2. Principle: Know your customer – KYC

But: BAL NC sets out basic requirements regarding daily metered, non-daily metered and within-daily metered sites:



- data accuracy
- wid. obligations

# b. system level

# Prevailing View

Current Gas Day : Friday, 04/11/2016 | Help | Print |

Previous | Welcome to National Grid | Next

## System Status

| | Today 04/11/2016 | Tomorrow 05/11/2016 |
|---|---|---|
| GDW | NONE | |
| MN Trigger | 451.00 | |

### Forecast

Graph

| Demand (mscm) | | |
|---|---|---|
| Forecast Demand | 268.4 (13:07) | 266.5 (13:01) |
| Seasonal Normal Demand | 249.6 | 230.8 |
| **Supply (mscm/d)** | | |
| Forecast Flow | 289.6 (13:00) | |
| Physical Flow | 290.6 (13:00) | |
| **Linepack (mscm)** | | |
| PCLP | 361.7 (13:07) | |

Long Term Demand

System Entry Point Flow Data

## Forecast Map | Actual Map

Demand | Supply | Demand | Supply


Forecast Annual Peak Demand 465 mscm

Real Time Flow Data

### ANS Messages

## Actual

| Demand (mscm) | Graph | |
|---|---|---|
| Actual Demand | | |
| Seasonal Normal Demand | | |
| Actual CWV | | |
| CWV Seasonal Normal | | |
| **Supply (mscm)** | **Graph** | **02/11/2016** |
| Beach including Norway | | 220 |
| LNG Imports | | 5 |
| Interconnectors | | 31 |
| Storage | | 10 |
| **Linepack (mscm)** | **Graph** | **04/11/2016** |
| Opening | | 341.5 |
| **EOD Export Physical Flows (mscm)** | | **03/11/2016** |
| Bacton | | 0 |
| Moffat | | 11 |

**Storage Stock Levels (GWh)** Graph

| | 02/11/2016 | 03/11/2016 |
|---|---|---|
| Short | 0 | 0 |
| Medium | 14,559 | 14,516 |
| Long | 13,715 | 13,715 |

**Actual Storage Stock (GWh)** Graph

**Aggregate LNG Importation Stock (GWh)** Graph

| 02/11/2016 | 03/11/2016 |
|---|---|
| 7,782 | 7,694 |

**Price** Graph 03/11/2016

| | SAP | SMP Buy | SMP Sell | 7 day Avg |
|---|---|---|---|---|
| p/kWh | 1.7683 | 1.8080 | 1.7286 | 1.6050 |
| p/thm | 51.82 | 52.99 | 50.66 | 47.04 |

EFET

## Prevailing View

Previous

Welcome to N

### System Status

| | Today 04/11/2016 | Tomorrow 05/11/2016 |
|---|---|---|
| GDW | NONE | |
| MN Trigger | 451.00 | |

### Forecast

Graph

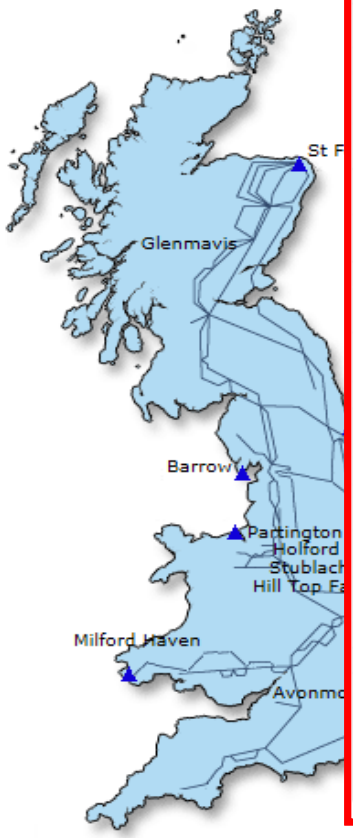
| | | |
|---|---|---|
| **Demand (mscm)** | | |
| Forecast Demand | 268.4 (13:07) | 266.5 (13:01) |
| Seasonal Normal Demand | 249.6 | 230.8 |
| **Supply (mscm/d)** | | |
| Forecast Flow | 289.6 (13:00) | |
| Physical Flow | 290.6 (13:00) | |
| **Linepack (mscm)** | | |
| PCLP | 361.7 (13:07) | |

Long Term Demand

System Entry Point Flow Data

### Forecast Map

Demand | Supply




Forecast Annual Peak Demand 465 mscm

Real Time Flow Data

### ANS Messages

Instantaneous Flows (mcm/day)

| System Entry Name | 13:24 | 13:26 | 13:28 | 13:30 | 13:32 | 13:34 |
|---|---|---|---|---|---|---|
| ALDBROUGH | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AVONMOUTH | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| BACTON BBL | 23.24 | 23.05 | 23.10 | 23.18 | 23.18 | 23.24 |
| BACTON IC | 18.71 | 18.59 | 18.61 | 18.42 | 18.42 | 18.64 |
| BACTON PERENCO | 3.52 | 3.67 | 3.57 | 3.56 | 3.61 | 3.61 |
| BACTON SEAL | 14.65 | 14.70 | 14.94 | 15.11 | 14.88 | 14.67 |
| BACTON SHELL | 8.98 | 8.98 | 8.98 | 8.98 | 8.98 | 8.98 |
| BARROW SOUTH | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| DYNEVOR ARMS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| EASINGTON DIMLINGTON | 6.53 | 6.53 | 6.49 | 6.46 | 6.46 | 6.46 |
| EASINGTON LANGELED | 69.83 | 70.30 | 70.30 | 70.51 | 70.51 | 70.54 |
| EASINGTON ROUGH | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| GLENMAVIS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| GRAIN NTS 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| GRAIN NTS 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HILLTOP | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HOLE HOUSE FARM | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HOLFORD | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| HORNSEA | 7.77 | 7.77 | 7.79 | 7.76 | 7.76 | 7.76 |
| MILFORD HAVEN - DRAGON | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| MILFORD HAVEN - SOUTH HOOK | 5.05 | 5.05 | 5.05 | 5.05 | 5.05 | 5.05 |
| PARTINGTON | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ST FERGUS MOBIL | 19.05 | 19.14 | 19.14 | 19.14 | 19.14 | 19.14 |
| ST FERGUS NSMP | 47.75 | 47.64 | 47.74 | 47.61 | 47.58 | 47.74 |
| ST FERGUS SHELL | 27.61 | 27.58 | 27.53 | 27.62 | 27.66 | 27.60 |
| STUBLACH | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TEESSIDE BP | 7.66 | 7.70 | 7.59 | 7.79 | 7.69 | 7.75 |
| TEESSIDE PX | 9.00 | 9.01 | 8.98 | 9.01 | 9.01 | 9.02 |
| THEDDLETHORPE | 7.71 | 7.61 | 7.74 | 8.54 | 7.76 | 7.76 |

Price Graph 03/11/2016

| | SAP | SMP Buy | SMP Sell | 7 day Avg |
|---|---|---|---|---|
| p/kWh | 1.7683 | 1.8080 | 1.7286 | 1.6050 |
| p/thm | 51.82 | 52.99 | 50.66 | 47.04 |

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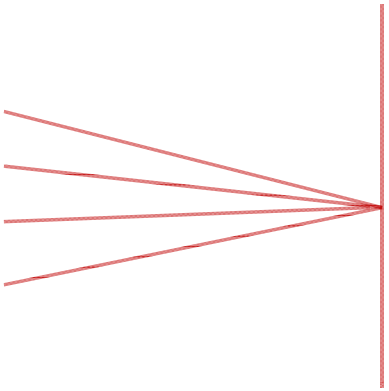
## Ideally, system information should consist of 20 reports.

1. Forecast end-of-day input
2. Actual input
3. Forecast end-of-day offtake
4. Actual offtake



A. Cross-border IPs
B. IPs to Distribution Systems
C. Storage
D. LNG Terminals

5. Forecast End-of-day System Balance (as result of 1-3)
6. Actual System Balance (as result of 2-4)
7. TSO balancing actions: SMP Buy/Sell, SAP, balancing trades (volume, price, location)
8. Storage stock level

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www.efet.org

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European Federation
of Energy Traders

SO YOU CAN RELY ON THE MARKET

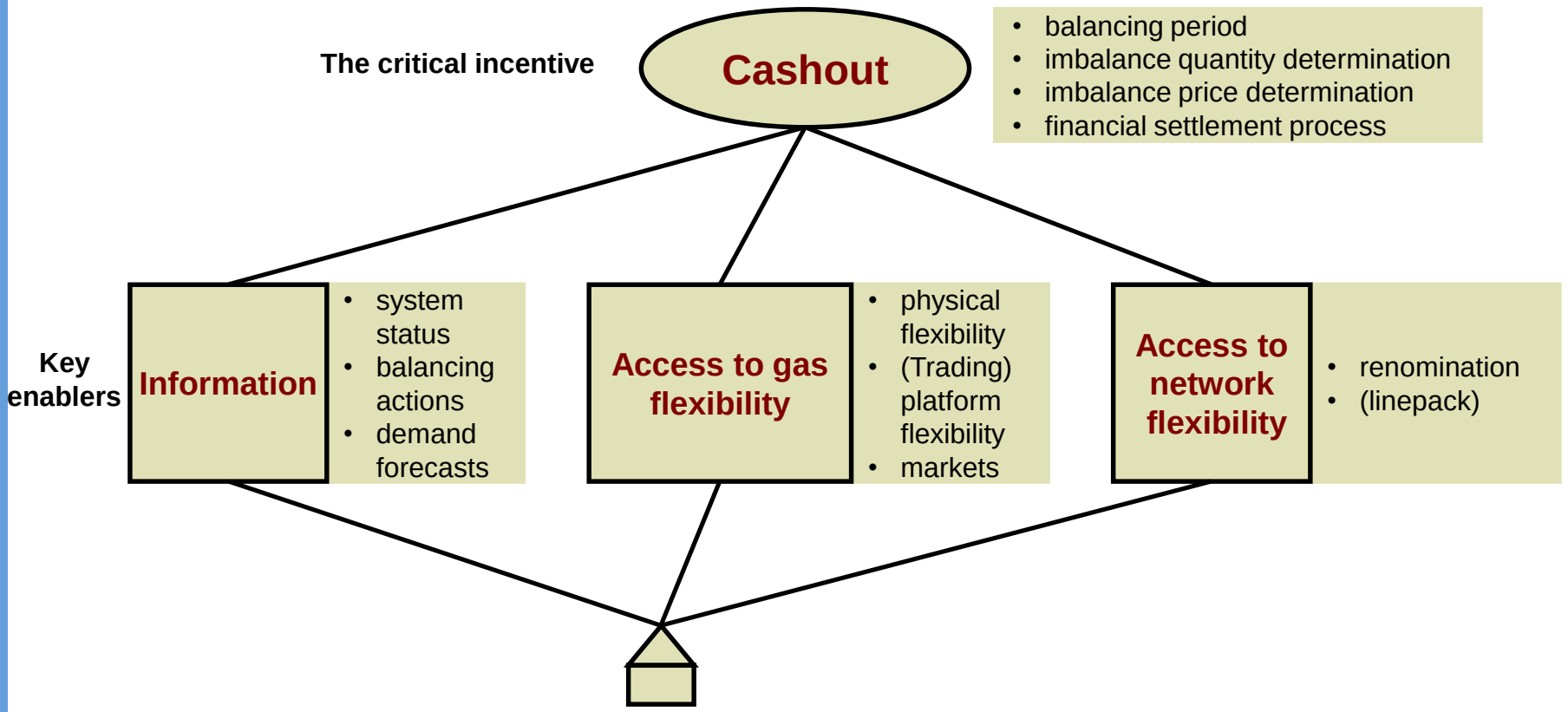
# Daily imbalance charge calculation

[redacted]

*sisman energy consultancy ltd*

Workshop: Gas Balancing Code implementation, Warsaw, Poland, 9 November 2016

# The balancing code is designed to deliver efficient outcomes by devolving balancing responsibilities to network users




**Cashout should encourage network users to perform most of the balancing activity by providing adequate, but not excessive, incentives to individually balance**

**Network users should typically be best served by balancing their gas account**

sec

# Understanding cashout

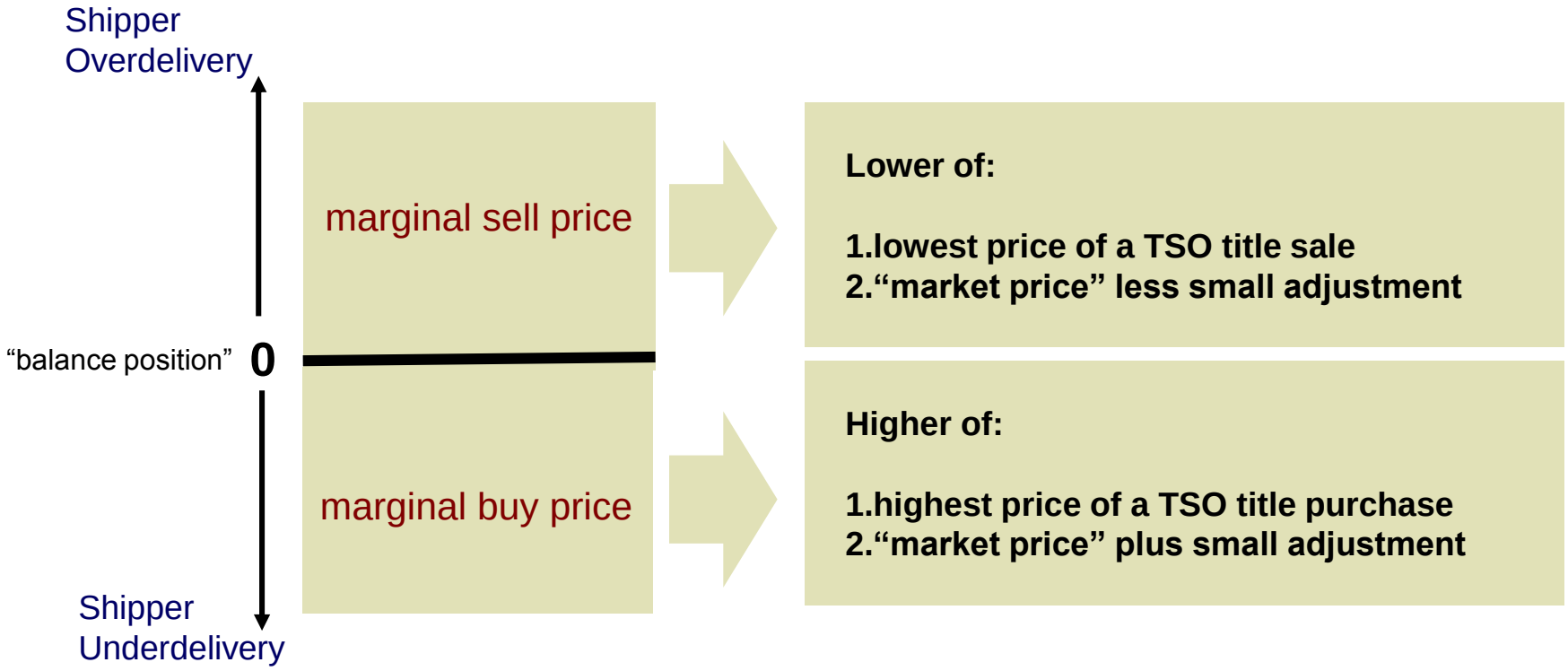
| | |
|---|---|
| **Balancing period** | • Daily |
| **Imbalance quantity determination** | • Imbalance = Entry inputs + net trade position – Exit offtakes<br>• Some discretion over how physical entry and exit credits defined |
| **Imbalance price determination** | • Dual priced cashout<br>• Takes account of market and TSO balancing trades<br>• Structured to provide network users with incentives to balance and to deliver on transactions with TSO |
| **Financial settlement** | • Daily imbalance extinguished via settlement process |

**A critical element of regime design and operation is that network users see the evolution of the daily cashout prices**

sec

# Full daily balancing cashout – enduring provisions

## Key concepts




**Key design optionality includes:**

- **which trades set the “market price” reference**
- **the size(s) of the small adjustment(s)**
- **whether to include locational transactions**

sec

# Exercising design choices

| | |
|---|---|
| **Trades to set market reference price (WAP)** | • Relevant platform(s) to be predefined<br>• Code implies day-ahead and within-day trades relevant<br>• Data to be processed to indicate evolving cashout prices in real time |
| **Small adjustment(s)** | • To ensure a balancing incentive even when TSO is not active in market<br>• Code implies small adjustments should be less than 10%<br>• Small adjustment might be set taking account of cost of service associated with flex gas (e.g. platform transaction cost or storage costs) |
| **Inclusion of locational trade prices** | • An option where merited and approved by NRA<br>• Enables locational value of gas to influence cashout pricing<br>• May be useful where significant locational requirements are necessary or to facilitate higher levels of capacity release |

**The link between the market and prices of TSO actions with cashout prices is critical to ensure the feedback loop that provides appropriate incentives**

**Where interim pricing is applied setting appropriate proxy prices is particularly challenging – but without the feedback loop to local market prices incentives might be inappropriate**

sec

# Part II : Daily Imbalance Charges

How is imbalance charge calculated in a WDO regime ?

9th November 2016

ACER/ENTSOG Balancing Workshop

FLUXYS

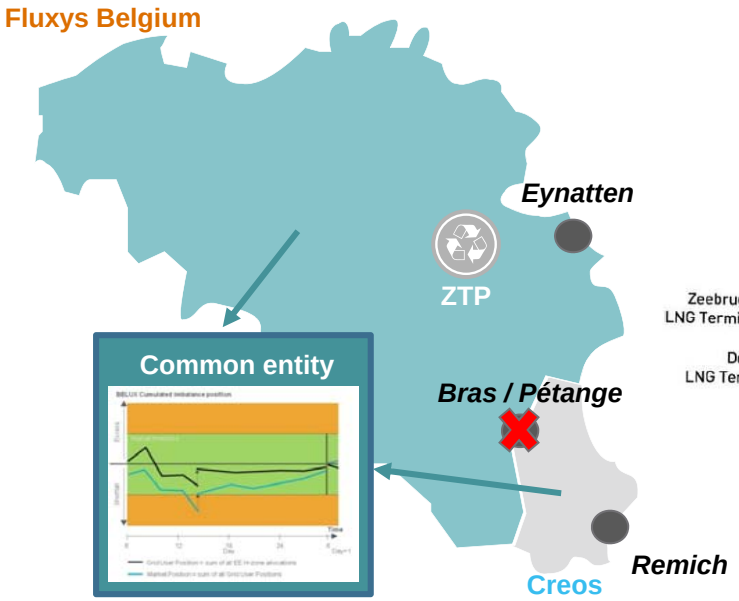
1. **BeLux Entry/Exit system**
2. Balancing system & Balancing information
3. Within-day settlement
4. End-of-day settlement

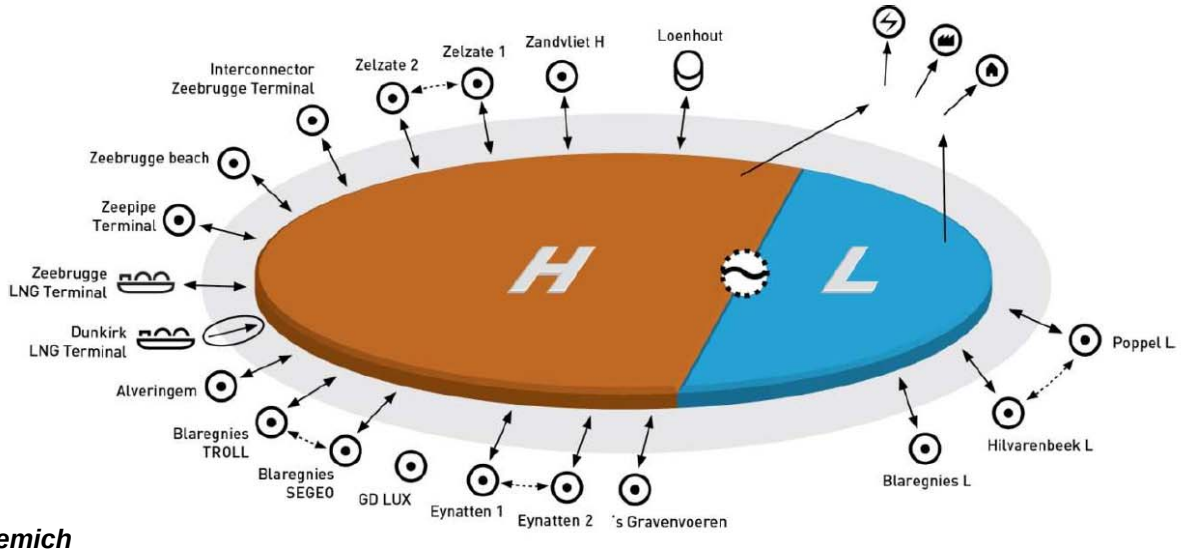




FLUXYS

# BeLux Entry/Exit system




- Single E/E market capitalizing on TSO existing means
- Single gas trading place in BeLux, i.e. ZTP
- 2 zones, one with High calorific gas and one with Low calorific gas
- Harmonized balancing rules set : System-wide Within-Day Obligations with hourly information





FLUXYS

1. BeLux Entry/Exit system
2. **Balancing system & Balancing information**
3. Within-day settlement
4. End-of-day settlement







FLUXYS

# Overview of Balancing System

| Implementation | 2015 |
|---|---|
| Info requirements<br>System status<br>TSO balancing actions<br><br>Network user portfolio | <br>Hourly information – see next slide<br>Information to shippers on balancing interventions during the day<br>Variant 1 – hourly information – see next slide |
| Trading Platform | Use of Powernext – Pegas ZTP since 1/10/2016 |
| Source for balancing actions | STSP's and title products – no use of balancing services |
| Cash out prices | Set using Trading Platform trades |
| Neutrality charge | Set to 0 € |
| Small adjustments | 0% for helpers<br>3% for causers |

# BALANCING INFORMATION

**In order to enable shippers adjusting their WD positions in a timely manner, grid users:**

- Receive an hourly Balancing Message : contains their individual position and the market position (+forecast until the end of the gas day)
- Receive an hourly Allocation Message : contains for each IP, Domestic exit point the hourly allocation
- May revise their nominations by sending renominations at least H - 30 minutes (ZTP) or 2 hours before the change will take effect

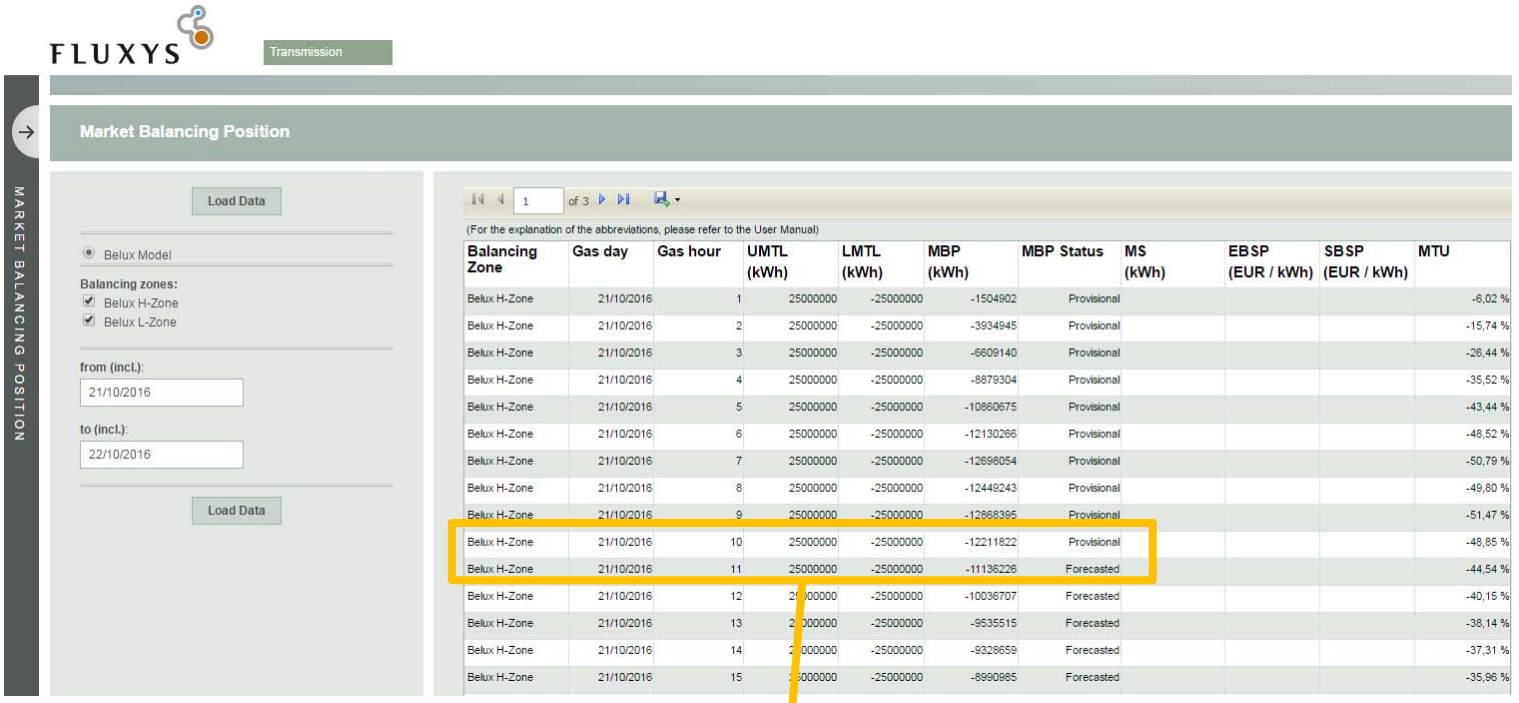
## Advantages of hourly info for Grid User

- No exposure to unexpected financial settlement as all tools at its disposal to adapt its individual balancing position → transparent and traceable
- Detailed allocation info available to steer its balancing position
- No cross-subsidization between different end-user profiles as all imbalances caused by certain types of End-users can be allocated to the causer
- New entrants can benefit of full flexibility (not limited to individual tolerances)

## Advantages of hourly information for Operator

- Grid Users are primarily responsible to balance their portfolio
- Residual balancing = role as Balancing Operator
- Directly relates the cost of a Within-Day residual balancing action to the commodity market price at the moment of such action and can allocate the cost to the responsible parties
- Encourages utilization of cross-border trades and promotes the development of a liquid market

# PUBLICLY AVAILABLE INFORMATION




| Balancing Zone | Gas day | Gas hour | UMTL (kWh) | LMTL (kWh) | MBP (kWh) | MBP Status | MS (kWh) | EBSP (EUR / kWh) | SBSP (EUR / kWh) | MTU |
|---|---|---|---|---|---|---|---|---|---|---|
| Belux H-Zone | 21/10/2016 | 1 | 25000000 | -25000000 | -1504902 | Provisional | | | | -6,02 % |
| Belux H-Zone | 21/10/2016 | 2 | 25000000 | -25000000 | -3934945 | Provisional | | | | -15,74 % |
| Belux H-Zone | 21/10/2016 | 3 | 25000000 | -25000000 | -6609140 | Provisional | | | | -26,44 % |
| Belux H-Zone | 21/10/2016 | 4 | 25000000 | -25000000 | -8879304 | Provisional | | | | -35,52 % |
| Belux H-Zone | 21/10/2016 | 5 | 25000000 | -25000000 | -10860675 | Provisional | | | | -43,44 % |
| Belux H-Zone | 21/10/2016 | 6 | 25000000 | -25000000 | -12130266 | Provisional | | | | -48,52 % |
| Belux H-Zone | 21/10/2016 | 7 | 25000000 | -25000000 | -12698054 | Provisional | | | | -50,79 % |
| Belux H-Zone | 21/10/2016 | 8 | 25000000 | -25000000 | -12449243 | Provisional | | | | -49,80 % |
| Belux H-Zone | 21/10/2016 | 9 | 25000000 | -25000000 | -12868395 | Provisional | | | | -51,47 % |
| Belux H-Zone | 21/10/2016 | 10 | 25000000 | -25000000 | -12211822 | Provisional | | | | -48,85 % |
| Belux H-Zone | 21/10/2016 | 11 | 25000000 | -25000000 | -11136226 | Forecasted | | | | -44,54 % |
| Belux H-Zone | 21/10/2016 | 12 | 25000000 | -25000000 | -10036707 | Forecasted | | | | -40,15 % |
| Belux H-Zone | 21/10/2016 | 13 | 25000000 | -25000000 | -9535515 | Forecasted | | | | -38,14 % |
| Belux H-Zone | 21/10/2016 | 14 | 25000000 | -25000000 | -9328659 | Forecasted | | | | -37,31 % |
| Belux H-Zone | 21/10/2016 | 15 | 25000000 | -25000000 | -8990985 | Forecasted | | | | -35,96 % |

| | | | | | | |
|---|---|---|---|---|---|---|
| Belux H-Zone | 21/10/2016 | 10 | 25000000 | -25000000 | -12211822 | Provisional |
| Belux H-Zone | 21/10/2016 | 11 | 25000000 | -25000000 | -11136226 | Forecasted |

Zone | Gas day | Gas hour | Market Thresholds | Market Balancing Position | Status





FLUXYS

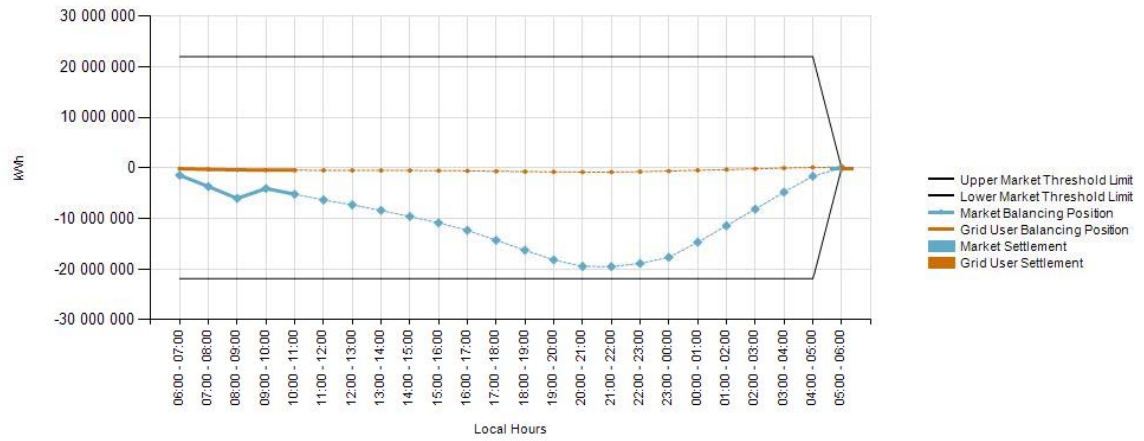
# DETAILED GRID USER INFORMATION

GRID USER BALANCING POSITION

Display H-Zone | Display L-Zone | Download

Previous Day 08/11/2016 Next Day Last Available Report 08/11/2016 11:52

Show Only Grid User | Show All | Generated at 08/11/2016 11:33:00




| Local Hours | Upper Market Threshold Limit (kWh) | Lower Market Threshold Limit (kWh) | Market Balancing Position (kWh) | Market Settlement (kWh) | Grid User Balancing Position (kWh) | Grid User Settlement (kWh) | Status |
|---|---|---|---|---|---|---|---|
| 06:00 - 07:00 | 22 000 000 | -22 000 000 | -1 390 940 | 0 | -89 961 | 0 | Provisional |
| 07:00 - 08:00 | 22 000 000 | -22 000 000 | -3 631 555 | 0 | -227 502 | 0 | Provisional |
| 08:00 - 09:00 | 22 000 000 | -22 000 000 | -5 968 135 | 0 | -329 337 | 0 | Provisional |
| 09:00 - 10:00 | 22 000 000 | -22 000 000 | -4 012 290 | 0 | -377 612 | 0 | Provisional |
| 10:00 - 11:00 | 22 000 000 | -22 000 000 | -5 145 453 | 0 | -399 206 | 0 | Provisional |
| 11:00 - 12:00 | 22 000 000 | -22 000 000 | -6 264 802 | 0 | -418 585 | 0 | Forecasted |





FLUXYS

# ADVANTAGES OF ENTRY-EXIT MODEL WITH SYSTEM-WIDE WITHIN DAY OBLIGATIONS

## Advantages for Grid User

• Through **hourly data publication** and short term renomination possibilities grid users are enabled to manage in a timely manner their WD/EoD positions in order to **manage their financial exposure**

• **No cross-subsidization** between different end-user profiles as all imbalances caused by certain types of End-users can be allocated to the causer

• Creates a **level playing field for new grid users** entering the market because new grid users with limited flexibility can enter the Belgian market and use the entire flexibility offered by Fluxys Belgium

## Advantages for Operator

• **No reservation of significant physical buffer** for balancing model without WDO

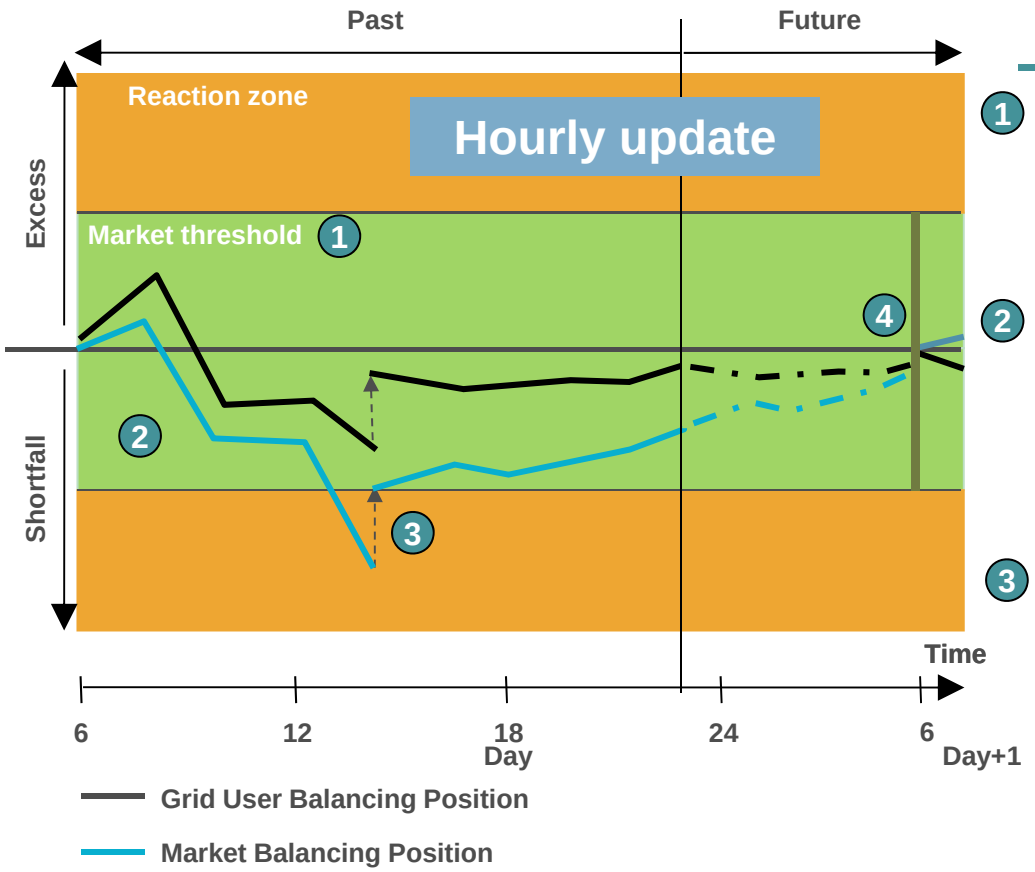
  • The cost of this physical buffer doesn't have to be recovered on the grid users→ Low tariffs

• Encourages utilisation of cross-border trades and promotes the development of a **liquid trading market**

• **Directly relates the cost or revenue** of a residual balancing action to the actual commodity market prices at the moment of such action and can target those costs or revenues **to responsible parties**

FLUXYS

# BALANCING THE NETWORK MADE EASIER, BASED ON MARKET BEHAVIOUR




## BeLux Daily Market-Based Balancing

1. **Thresholds to limit the aggregated market imbalances, sized to domestic market needs**
2. **No action intra-day and no impact on market parties as long as market imbalance is within market threshold**
3. **Residual action initiated on the exchange when market position goes beyond market threshold, with cash compensation for causers**
4. **Residual end-of day imbalance settled in cash**

**Comprehensive hourly information provision to the market**
**In line with EU Balancing Network Code**

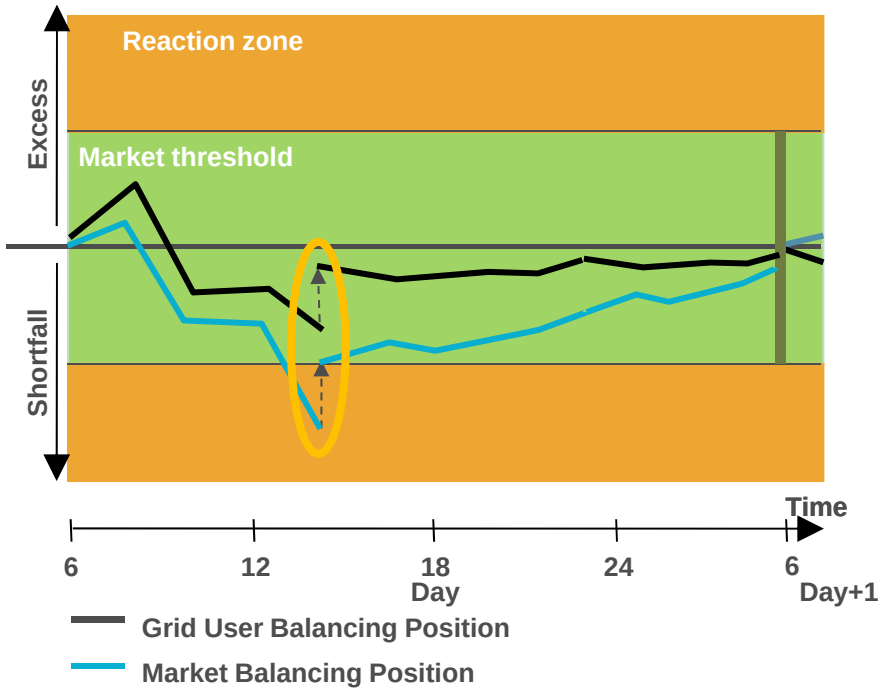




FLUXYS

1. BeLux Entry/Exit system
2. Balancing system & Balancing information
3. **Within-day settlement**
4. End-of-day settlement

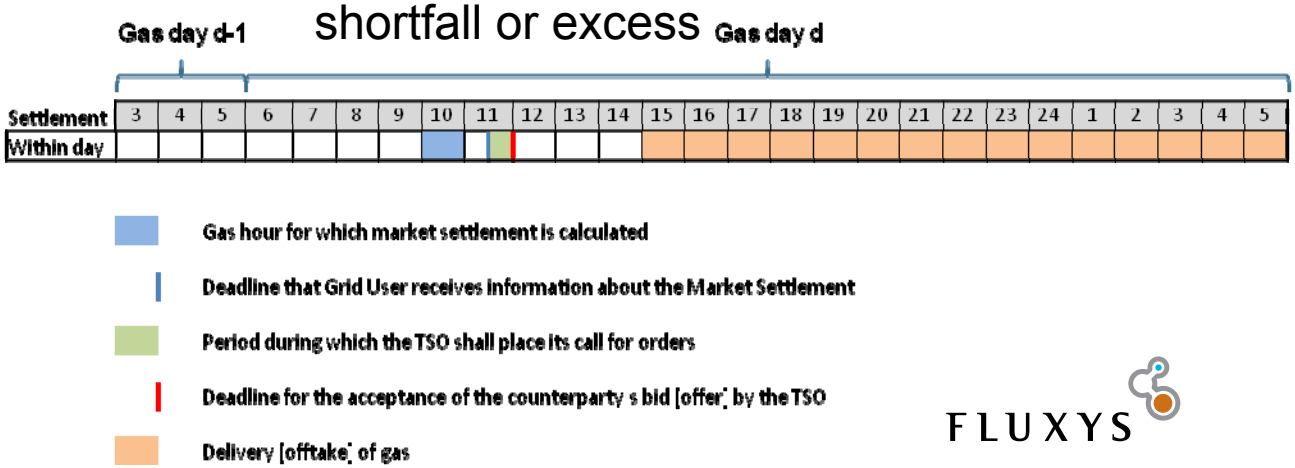
# WITHIN-DAY SETTLEMENT




- Quantity to settle = Market Excess or Shortfall (difference between Market Balancing Position and Market Threshold)
- Correction of causing grid users balancing position proportional to their contribution to the market imbalance (grid user excess / shortfall)

$$\text{Market Excess} \times \frac{\text{Balancing position}_{\text{causing user}}}{\sum \text{Balancing position}_{\text{all causing users}}}$$

- Transaction initiated for purchase or sale of a quantity of gas compensating the market shortfall or excess



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# WITHIN DAY SETTLEMENT

- Imbalance charge

$$\text{Market Excess} \times \frac{\text{Balancing position}_{\text{causing user}}}{\sum \text{Balancing position}_{\text{all causing users}}} \times \text{Balancing settlement Price}$$

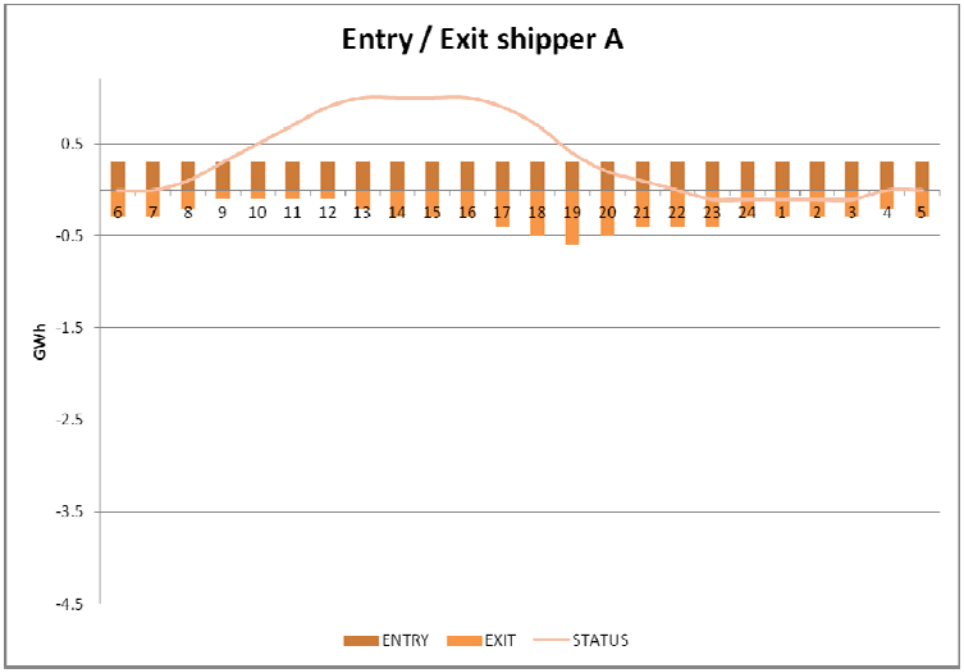
  - Balancing settlement Price
    - Excess

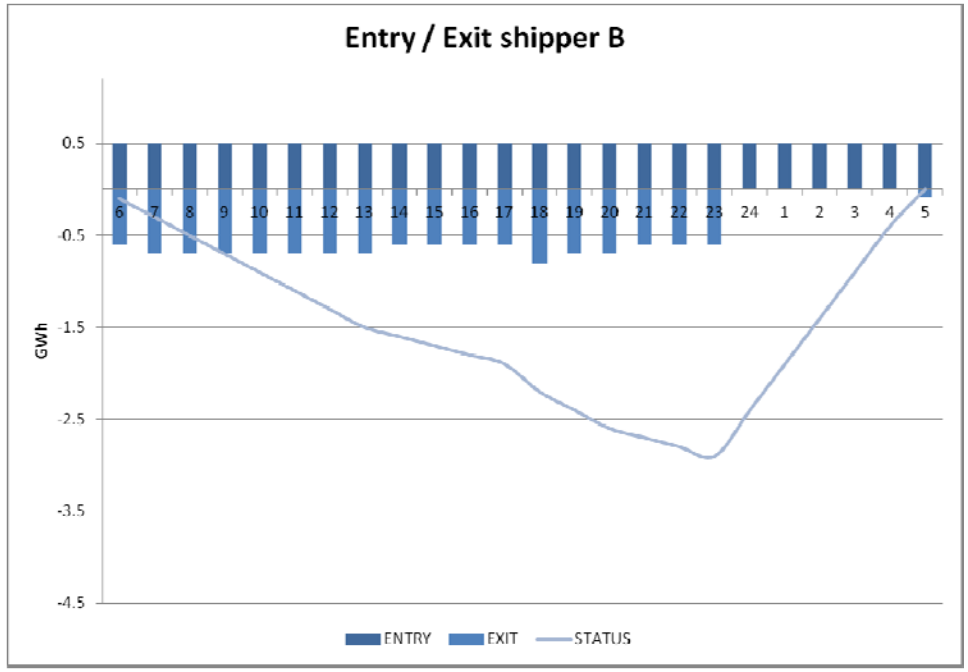
      min (lowest price of any sale ; reference gas price x (1 – Small Adjustment))

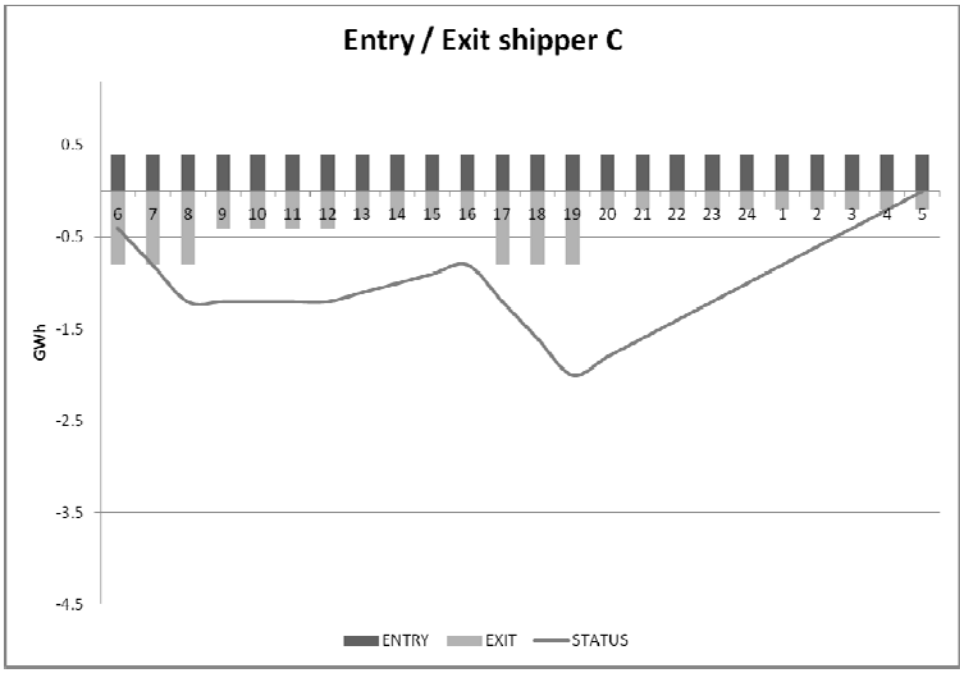
    - Shortfall

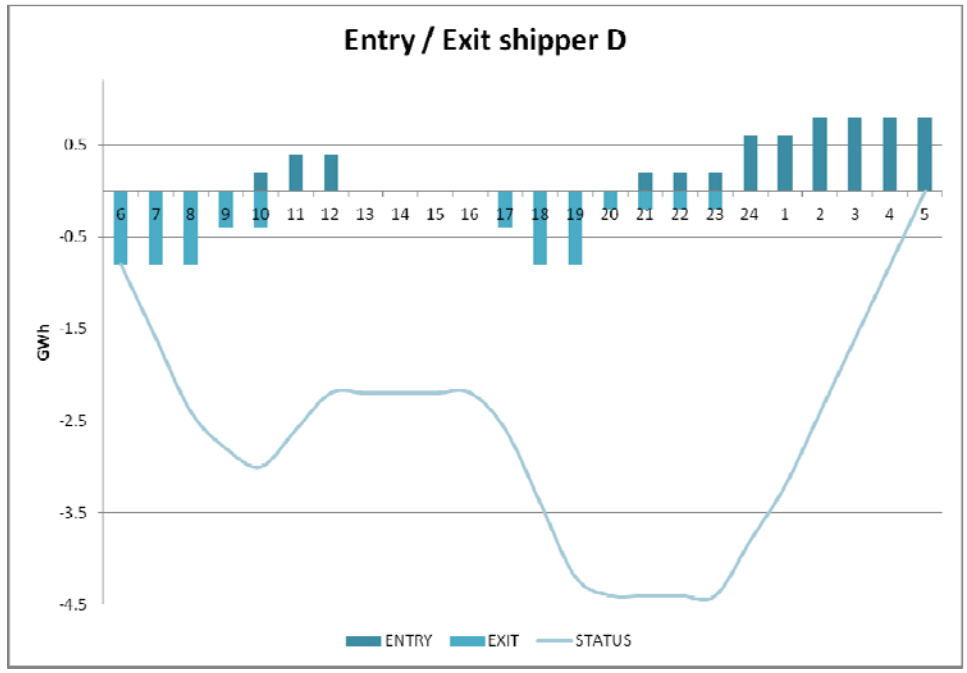
      max (highest price of any purchase ; reference gas price x (1 +Small Adjustment))

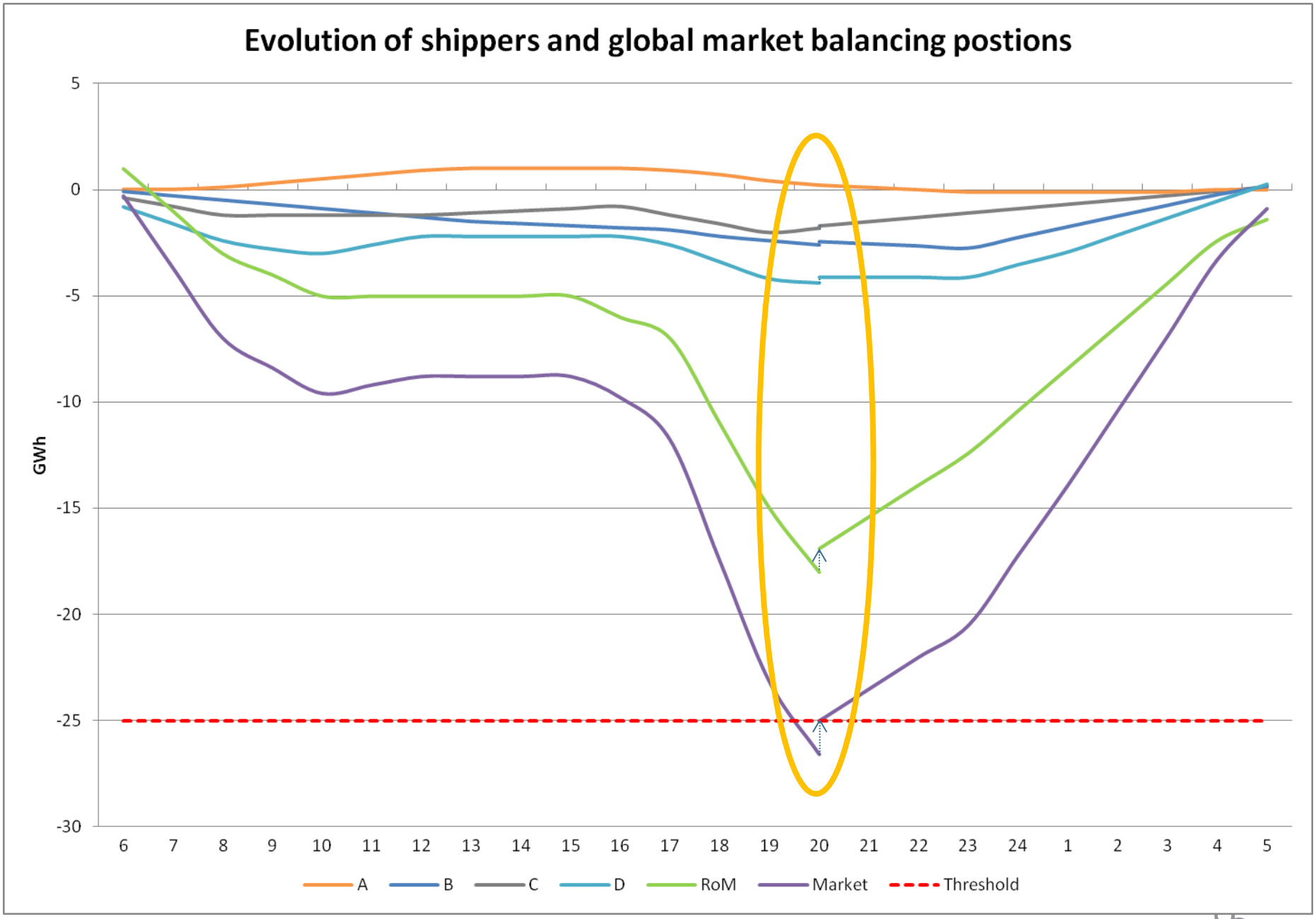
# WITHIN DAY SETTLEMENT : EXAMPLE (1/3)





# WITHIN DAY SETTLEMENT : EXAMPLE POWER STATIONS (2/3)

- Market Threshsolds : +25 GWh and -25 GWh
- 4 specific shippers + rest of market (RoM) – end of hour balacing position (20h)
  - A : + 0.2 GWh
  - B : - 2.6 GWh
  - C : - 1.8 GWh
  - D : - 4.4 GWh
  - RoM : -18 GWh

  } Market position : - 26.6 GWh

➔Market shortfall : 1.6 GWh

- Grid users position correction (also used for determination of imbalance charge)
  - B : 1.6 * (-2.6 / -26.8) = 0.155 GWh = 155 MWh
  - C : 1.6 * (-1.8 / -26.8) = 0.107 GWh = 107 MWh
  - D : 1.6 * (-4.4 / -26.8) = 0.263 GWh = 263 MWh
  - RoM : 1.6 * (-18/-26.8) = 1.075 GWh = 1075 MWh

# WITHIN DAY SETTLEMENT : EXAMPLE POWER STATIONS (3/3)

- Reference gas price : 12 € / MWh
- Small Adjustment causer : 3%
- Market offers
  - 1 GWh @ 12 €/MWh
  - 0.6 GWh @ 11.9 €/MWh

  →Balancing settlement price = max (12 ; 12.36) = 12.36 €/MWh
- Imbalance charges
  - B : 155 * 12.36 = 1916 €
  - C : 107 * 12.36 = 1323 €
  - D : 263 * 12.36 = 3251 €
  - RoM : 1075 * 12.36 = 13 287 €

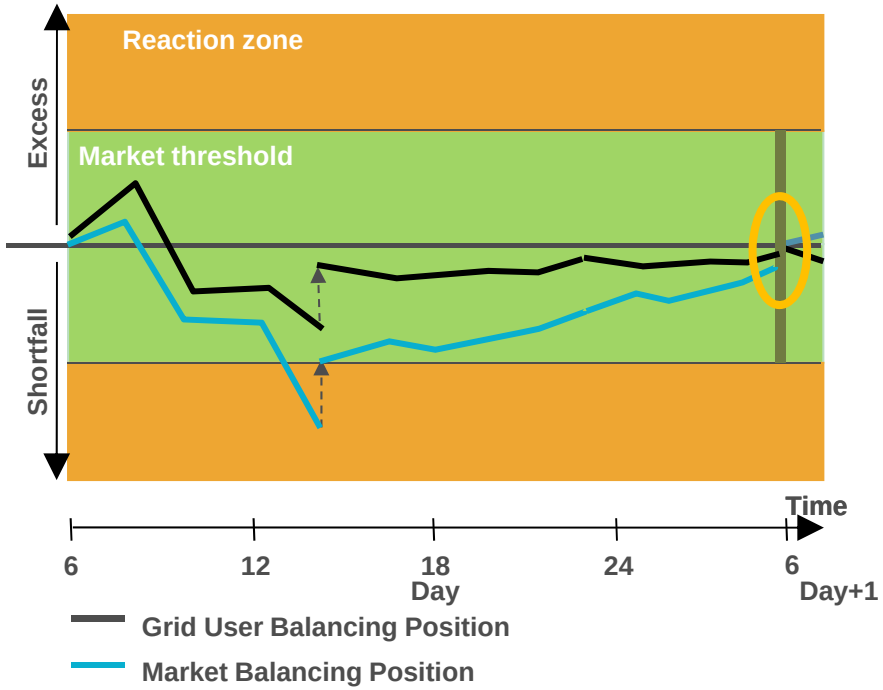
1. BeLux Entry/Exit system
2. Balancing system & Balancing information
3. Within-day settlement
4. **End-of-day settlement**





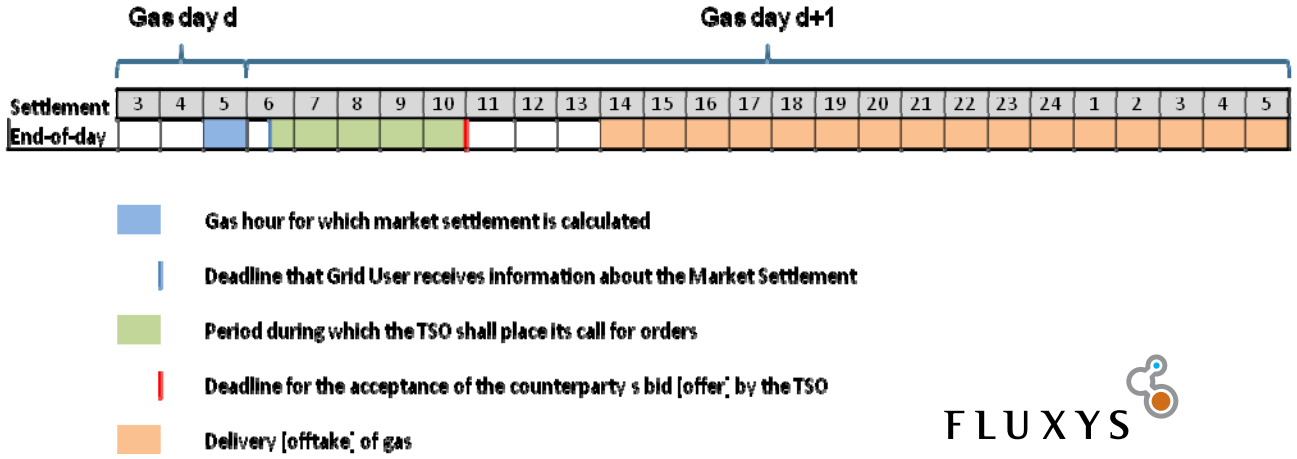
FLUXYS

# END-OF-DAY SETTLEMENT




- Quantity to settle = balancing position of last hour of gas day
- Balancing position set to 0 for next gas day

- Transaction initiated for purchase or sale of a quantity of gas compensating the market shortfall or excess






FLUXYS

# END-OF-DAY SETTLEMENT

- Imbalance charge
  - Balancing position @ last hour of gas day x Balancing Settlement Price
  - Balancing settlement Price
    - Excess

      min (lowest price of any sale ; reference gas price x (1 – Small Adjustment))
    - Shortfall

      max (highest price of any purchase ; reference gas price x (1+ Small Adjustment))



FLUXYS

Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

# ACER-ENTSOG Joint Workshop on Gas Balancing Code implementation

CER, Ireland

9th November 2016

Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

# Outline of today's presentation

Irish Wholesale market and NBP link

Issues faced due to new sources of gas

Current Interim Measures


Proceeding towards a Trading Platform

Issues expected

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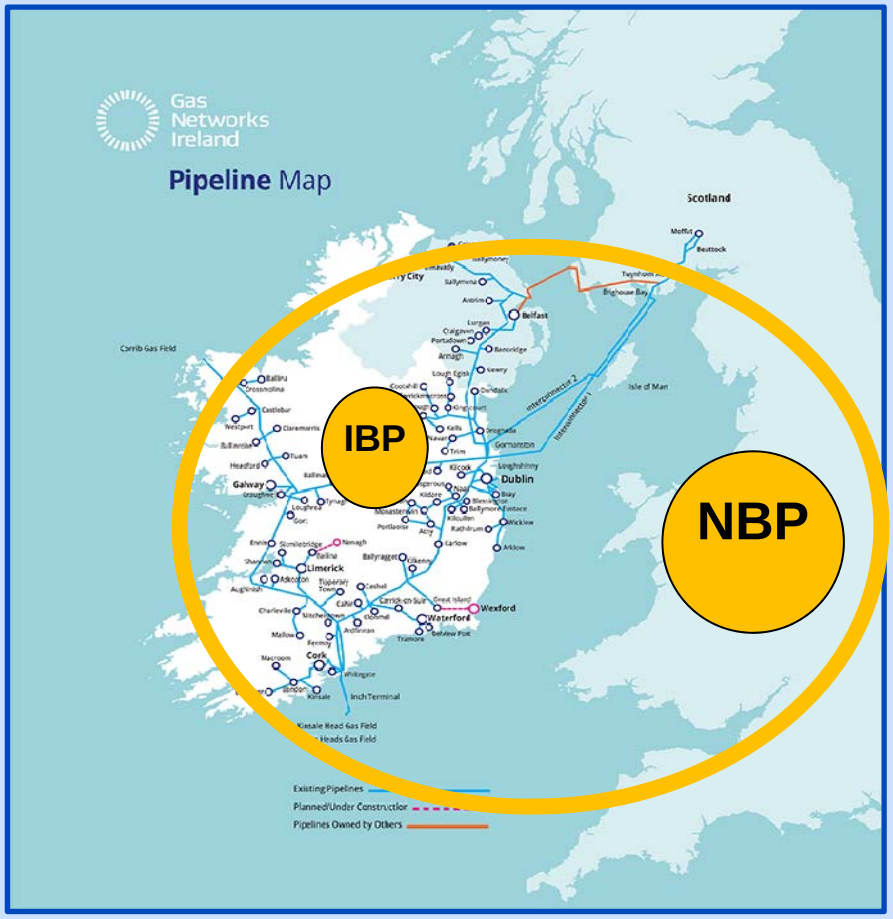
# Ireland's gas market

**Wholesale markets in Ireland**




- Ireland has been to date, a gas price taker
- Ample capacity and NBP liquidity has benefited Ireland
- IBP= NBP+ IC transport
- Low liquidity at IBP has not been detrimental to supply competitiveness

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# Ireland's gas supplies

## 2015
## IC imports


## 2016
## Indigenous +Imports

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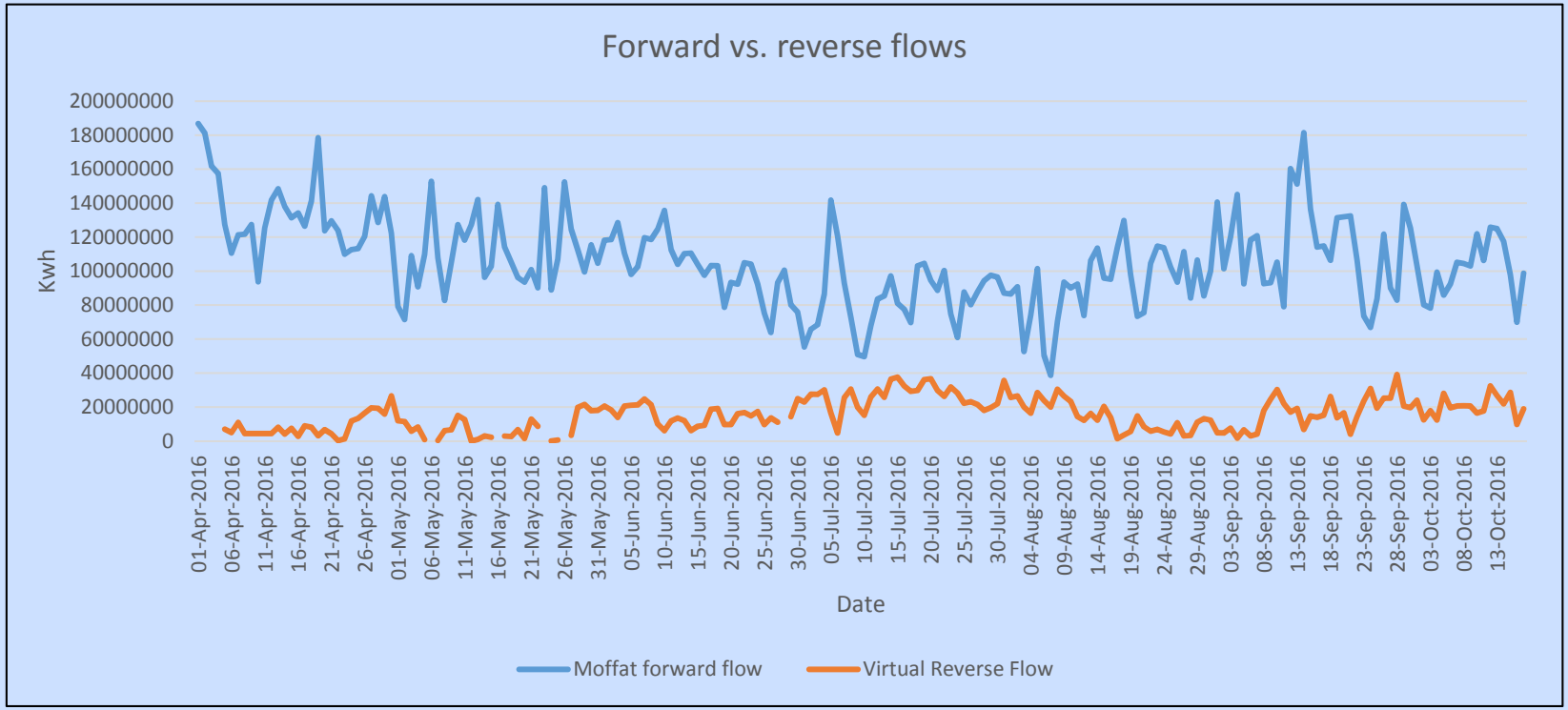
Interconnectors to Britain only apply Virtual Backhaul product

# Indigenous gas displacing imports



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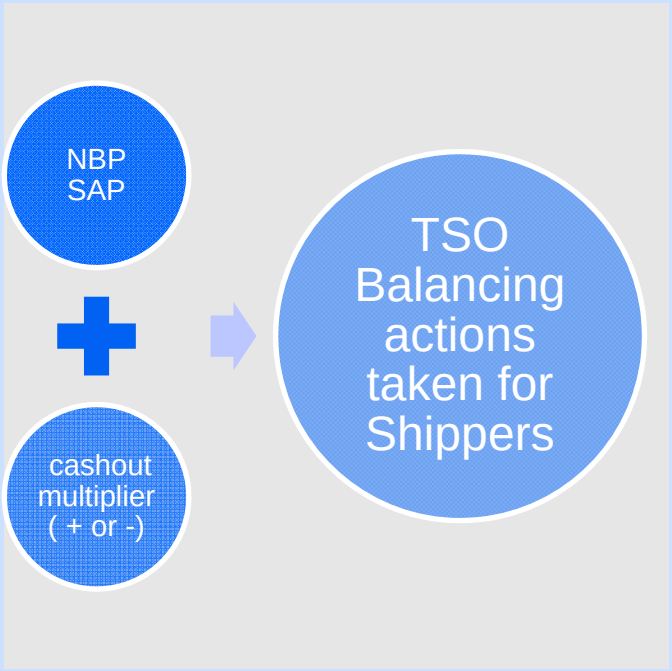
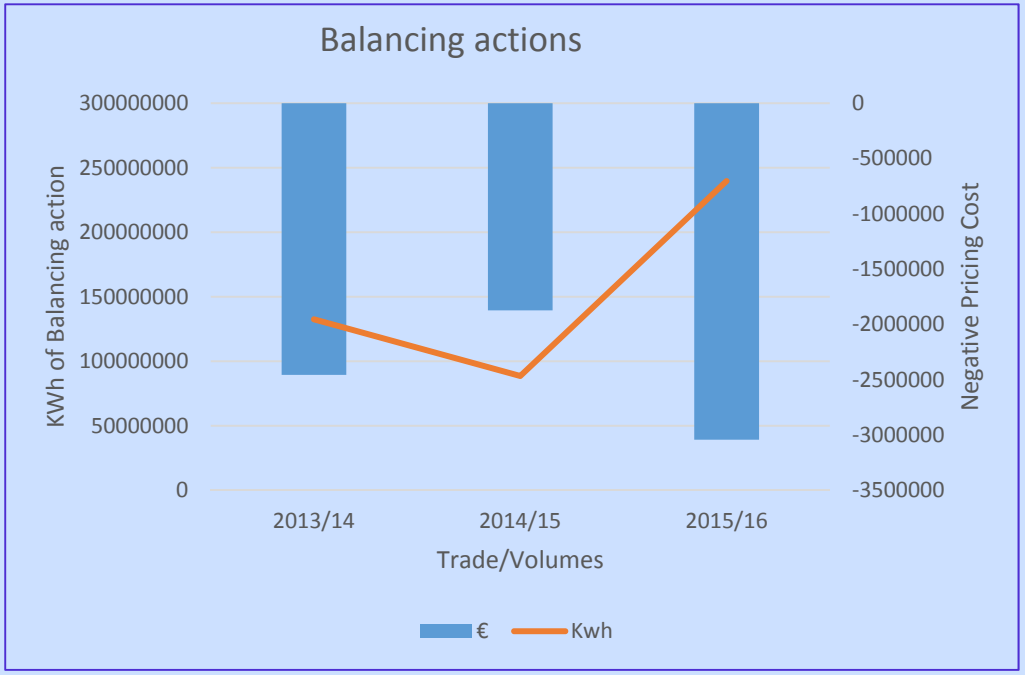
# Current regime




Current regime <u>should</u> encourage Shippers to balance their own portfolio, using a cash out multiplier where Shippers are not in balance ( -25% SAP for long & +25% for short)
However, price discovery and market dynamics do not occur, and therefore Shippers may leave gas on the system and obtain an NBP linked price ( SAP).
Costs & level of Balancing actions has increased in last year, indicating changes are required before 2019

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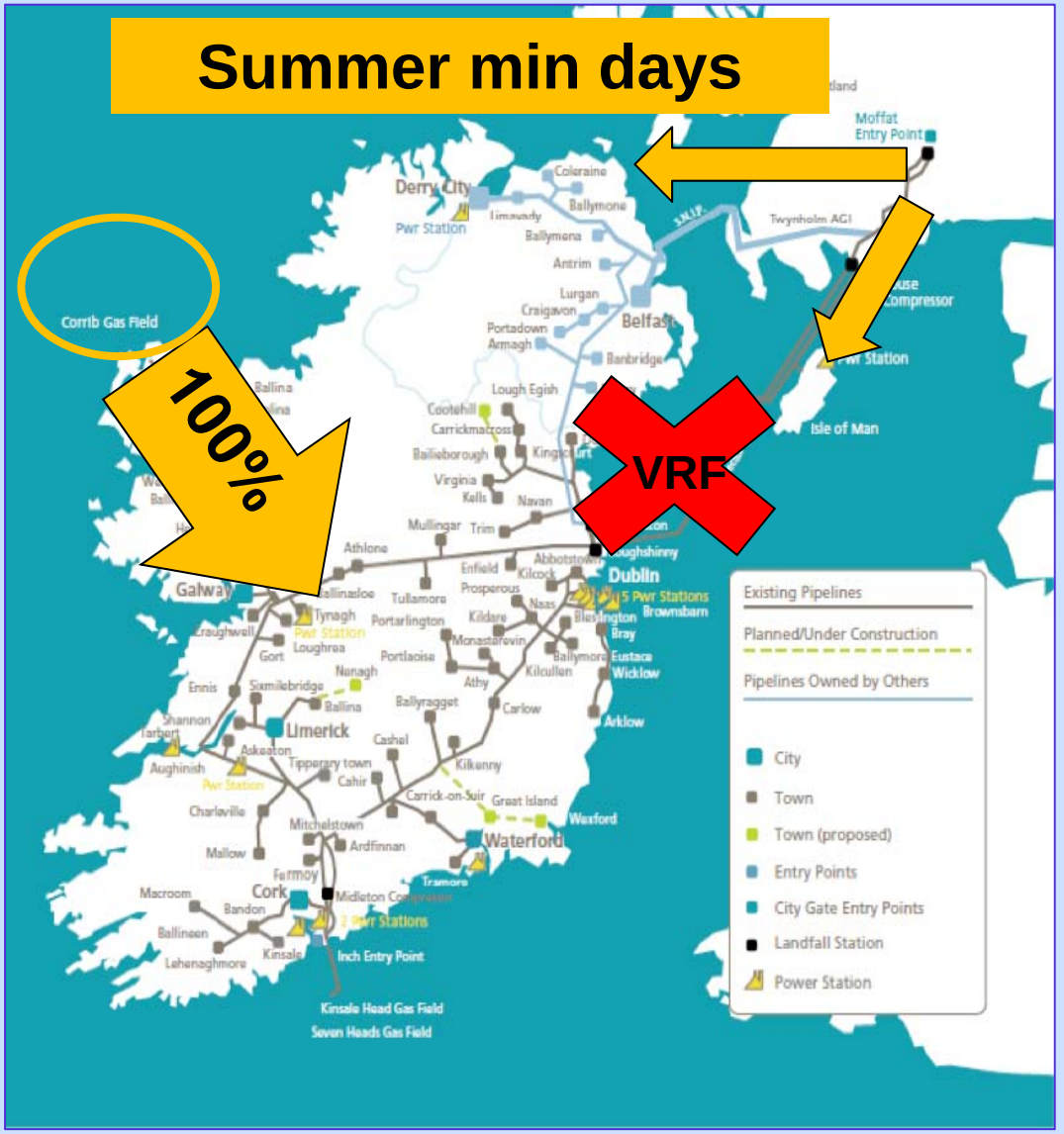
# The issue

Flows required to Northern Ireland and Isle of Man

- Due to changes in gas flows in Ireland there are certain days on which gas flows are in excess to domestic requirements
- Ireland lacks a price signal where Supply/Demand equilibrium can be reached
- Limited availability of VRF, and dampened price signals can result in shipper's not balancing optimally
- The current tool or signal at the TSO's discretion is tolerances and cash-out prices
- Shippers are cautious with nomination behaviour and therefore affecting the ability of the TSO in terms of gas flow scheduling at the IPs



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# Interim Measures

## 2015

Interim Measures applied due to lack of liquidity, but strong link to NBP

Tolerances allowed and cash out prices set at a level that should promote Shippers to balance their individual portfolio

Cashout prices set by reference to NBP SAP

Two levels of imbalances permitted
First tier ( 0.98, 1.02)
Second tier (0.95, 1.05)

## 2016

Cashout prices continuing
Indigenous gas on-stream

Low flow days in Ireland
Limited availability of VRF

Gas being left on the system
Tolerances and cash out prices not creating incentives to balance on certain days

Changes to Second Tier Imbalance prices occurred in September to 0.75/1.25 SAP

## 2017

Trading Platform to be implemented as primary source of Balancing gas

Balancing services contract will need to be retained as liquidity is uncertain

Shipper tolerance and the cash out prices will be retained

Tolerances will be kept under review

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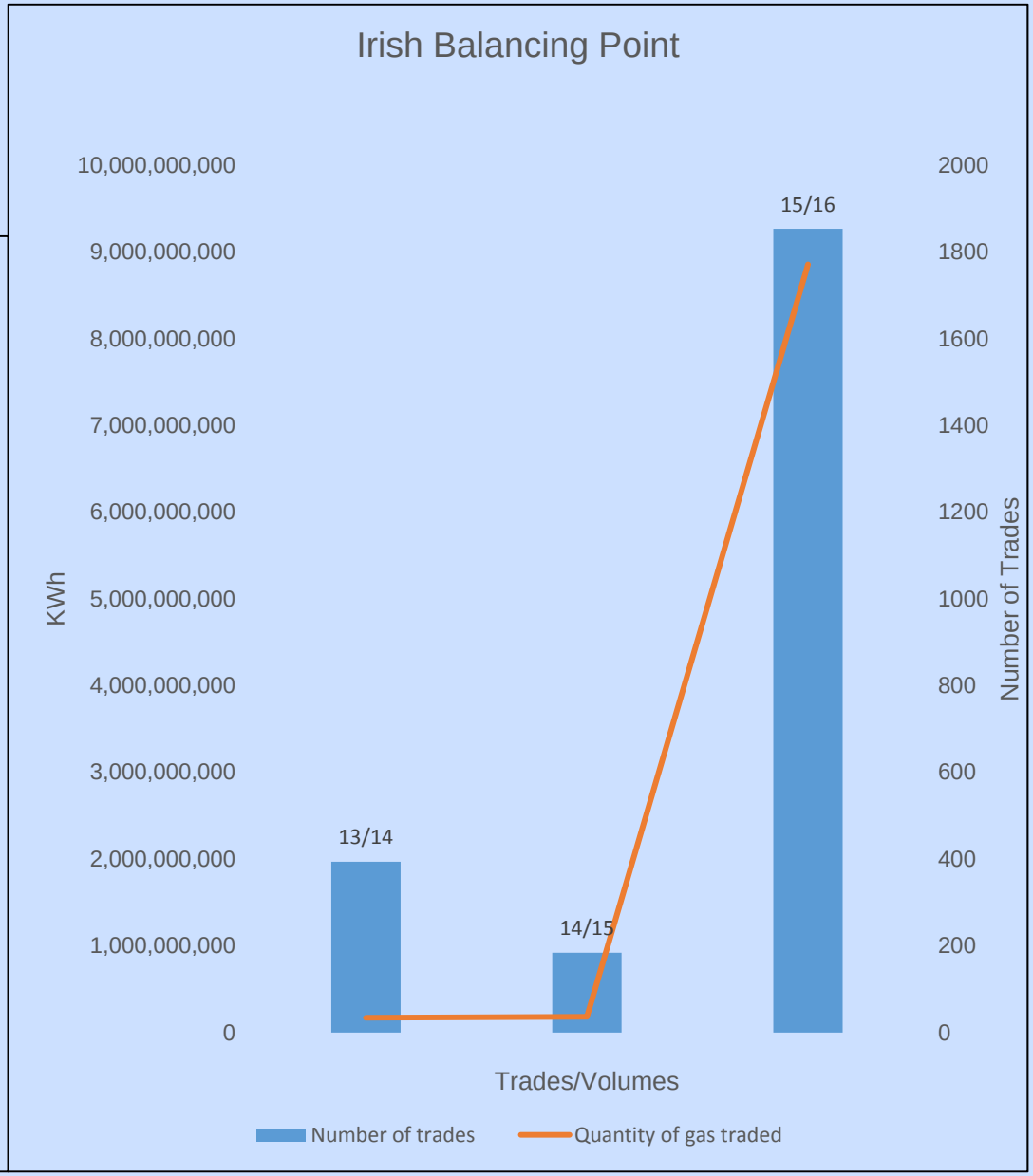
- IBP liquidity and price divergence from NBP, in particular on certain summer days where supply exceeds indigenous demand will be a key issue for the TSO taking Balancing actions
- Trades at IBP have increased significantly in 2015/16, as bundling of capacity means smaller Shippers are taking delivery at IBP
- Balancing should be taken at the most cost effective price and this may require the TSO to make commercial decisions on whether NBP ( balancing contract) or IBP ( Platform) is best at the time
- Balancing contract retention is required for medium term



# Moving to a Trading Platform issues identified

## Platform v. Contract

- TSO will move to taking Balancing actions on the platform
- Market dynamics should indicate the TP as first choice
- Price discovery not yet known
- On limited days there may be limited scope for Balancing actions at the IBP
- Retention of the BAL contract

## NBP v. IBP pricing

- NBP sets a clear, liquid pricing alternative which will set a limitation on local pricing
- The BAL NC intends to foster liquidity to allow Shippers balance their own portfolio
- In Ireland, this is considered an important tool alongside VRF to Britain

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# Conclusions

Trading platform progression ongoing, but lack of liquidity will require retention of balancing contract

Balancing in Ireland must be understood in context of access to GB NBP flexibility and liquidity which Ireland benefits from

Trading may allow Shippers to balance better leading to lower levels of TSO Balancing than currently seen

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# Questions?

Agencija za energijo

# TRANSITION TO TRADING PLATFORM BASED PRICING

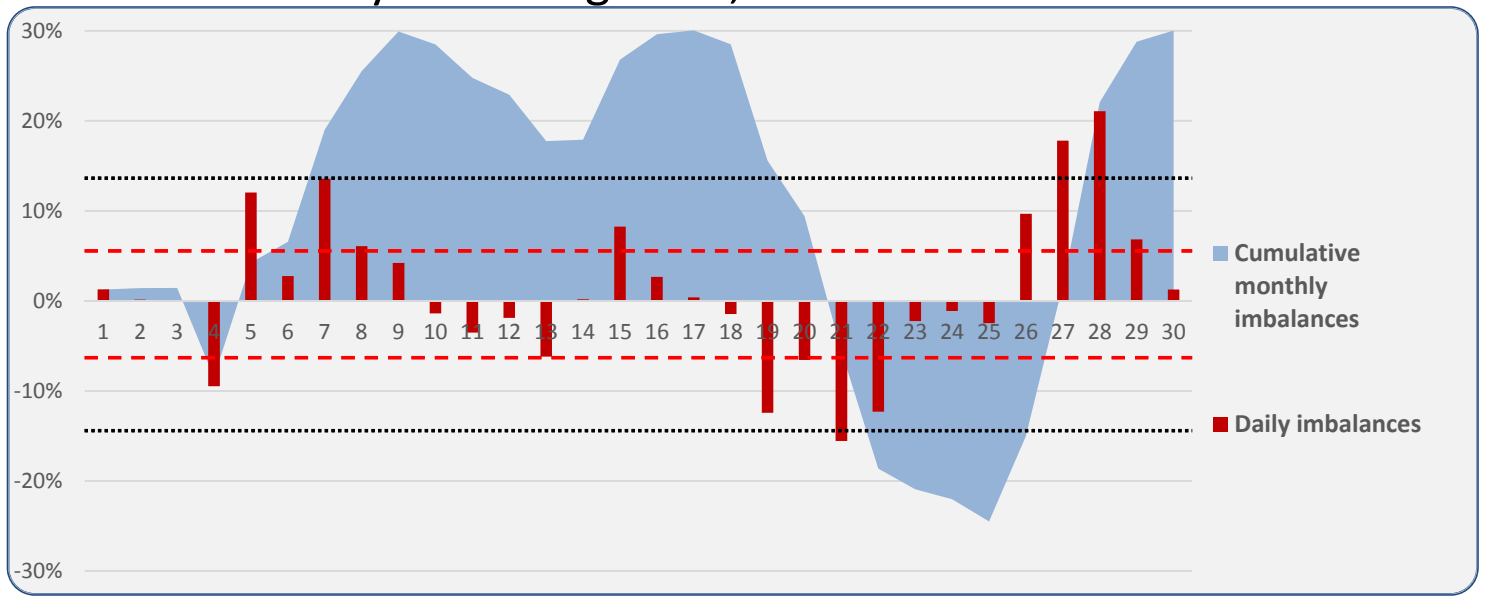
## Slovenian Gas Market

ACER-ENTSOG Joint Workshop on Gas Balancing Code Implementation

Warsaw, 9 November 2016

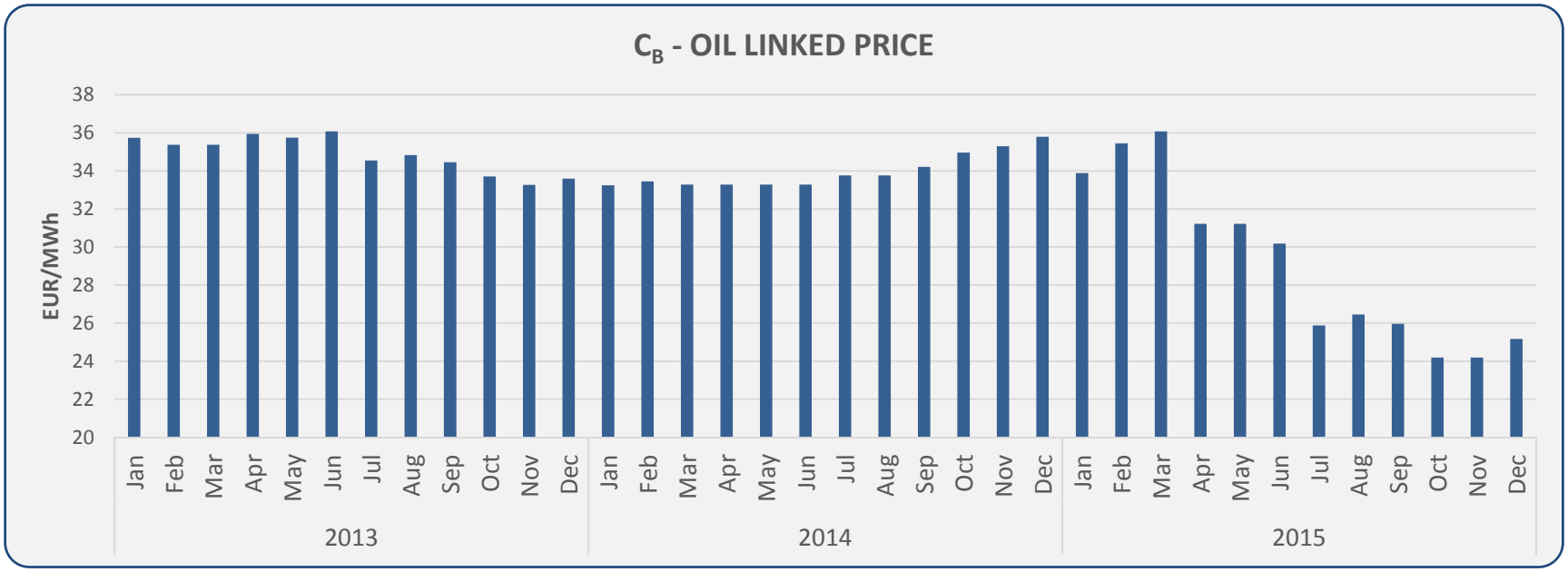
# BEFORE BAL NC IMPLEMENTATION

- Limited balancing by **network users**
  - yearly and weekly nomination, last re-nomination on D-1 (10:00)
  - no trade notifications for gas exchange
  - no daily information on balancing position
- Daily and cumulative monthly balancing
- Tolerances
  - daily balancing: 3%, 4% or 6%
  - cumulative monthly balancing: 15%, 30% or 40%

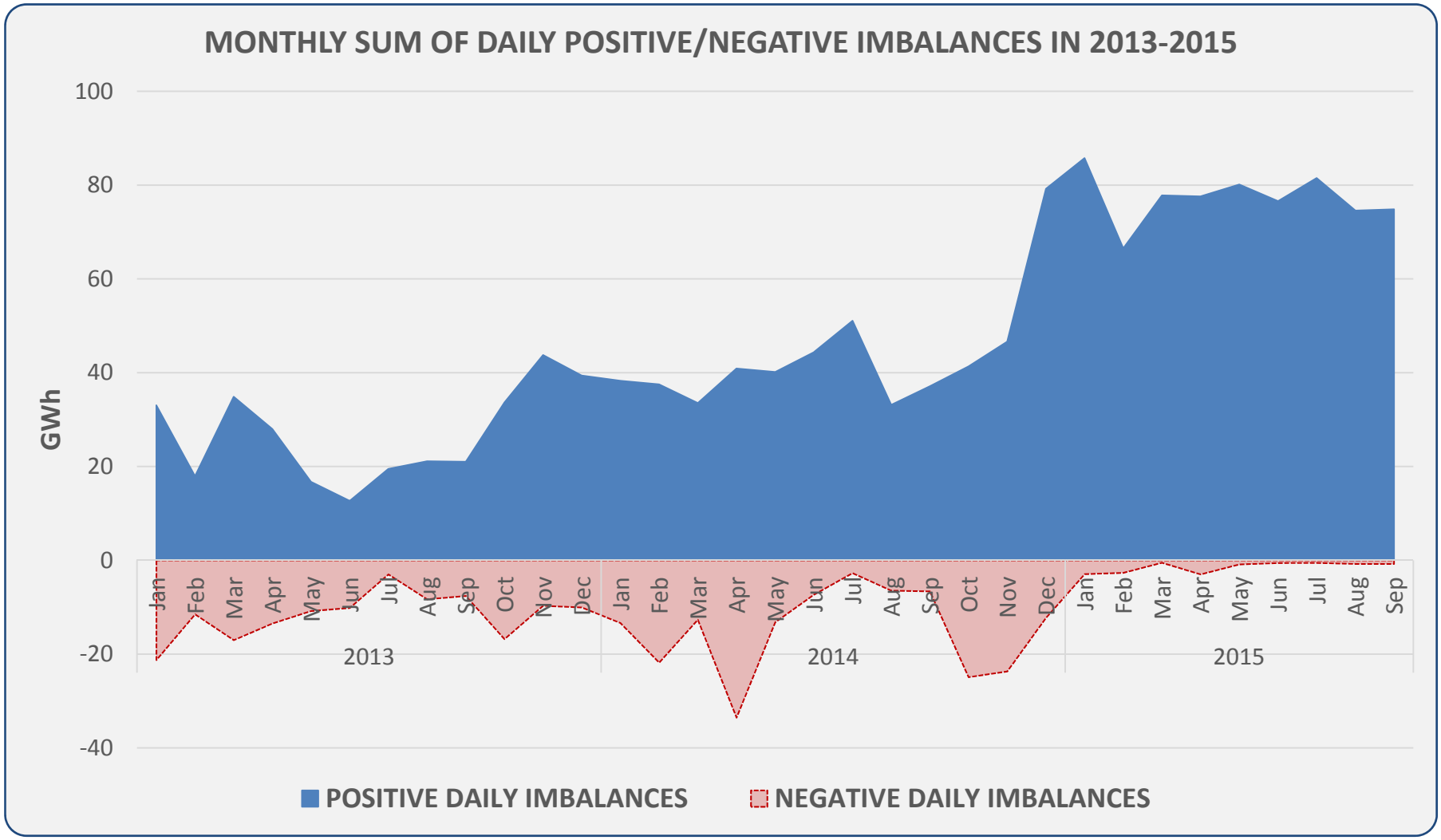


# BEFORE BAL NC IMPLEMENTATION

- Daily imbalance charge calculation
  - allowed daily imbalances
    - positive $C_B$ x 0.91
    - negative $C_B$ x 1.15
  - not allowed daily imbalances
    - positive $C_B$ x 0.74
    - negative $C_B$ x 1.51

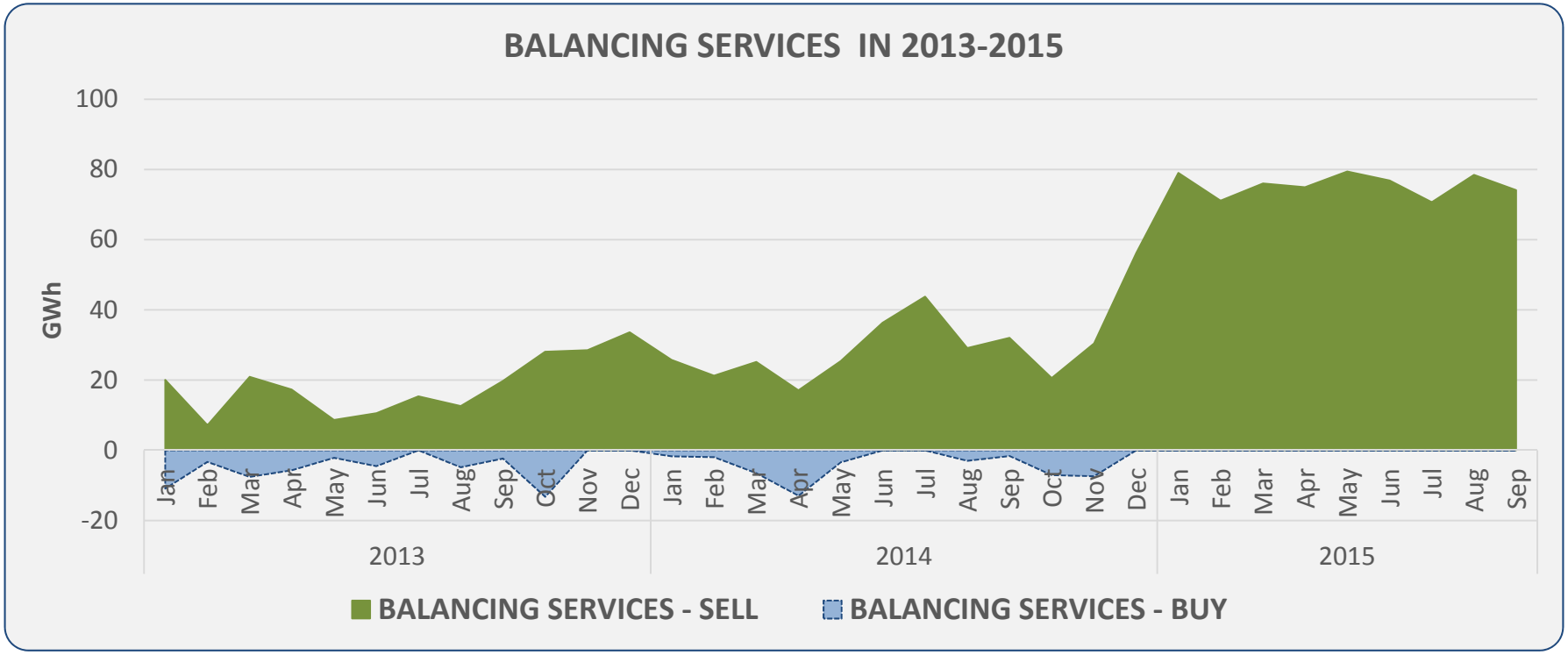


# BEFORE BAL NC IMPLEMENTATION



# BEFORE BAL NC IMPLEMENTATION

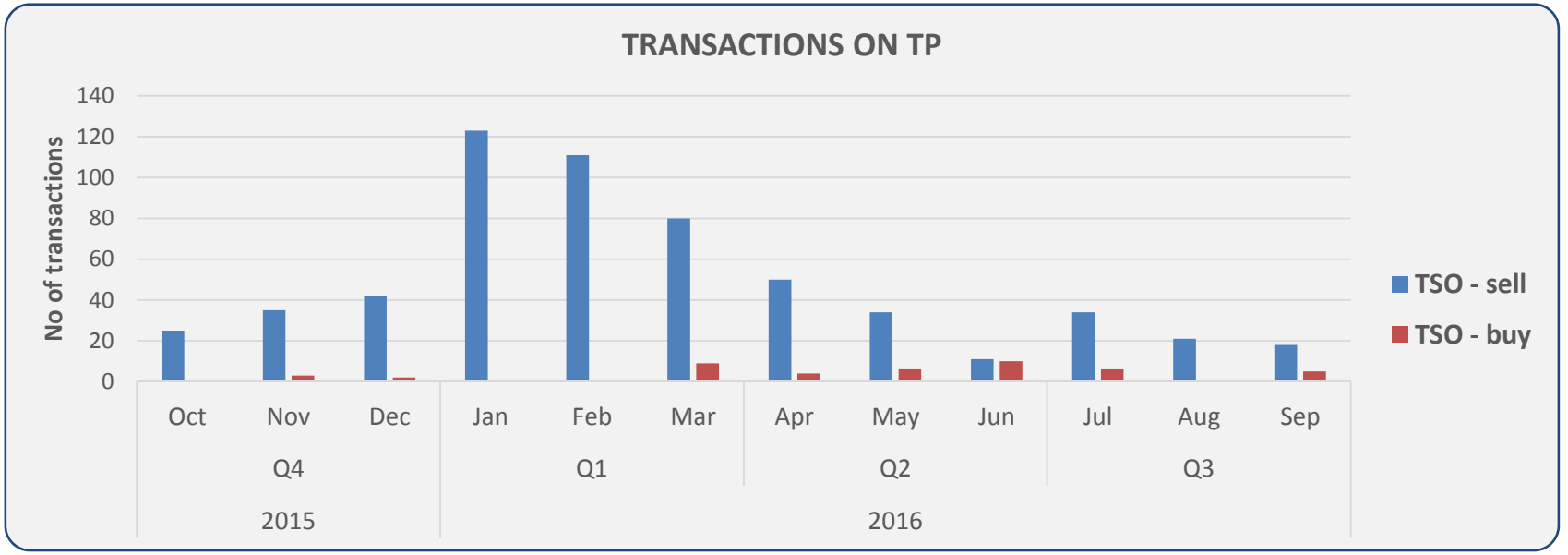
- Many balancing actions by **TSO**
  - no gas flexibility (no VTP, TP, storages, LNG, indigenous gas, …)
  - three-year contract for balancing services (no market based price – oil linked price $C_B$)



# AFTER BAL NC IMPLEMENTATION

- VTP established in Oct 2015
  - Trading platform (TP) is part of VTP
  - bulletin board services

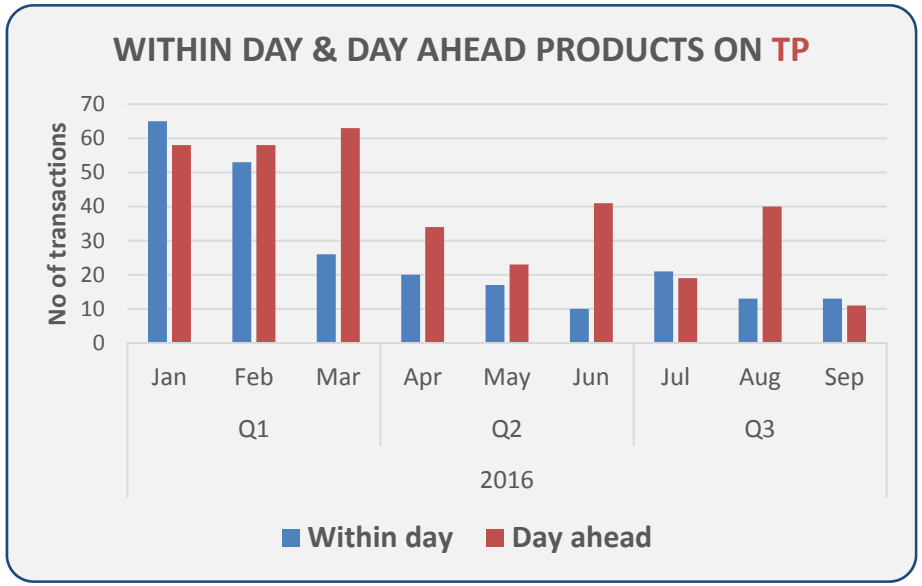
- TSO is TP operator
  - TSO trades on TP for the purpose of undertaking balancing actions
  - bilateral trading between trading participants is enabled

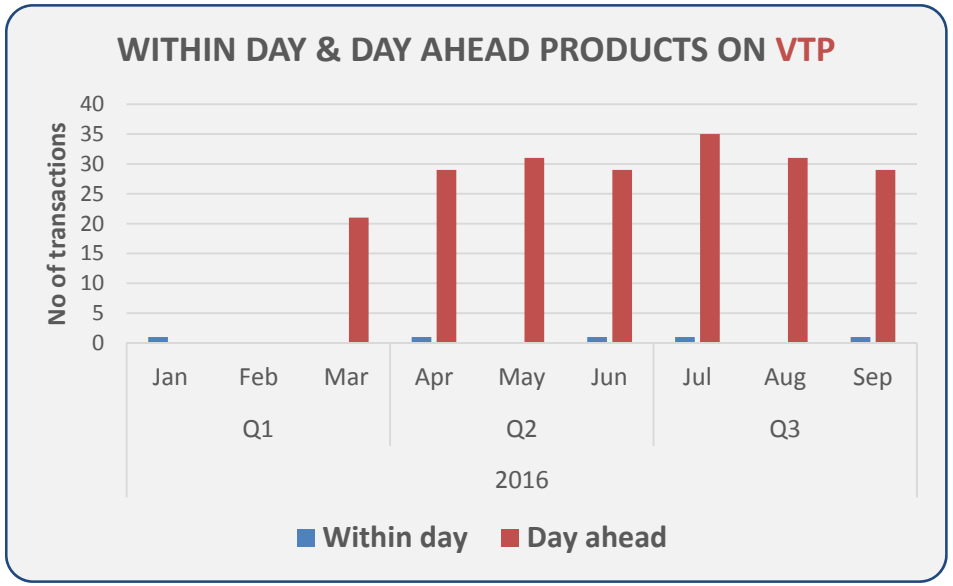


# AFTER BAL NC IMPLEMENTATION

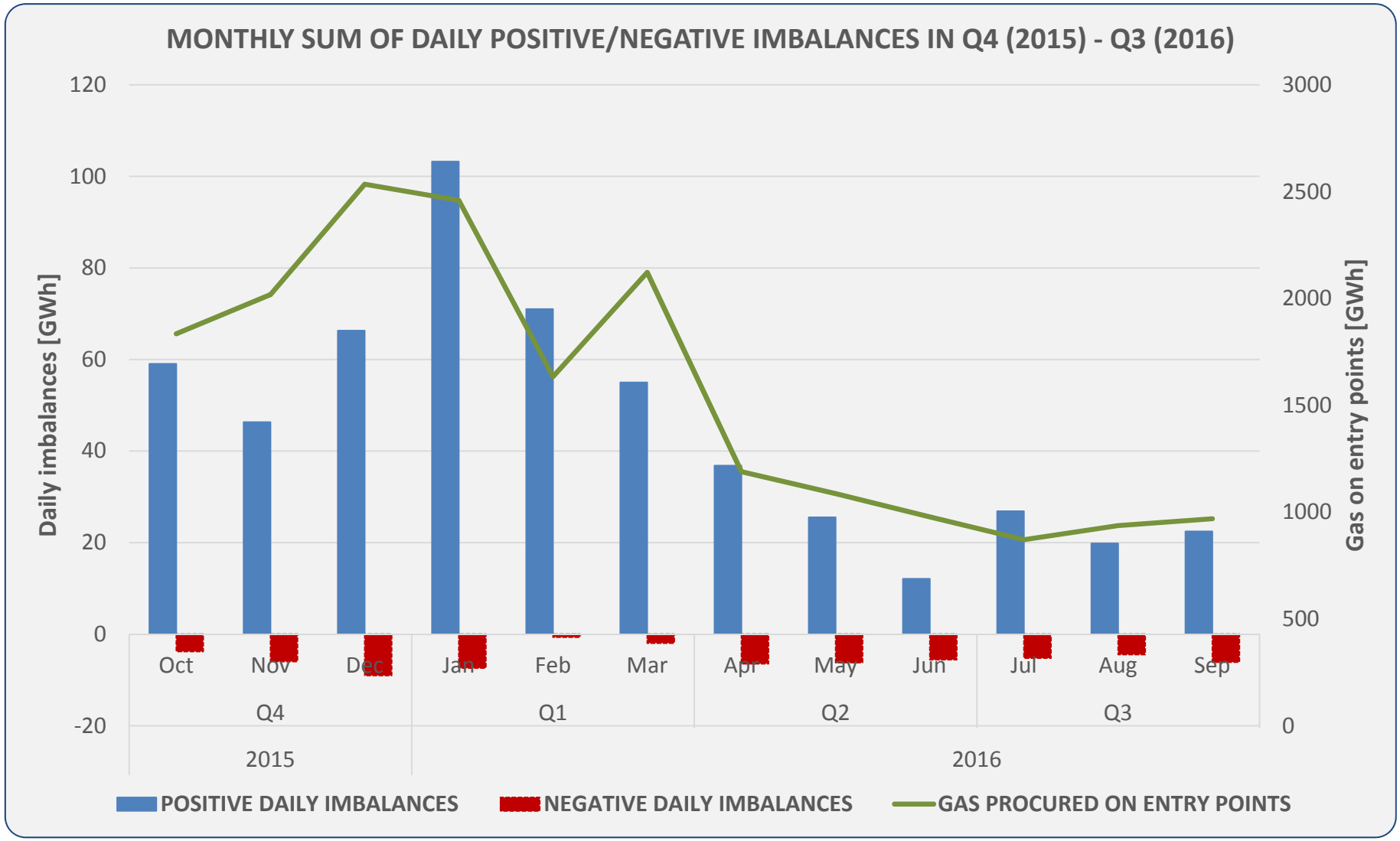
- Merit order
  - Within day title products
  - Day ahead title products
  - Balancing services

- Daily imbalance price calculation
  - marginal sell/buy price (small adjustment 10%)

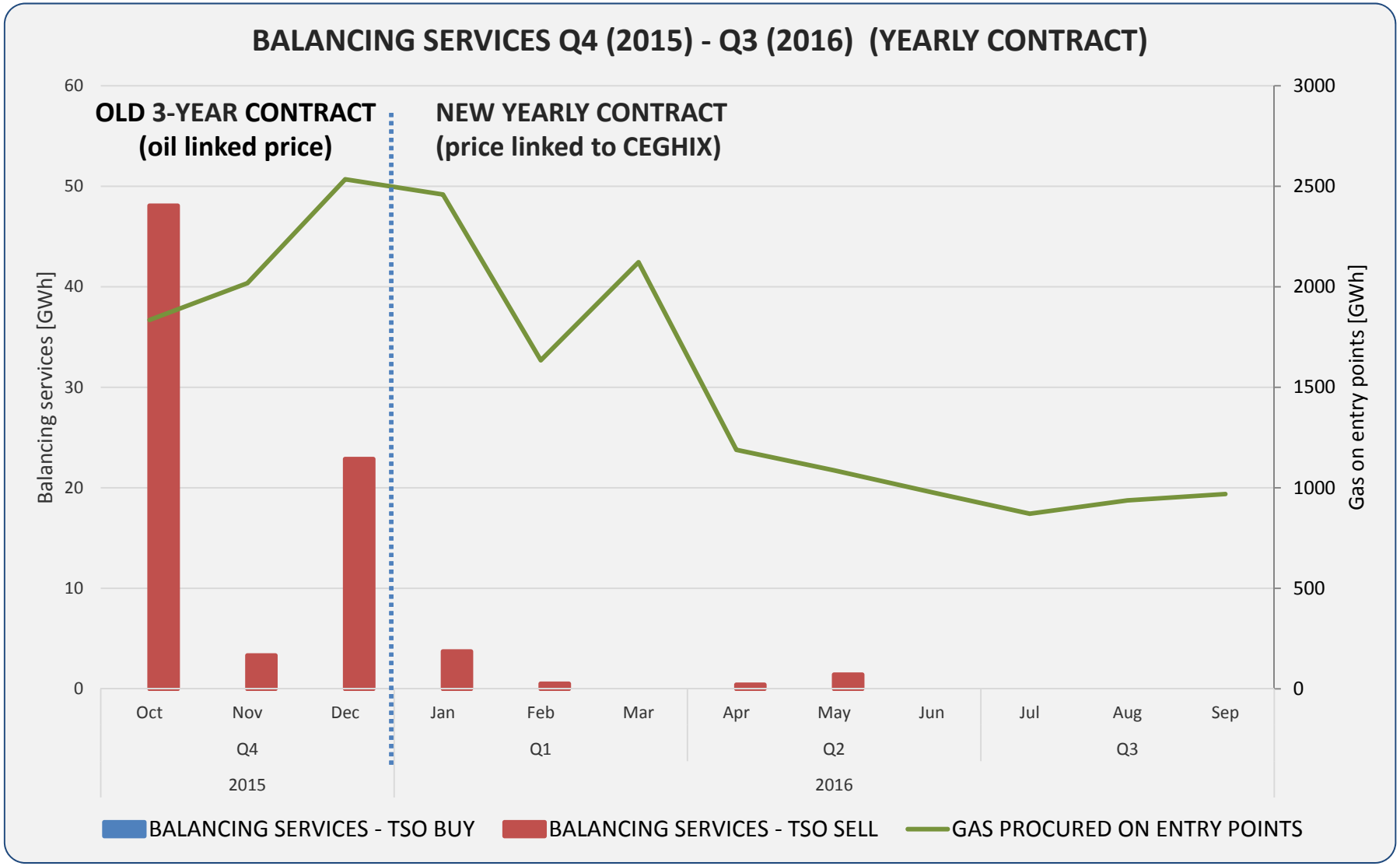


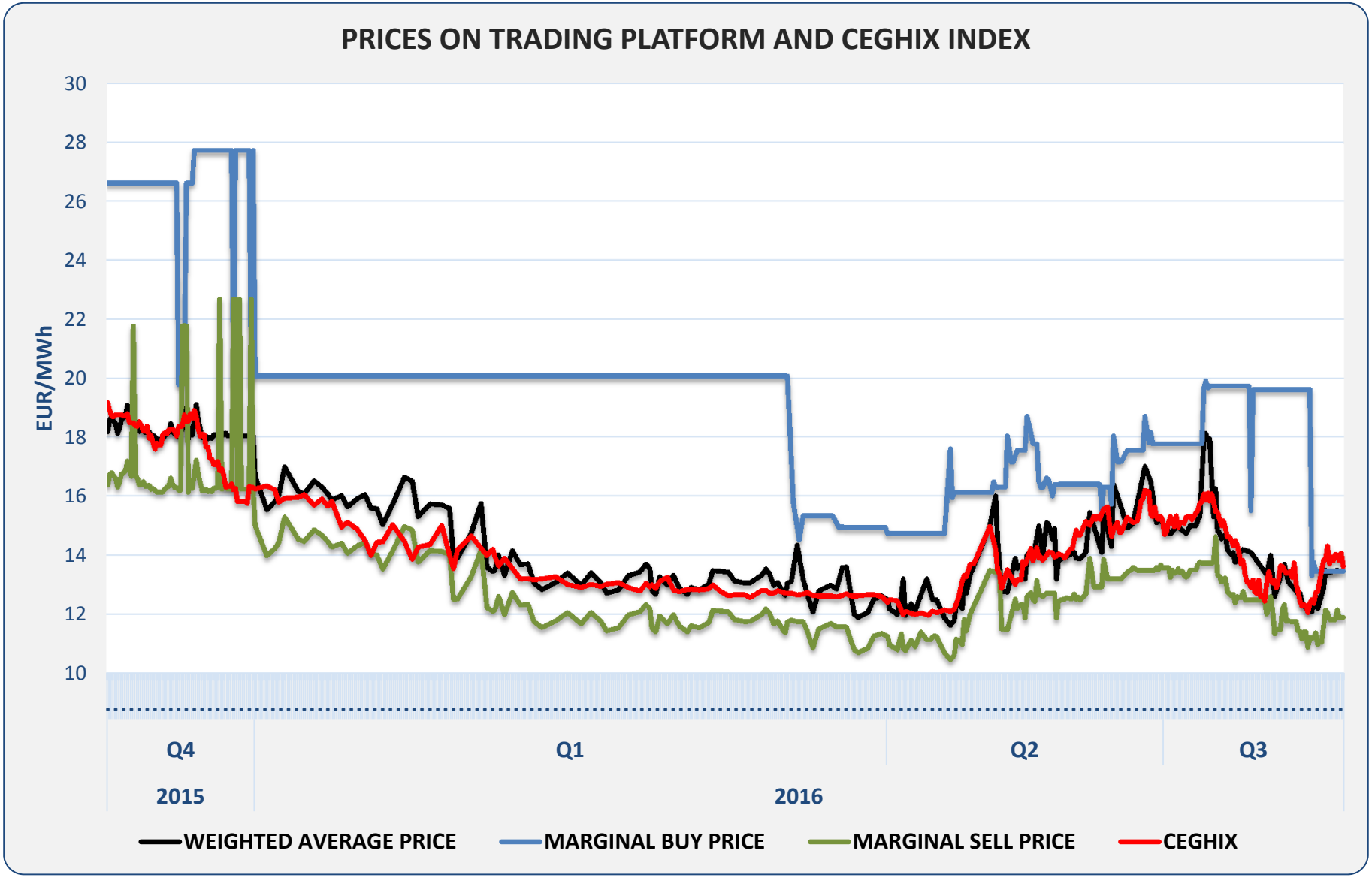
# AFTER BAL NC IMPLEMENTATION



# AFTER BAL NC IMPLEMENTATION

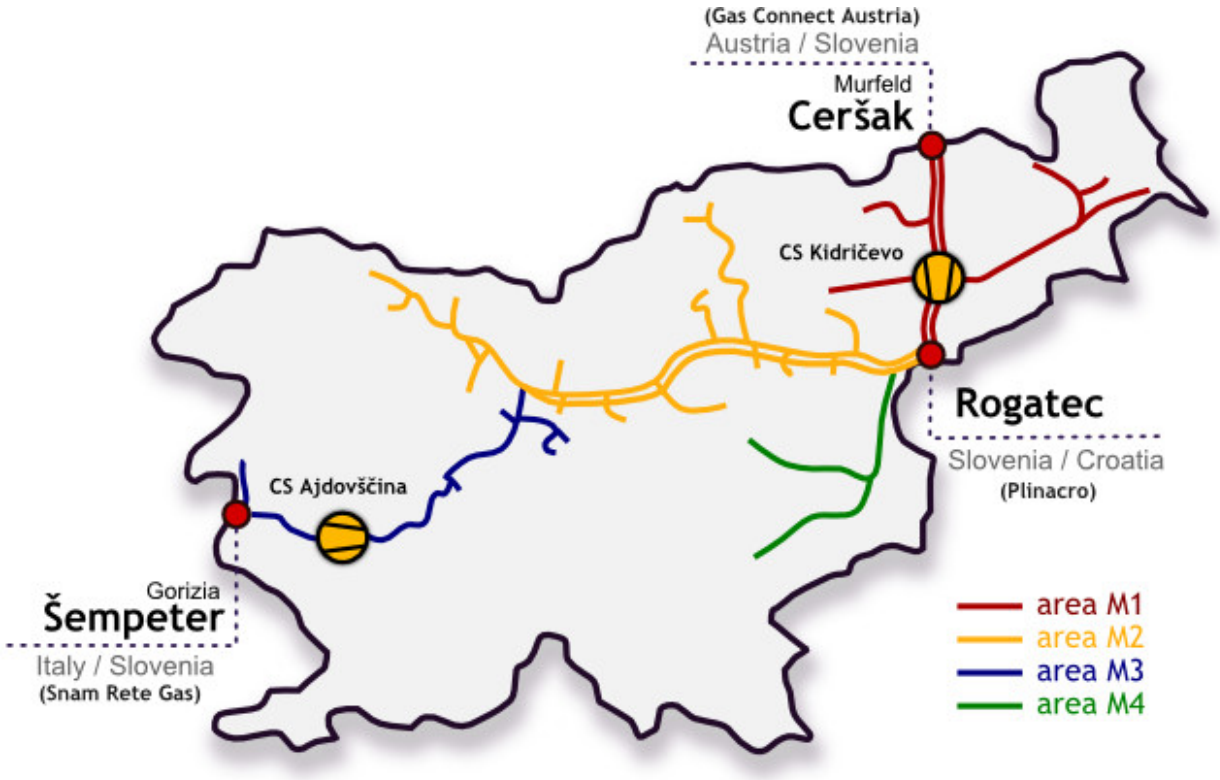


# AFTER BAL NC IMPLEMENTATION



# FACTS OF THE SLOVENIAN TRANSMISSION SYSTEM

| | |
|---|---|
| ❖ TSO | Plinovodi d.o.o. (ITO certified) |
| ❖ Transmission network | 1,155 km |
| ❖ Compressor stations | 2 |
| ❖ Interconnections points | 3 |
| ❖ Demand in 2015 | 0.83 bcm |



NetConnect Germany
simply gas

# The Gas Neutrality Scheme in Germany

ACER-ENTSOG Joint Workshop on the Gas Balancing Code Implementation

Warsaw, 9 November 2016

# Agenda

1. Information provision “Variant 2”
2. Neutrality scheme before and after BAL NC implementation

# Information Provision “Variant 2”

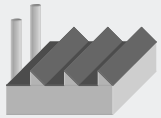
# Article 30 (5) BAL NC

Where the information model **variant 2** is applied and thus the neutrality charge for balancing may be based on forecasted costs and revenues, the transmission system operator's methodology for the calculation of neutrality charge for balancing shall **provide rules for a separate neutrality charge** for balancing in respect of non daily metered off-takes.

For what reason and

what does that mean in practice?

# Information provision “Variant 2” in Germany

| | Forecast | Metering | Allocation |
|---|---|---|---|
| Intra Day Metered  | Not provided | Provided by DSO via MAM* on D / D + 1 | Final Metering |
| Non Daily Metered  | Provided by DSO via MAM* on D-1 until 1 PM | Not provided | Forecast |

* MAM = Market Area Manager

- NDM forecast is provided to the shipper by the DSO as final allocation data on D-1
- Differences between forecast and actual consumption of NDM do not cause portfolio imbalances for shippers
- Consumption of IDM needs to be forecasted by the shippers themselves

# Imbalance positions for NDM and IDM

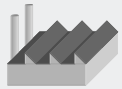
## Non Daily Metered

- Forecast = Allocation = 100 units
- Supply by shipper = 100 units
- Actual consumption of NDM = 90 units

| Shipper Portfolio | | DSO network account | |
|---|---|---|---|
| En: 100 | Ex: 100 | En: 90 | Ex: 100 |

Difference between NDM forecast and actual consumption leads to imbalance in DSO network account

## Intra Day Metered



- Metering = Allocation = 100 units
- Own forecast of shipper = 90 units
- Supply by shipper = 90 units

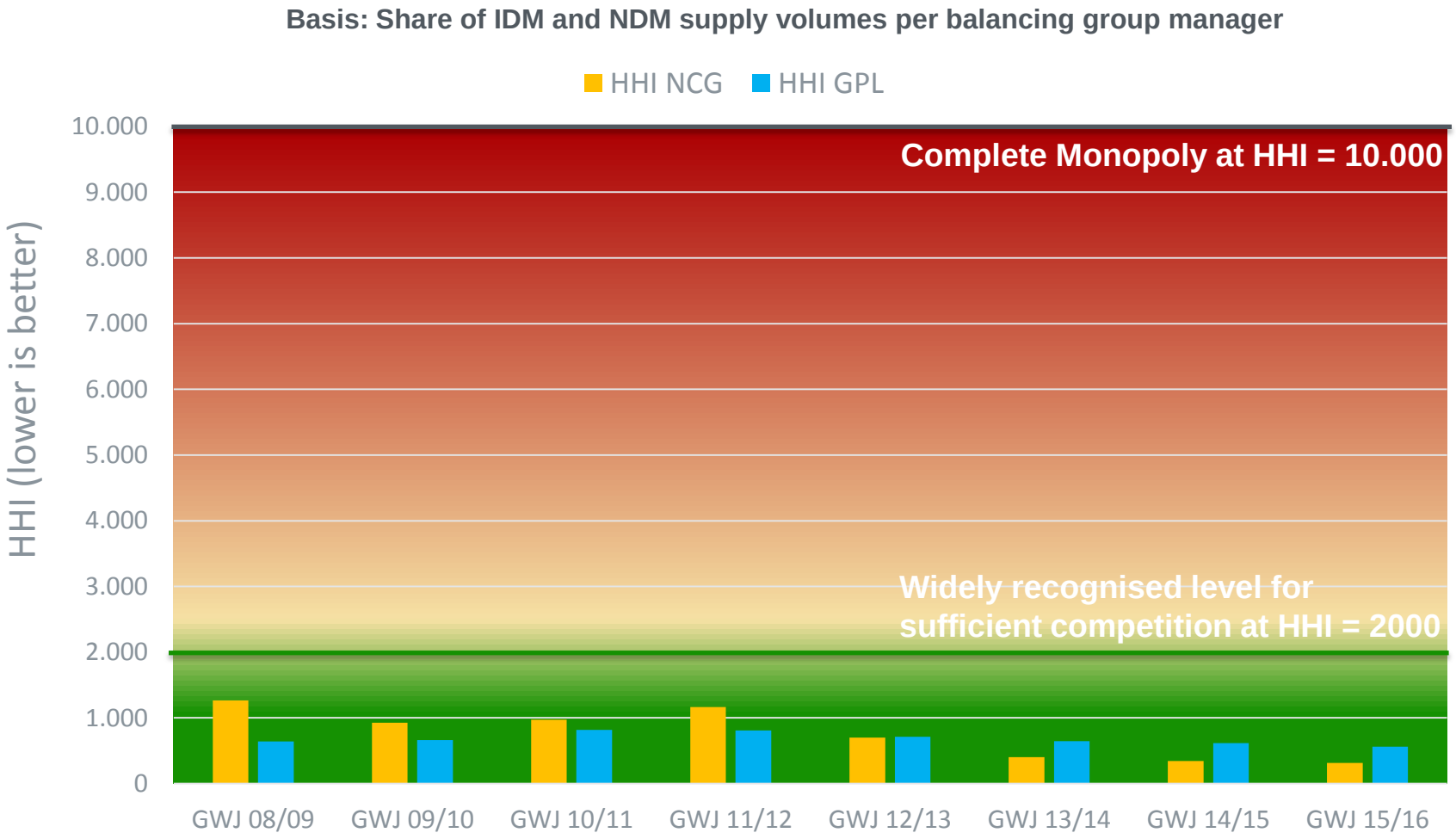
| Shipper Portfolio | | DSO network account | |
|---|---|---|---|
| En: 90 | Ex: 100 | En: 100 | Ex: 100 |

Difference between metering and shippers own forecast for IDM leads to imbalance in shipper portfolio

# Effects of Variant 2

- Balancing against a forecast enables shippers to supply NDMs (in particular household consumers) without any **imbalance risk** in their portfolio
- Thus, the market entry barrier is lowered for suppliers of household customers
- Accordingly, the **concentration** of gas suppliers and **competition** between them is very high in Germany
- At the moment, there are more than 450 active balancing group managers in the Market Area of NCG, of which about 250 are supplying NDMs
- Depending on the accuracy of the DSO forecast, Variant 2 can however lead to **physical imbalances** in the network which need to be balanced by the MAM by engaging in balancing activities
- The costs / revenues related to such imbalances are mostly compensated through the reconciliation process. The neutrality charge for NDM covers the remaining costs / revenues

# Herfindahl-Hirschman-Index for end consumer supplies in Germany




GWJ = Gas Year
Source: Calculations of GASPOOL and NCG

# Neutrality scheme before and after BAL NC implementation

# Neutrality charge before BAL NC application

Revenues from shipper imbalance charges

Revenues from sale of balancing gas

Revenues from structuring charges (WDO)

Revenues from reconciliation process

Neutrality account of MAM

Costs for shipper imbalance charges

Costs for the purchase of balancing gas

Costs for reconciliation process

Neutrality charge in EUR/MWh

Payments from shippers and DSOs to the neutrality account of the MAM

Payments from the neutrality account of the MAM to shippers and DSOs

# Neutrality charge since BAL NC application

**Neutrality account NDM**

**Revenues from sale of balancing gas**

**Revenues from reconciliation process**

**Costs for the purchase of balancing gas**

**Costs for reconciliation process**

Neutrality charge NDM in EUR/MWh

Neutrality charge IDM in EUR/MWh

**Revenues from sale of balancing gas**

**Revenues from shipper imbalance charges**

**Revenues from WDO charges**

**Costs for the purchase of balancing gas**

**Costs for shipper imbalance charges**

**Neutrality account IDM**

# Allocation of costs between IDM and NDM neutrality accounts 1/2

- Costs and revenues from balancing activities are divided between the two neutrality accounts according to an **allocation formula** on a daily basis
- The **allocation formula** is calculated as the ratio between shipper imbalances and imbalances in DSO network accounts:

| Aggregated DSO imbalances | Aggregated shipper imbalances | Allocation ratio |
|---|---|---|
| -200 | -100 | 1:2 |

=

Share of DSO = 2/3

Share of shippers = 1/3

| Costs of balancing activities | Revenues from balancing activities |
|---|---|
| 300.000 € | 60.000 € |

=

| Net Costs |
|---|
| 240.000 € |

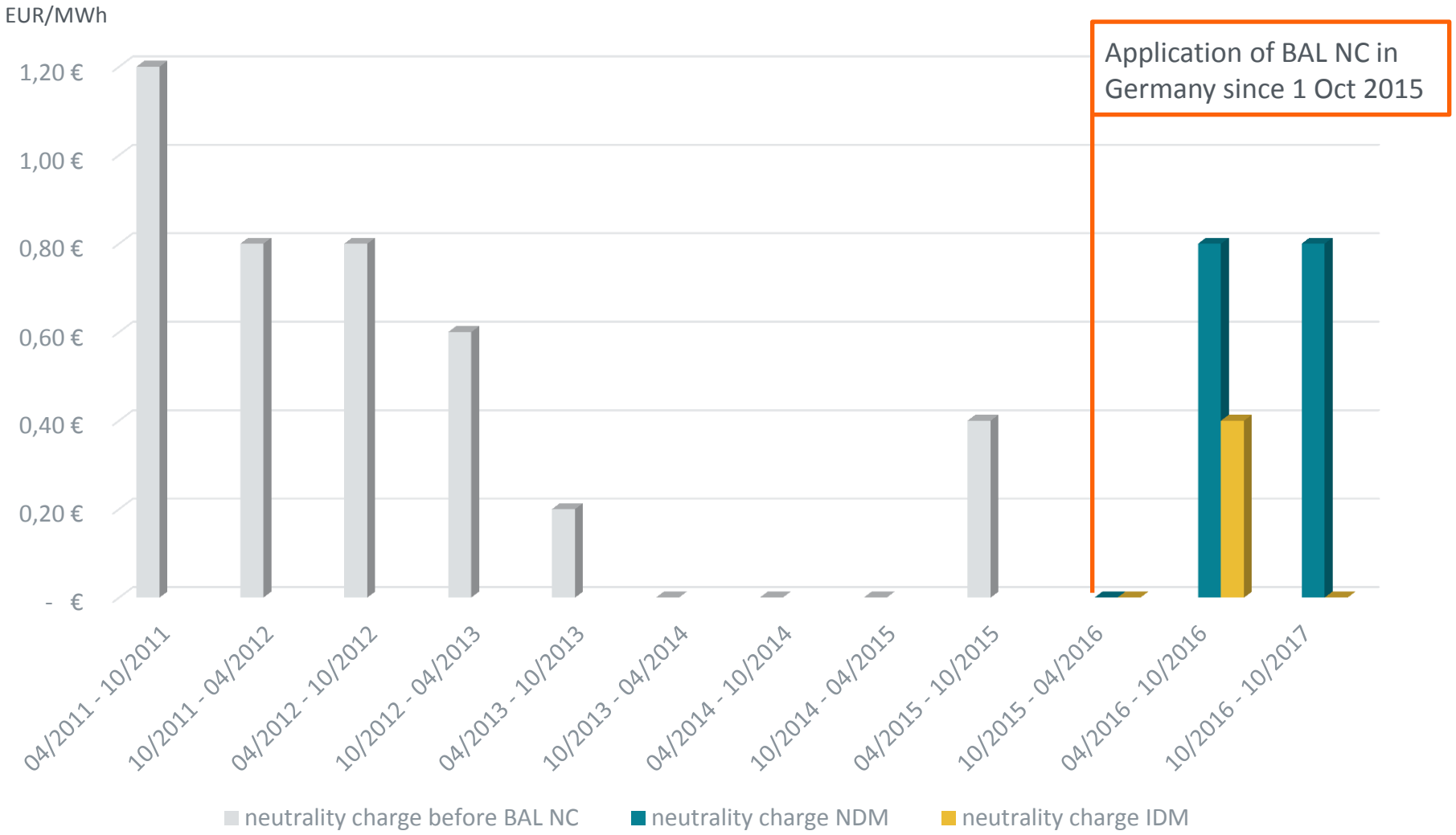
| Share of costs allocated to NDM neutrality account | Share of costs allocated to IDM neutrality account |
|---|---|
| 160.000 € | 80.000 € |

Allocation formula calculated separately for each gasday!

# Allocation of costs between IDM and NDM neutrality accounts 2/2

- Fixed costs of long-term balancing products and capacity costs for balancing activities at the adjacent trading point are not shared according to the daily ratio but according to a standard **yearly ratio**
- The yearly ratio for a gas year will be calculated once all final allocation data for that gas year is collected (preliminary ratio for 2015/2016 = 50:50)

# Neutrality charges in the Market Area NCG



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# Closing remarks

## Reflections on the ACER report's findings

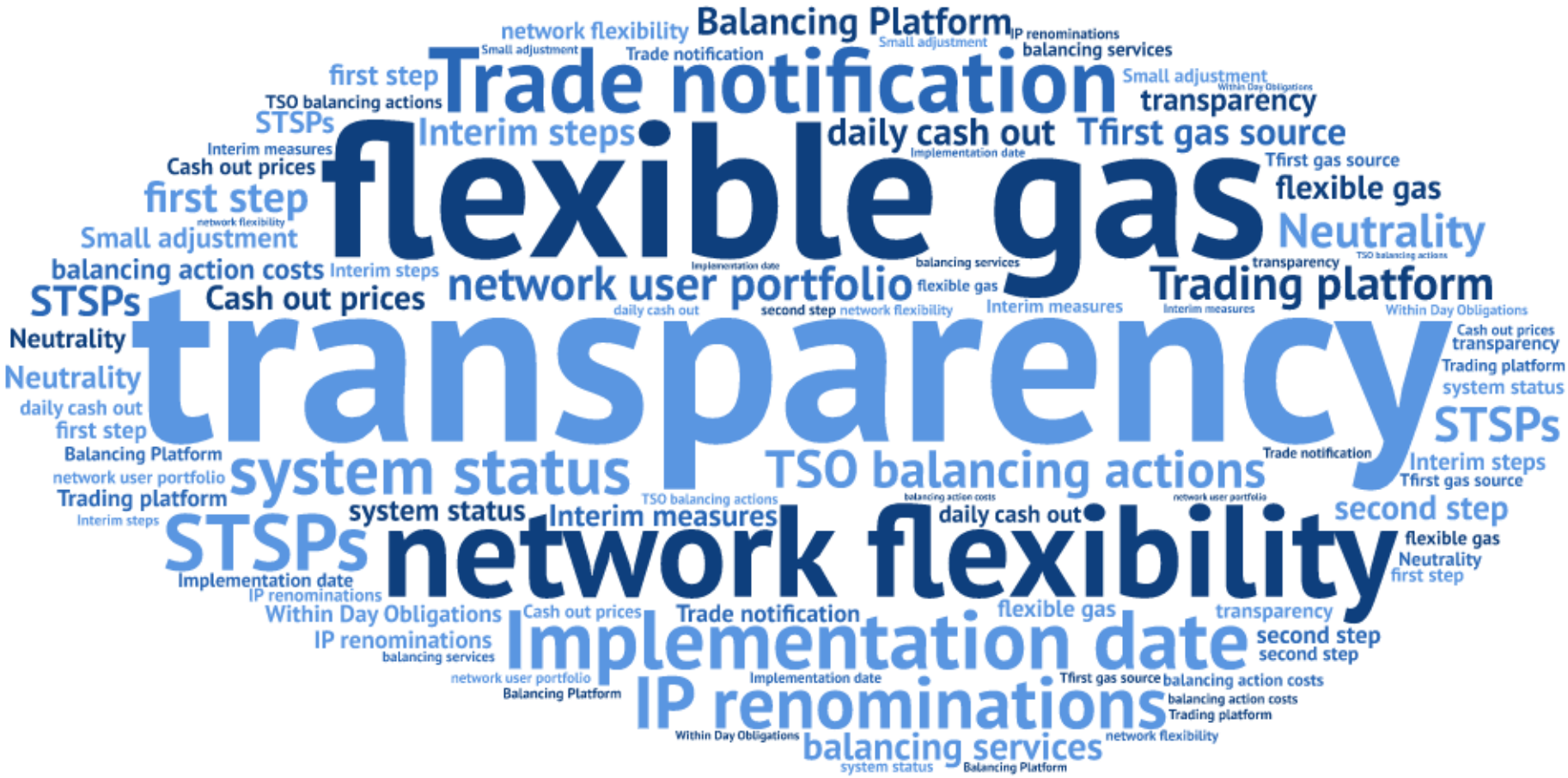
**ACER – ENTSOG Joint Workshop on Gas Balancing Code implementation – 9 November 2016**

# The purpose of a Monitoring exercise

## A Monitoring Report should identify problems and suggest solutions

- Legal compliance is not the end goal of the regulatory work. Effective functioning of markets is a clear goal of the 3rd Package.
- Monitoring is not simply a legal requirement. Monitoring is a proactive way to support meaningful implementation and Code improvements.
- Beyond respect of the letter of the law, we must assess how we achieved the goals set by the regulation.
- The Balancing Network Code placed important goals to be achieved namely a market-based approach to balancing, supporting short-term market development.
- Our Monitoring Report assessed achievements, problems and proposed solutions. It aims at ensuring that the best possible outcomes are taken within a certain market environment.

## The many challenges revolve around key market enabling policies



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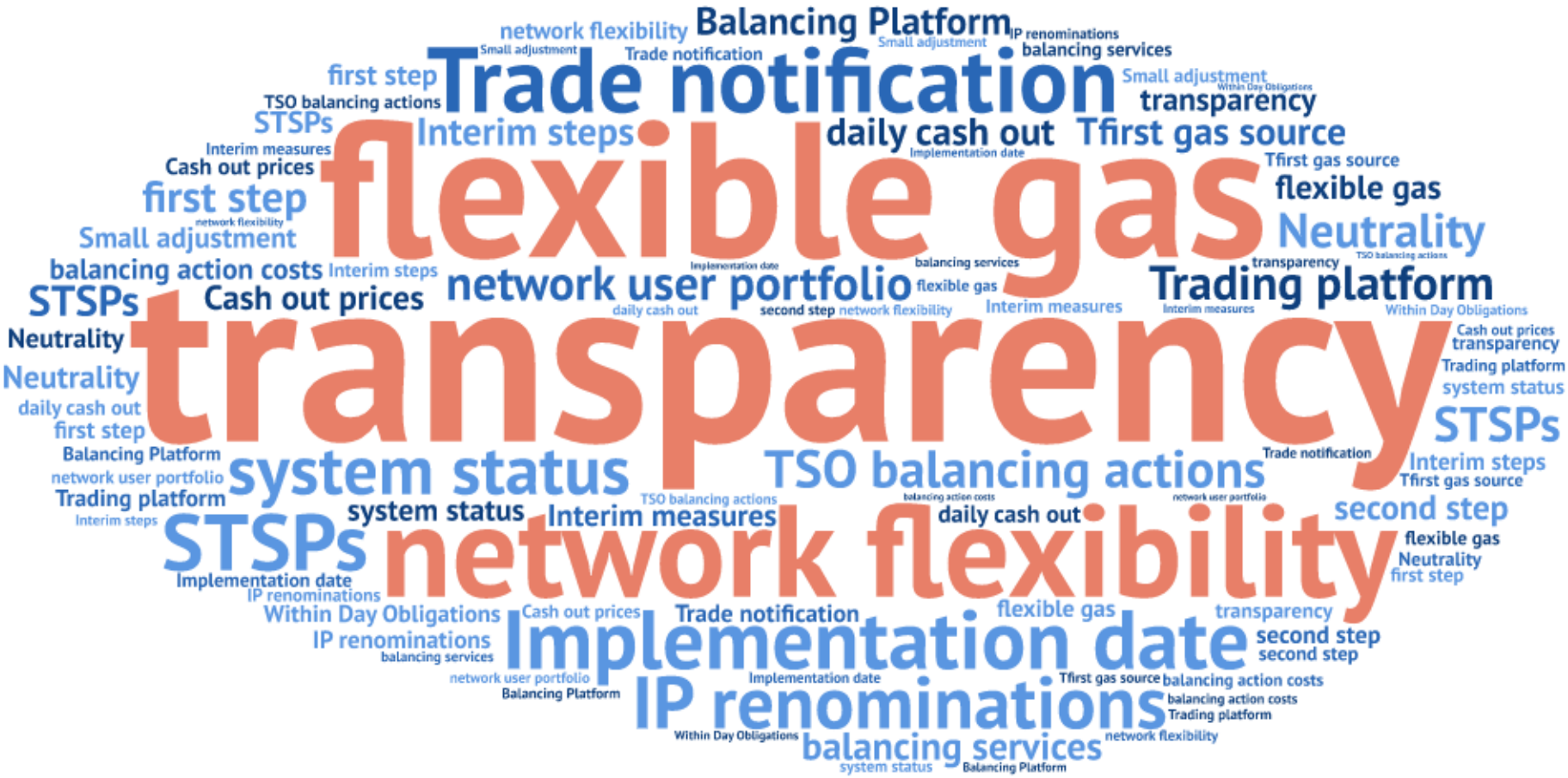
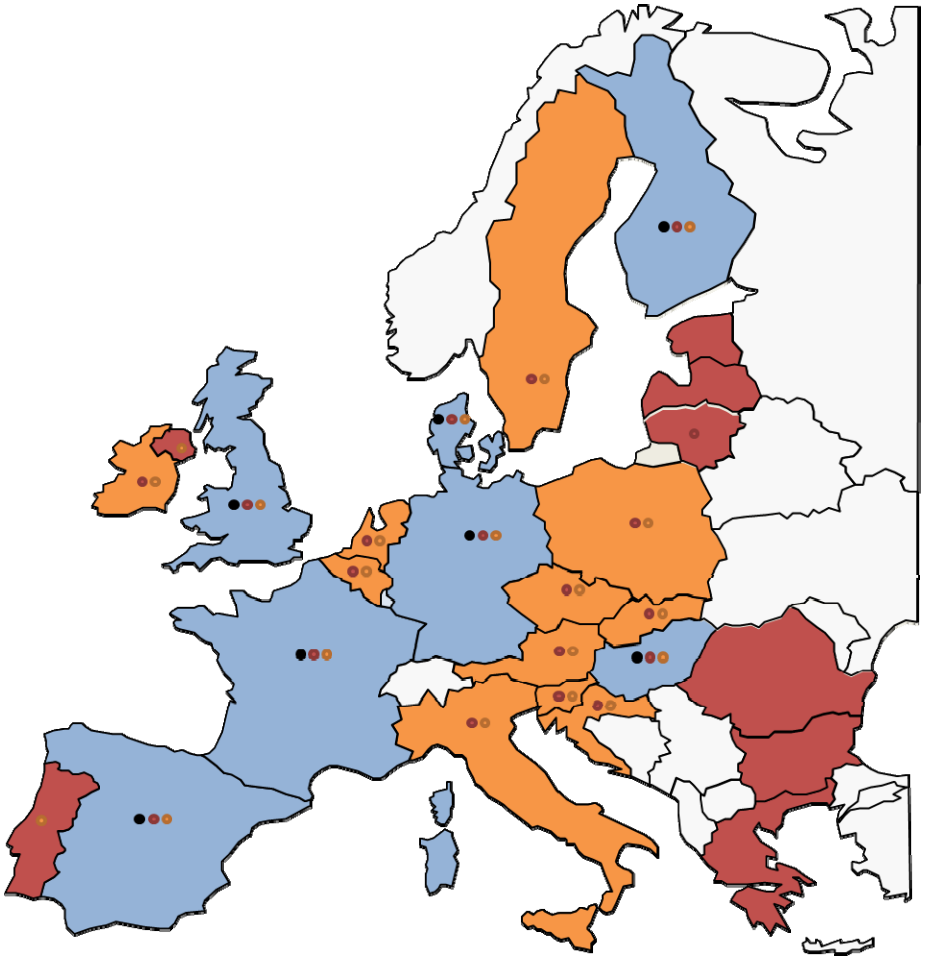
# Market enabling policies behind

## We observed that challenges revolved around the key market enabling policies



## Efforts must be pursued in implementing those fundamentals



Country offering all market enabling features

Country offering 2 market enabling features

Country offering 1 or no market enabling feature

- Information to support market development
- Access to flexible gas
- Access to network flexibility

## Efforts must be pursued in implementing those fundamentals

- 4 Member States must enable a wholesale market
- TSOs in 7 balancing zones are still not relying on short-term market
- Daily cash-out is not fully implemented in 10 Member States
- Neutrality is not implemented in 10 Member States
- Out of 10 Member States applying interim measures, 7 do not have a clear plan, consistent, updated and revised in a timely manner scoping the ending of the interim provisions.

# Efforts must be pursued across the EU

## Cluster of 2015

| | | | | |
|---|---|---|---|---|
| **85-100%** | UK_GB | FR | DK | BELUX |
| **70-85%** | DE | NL | SI | HU |
| **50-70%** | AT | | | |
| **under 50%** | | | | |

Within-day obligations

## Cluster of 2016

| | | | |
|---|---|---|---|
| **85-100%** | | | |
| **70-85%** | ES | CZ | |
| **50-70%** | IT | HR | PT |
| **under 50%** | | | |

Information provision

## Cluster of 2019

| | | | | | | |
|---|---|---|---|---|---|---|
| **85-100%** | | | | | | |
| **70-85%** | PL | | | | | |
| **50-70%** | SK | LT | | | | |
| **under 50%** | IE | Ni | SE | EL | RO | BG |

Implementation plans & platforms

# Conclusions

## The Agency concludes :

- Some legal interpretations of the Code do not take into account the intent of the Code and its main objective, which is to deliver functioning short-term wholesale markets
- Implementation optionality and flexibility undermine the intent of the Code
- Full implementation is not yet achieved and will require further effort across the EU

## … and recommends:

- Regulators and stakeholders in each country should regularly monitor progress
- It is necessary to improve knowledge sharing and dialogue across EU
- European Commission may consider taking enforcement actions in the coming years.

# Thank you for your kind attention

www.acer.europa.eu

**Link to the report:**

http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/ACER%20Report%20on%20the%20implementation%20of%20the%20Balancing%20Network%20Code.pdf

## Goal & rules behind the : effectiveness before compliance

- Beyond strict compliance, the report assesses implementation efficiency
- The Report compares approaches across the EU
- The Report identifies differing interpretations and implementations
- The Report suggests improvements on a national and EU level

| Part I<br>Overview | Part II<br>Policy assessment | Part III<br>Country analysis |
|---|---|---|
| • 10 pages<br>• Standalone<br>• Summary of the methodology<br>• Summary of Part II & conclusions<br>• Summary of Part III & conclusions<br>• Country recommendations | • 20 to 40 pages<br>• Covers a number of selected policies<br>• Provides pan-European problem analysis<br>• Provides solutions and examples | • 1 to 2 pages per country<br>• Based on an evaluation grid<br>• Assesses each main policy<br>• Provides a scoring and a rationale |