ZIGMA Industry Workshop

25 April 2014 Brussels

28 April 2014 London

Agenda & Timings

14:00 – 14:30   Registration and coffee

14:30 – 14:50   PART 1: INTRODUCTION & OVERVIEW

14:50 – 15:30   PART 2: ZIGMA Details
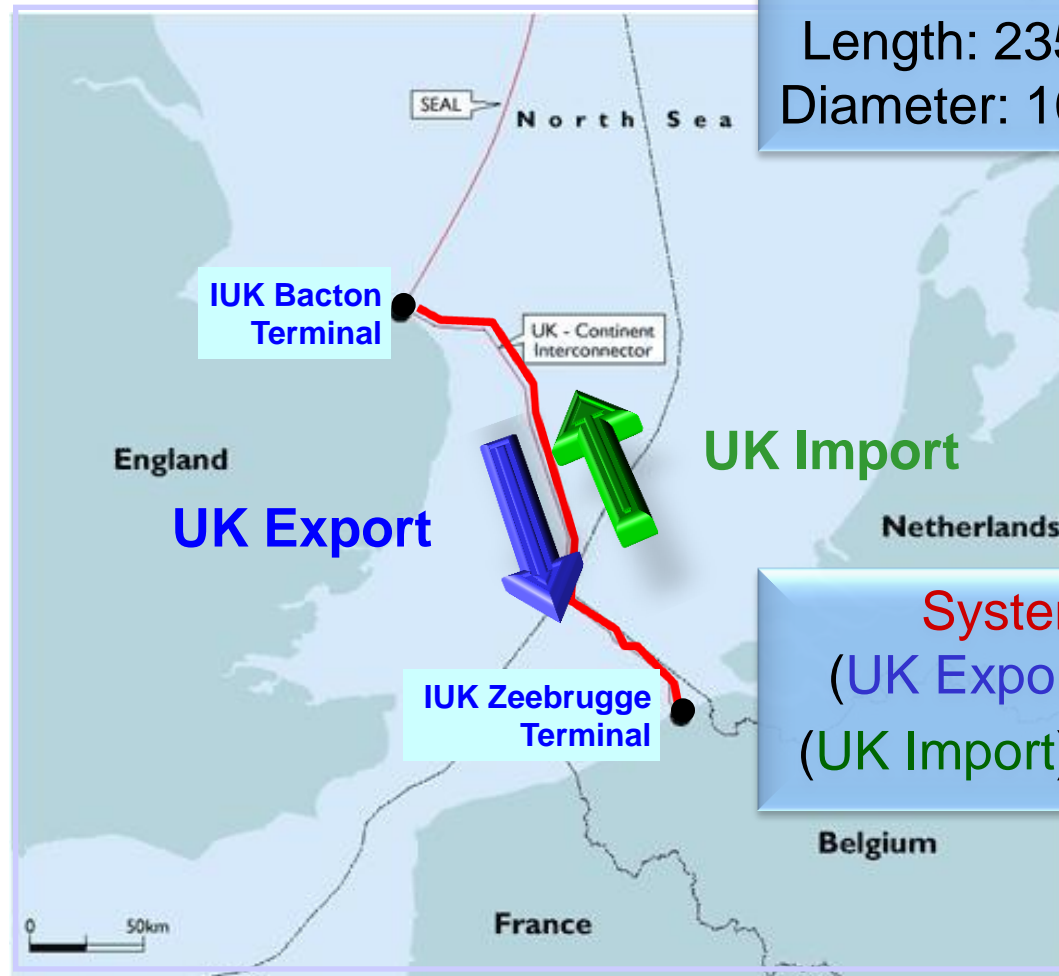
Coffee Break & Networking

15:50 – 16:15   PART 3: BALANCING & WDOs

16:15 – 16:30   PART 4: CONSULTATION & NEXT STEPS

16:30 – 16:45   PART 5: CONCLUSIONS & WRAP UP

Interconnector

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PART 1: Introduction & Overview

Interconnector

Pipeline
Length: 235 km / 145 miles
Diameter: 1016 mm / 40 inch

IUK Bacton Terminal

SEAL

North Sea

UK - Continent Interconnector

England

UK Export

UK Import

Netherlands

IUK Zeebrugge Terminal

System Capacity
(UK Export) 20 bcm/year
(UK Import) 25.5 bcm/year

Belgium

France

0   50km

Provides transportation & flexibility
Capacity equivalent to ~30% of UK Demand

Interconnector

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Fluxys Belgium

Transmission
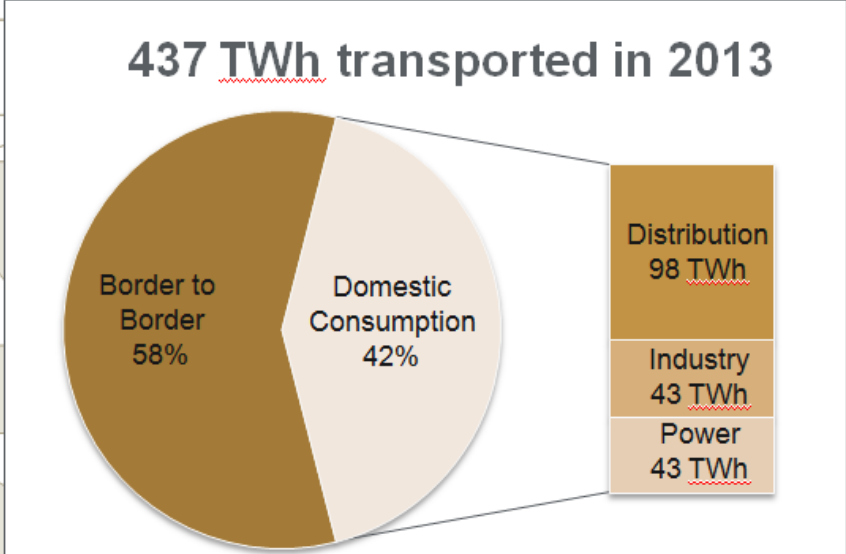
Storage

LNG terminalling

FLUXYS BELGIUM
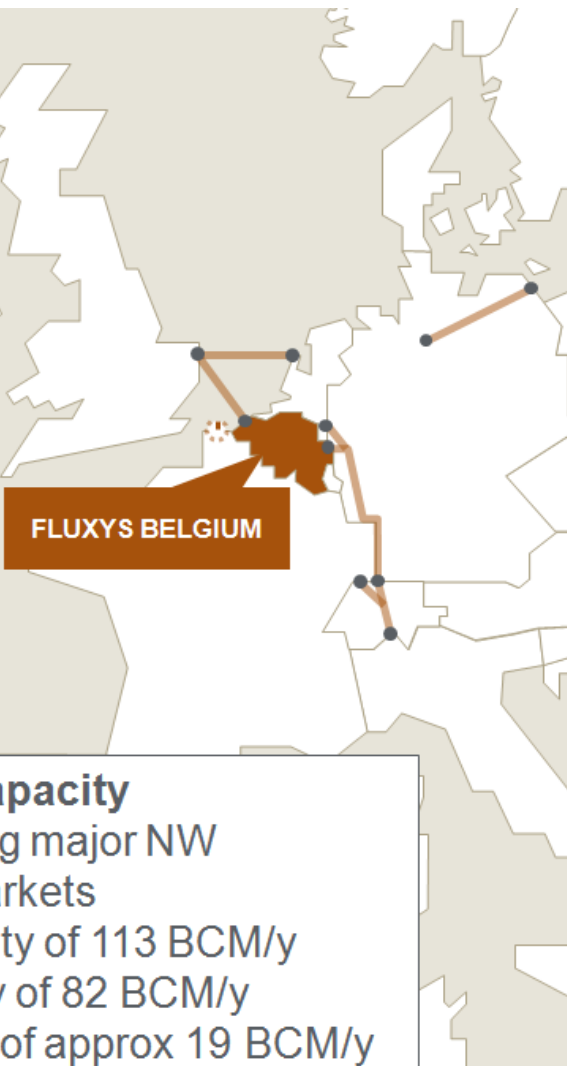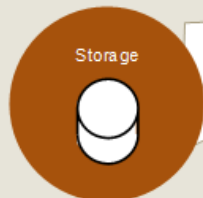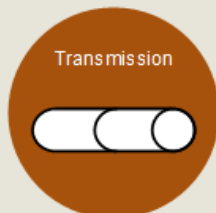
Our infrastructure
- 4100 km pipelines
- 1 LNG Terminal, with a deliverability of 9 BCM/y
- 700 MCM working volume of storage in Loenhout

Our transmission capacity
- 18 IPs, connecting major NW European gas markets
- Total entry capacity of 113 BCM/y
- Total exit capacity of 82 BCM/y
- Domestic market of approx 19 BCM/y

437 TWh transported in 2013

Border to Border 58%

Domestic Consumption 42%

Distribution 98 TWh

Industry 43 TWh

Power 43 TWh

Interconnector

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Our Vision

➤ Be the primary link between GB and continental Europe

➤ Be a reference market for gas in NW Europe

- Be one of the most active trading places in Europe

➤ Offer competitive products to the market

➤ Provide our customers with reliable flexible solutions

➤ Have a model in line with regulation at BE, UK and EU level

Combine Interconnector pipeline, Zeebrugge Area and Zeebrugge Beach hub into one cross-border market area providing improved services to the market
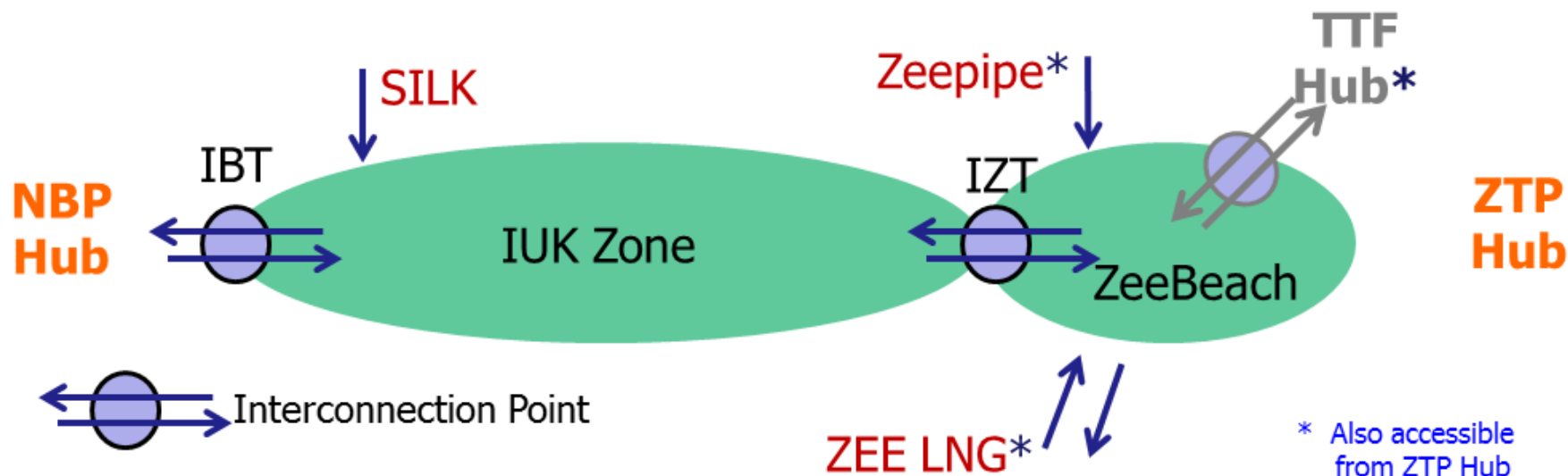
ZIGMA
(Zeebrugge beach Interconnector Gas Market Area)

Interconnector

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ZIGMA

Merging Interconnector, Zeebrugge Area and Zeebrugge Beach

➢ Zeebrugge Beach becomes a virtual hub

➢ Interconnection Points with NBP, ZTP, TTF

➢ Upstream and LNG connections

➢ Partnership between IUK and Fluxys Belgium

ZIGMA

Merging Interconnector, Zeebrugge Area and Zeebrugge Beach

➢ Zeebrugge Beach becomes a virtual hub

➢ Interconnection Points with NBP, ZTP, TTF

➢ Upstream and LNG connections

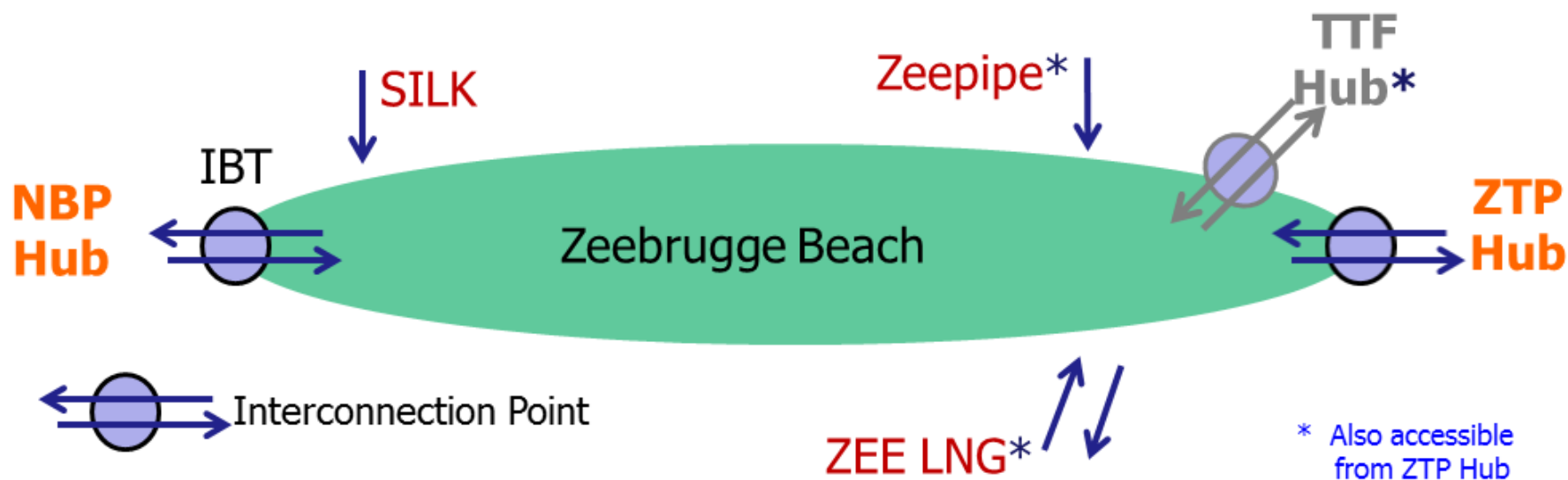➢ Partnership between IUK and Fluxys Belgium

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Our Strategy – Improve Service Offering

Create well connected market area
➤ Provides gas sourcing from Norway, UKCS and LNG
➤ Connects the NBP, ZTP and TTF
➤ Links into the GB, Belgian & Dutch downstream markets

Optimal flexibility provided
➤ Market based balancing model
➤ Zeebrugge Beach becomes the virtual hub for ZIGMA
➤ Potential for Storage/Flexibility services

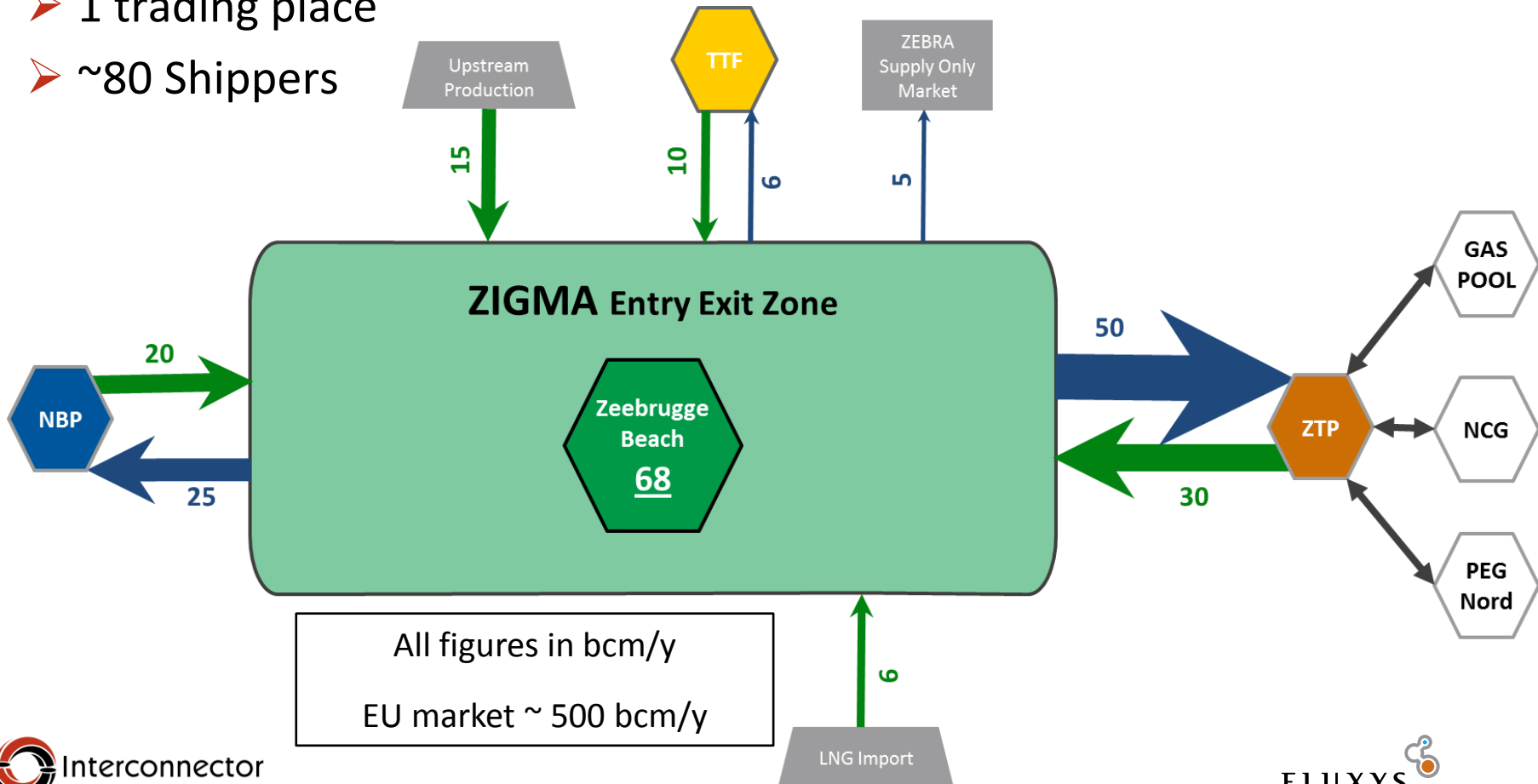**First class reliable assets maintained to the highest standards**
➤ Synergies leading to efficiency gains for better competitive position

Model in line with the regulations
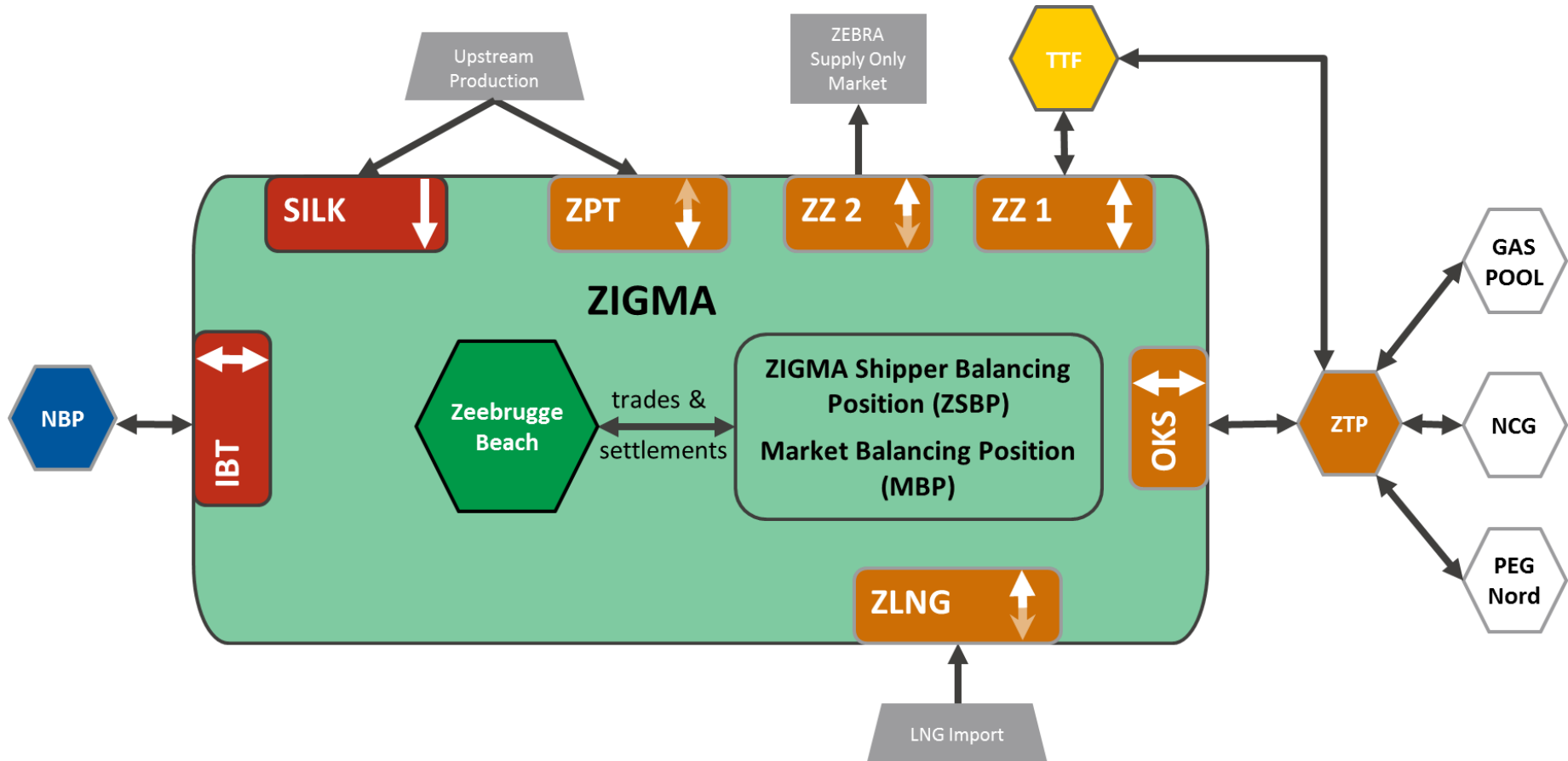➤ Based on Entry-Exit model already known by the industry

Interconnector

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ZIGMA in Numbers

➢ 3 bi-directional connections (physical) to and from adjacent hubs

➢ 2 upstream production connections

➢ 1 direct LNG connection

➢ 1 trading place

➢ ~80 Shippers

Upstream Production — 15

TTF — 10, 6

ZEBRA Supply Only Market — 5

ZIGMA Entry Exit Zone

Zeebrugge Beach 68

NBP — 20, 25

ZTP — 50, 30

GAS POOL

NCG

PEG Nord

LNG Import — 6

All figures in bcm/y

EU market ~ 500 bcm/y

Interconnector

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PART 2: ZIGMA in details

ZIGMA Market Model

ZIGMA Connection Points

CP	Name	Description
IBT	Interconnector Bacton Terminal	Entry and exit IP connecting ZIGMA with the NBP hub
OKS	Actual name to be confirmed by Fluxys	Entry and exit IP connecting ZIGMA with the ZTP hub
ZZ1	Zelzate 1	Entry and exit IP connecting ZIGMA with the TTF hub
ZZ2	Zelzate 2	Exit point connecting ZIGMA with the ZEBRA market area
SILK	SEAL Interconnector Link	Entry point connecting ZIGMA with gas production from the SEAL pipeline
ZPT	ZeePipe Terminal	Entry point connecting ZIGMA with gas production from Norway
ZLNG	Zeebrugge LNG Terminal	Entry point connecting ZIGMA with the Zeebrugge LNG Terminal

Interconnector
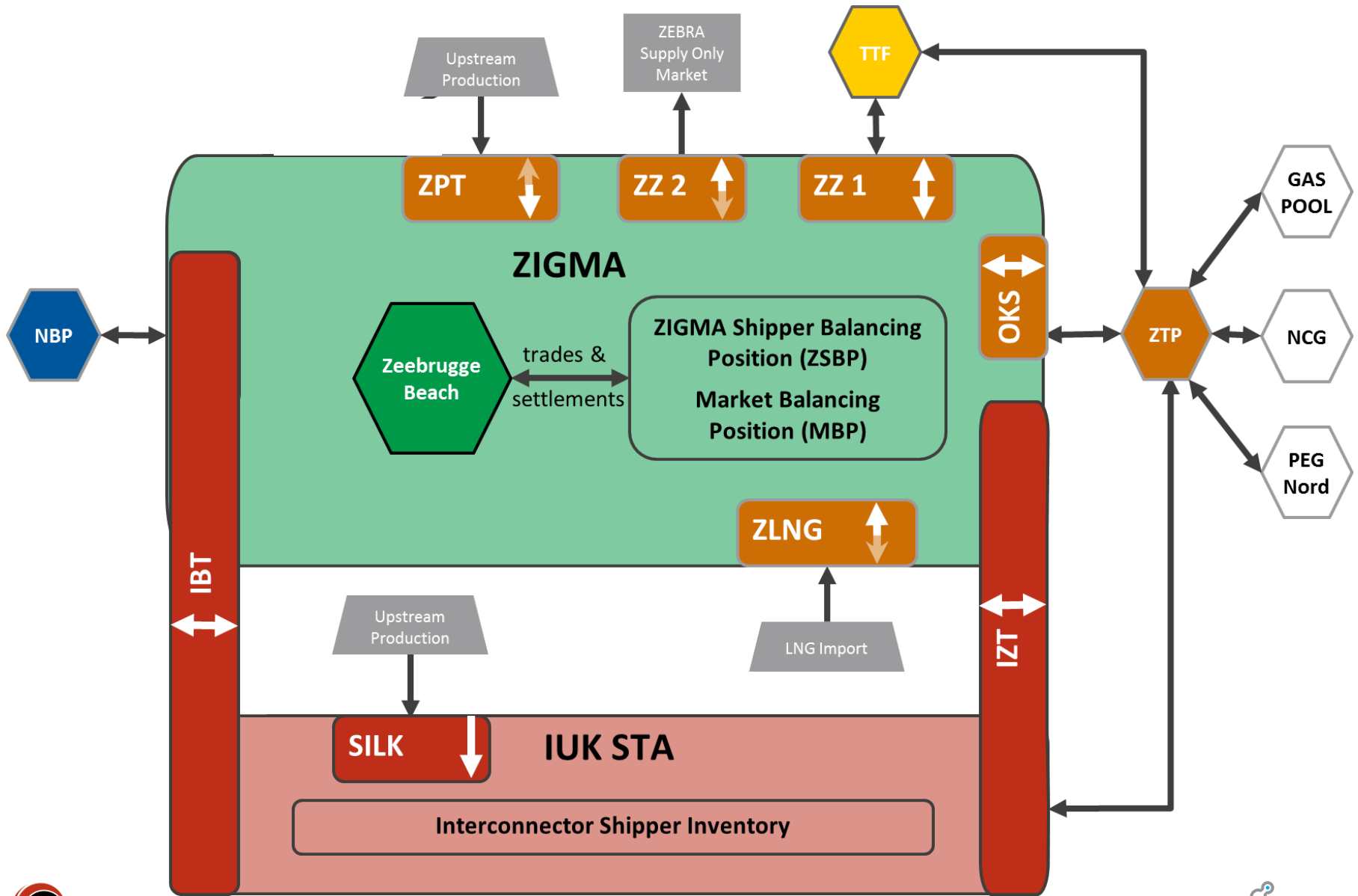
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ZIGMA Hub

- Zeebrugge Beach becomes a VTP (Virtual Trading Point)
    - Located 'inside' the ZIGMA zone
    - Operated by Huberator
- As previously
    - Bilateral trades
    - Trades via Brokers
    - Trades in £
- New
    - Flexibility through Shipper Balancing position
    - Exchange operator to allow for standard anonymous trading
    - ZIGMA Balancing Agent active every day on the Exchange

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Base Contracts

➤ FSTA (Fluxys Belgium Standard Transmission Agreement)

- Governing contract for the Fluxys Belgium IPs
- Covers both Fluxys Belgium Grid and ZIGMA

➤ IAA (IUK Access Agreement)

- New contract for capacities at Bacton

➤ ZBA (ZIGMA Balancing Agreement)

- Balancing rules for ZIGMA
- Mandatory contract for any Shipper active on ZIGMA
- Could be included within the IAA

➤ ISTA (IUK Standard Transportation Agreement)

- Continues until end September 2018
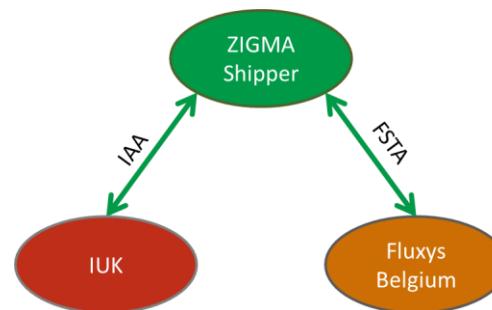- ISTA Shippers can decide whether to access ZIGMA

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2015-2018: Interim Regime

# 1/10/2018: Enduring Regime
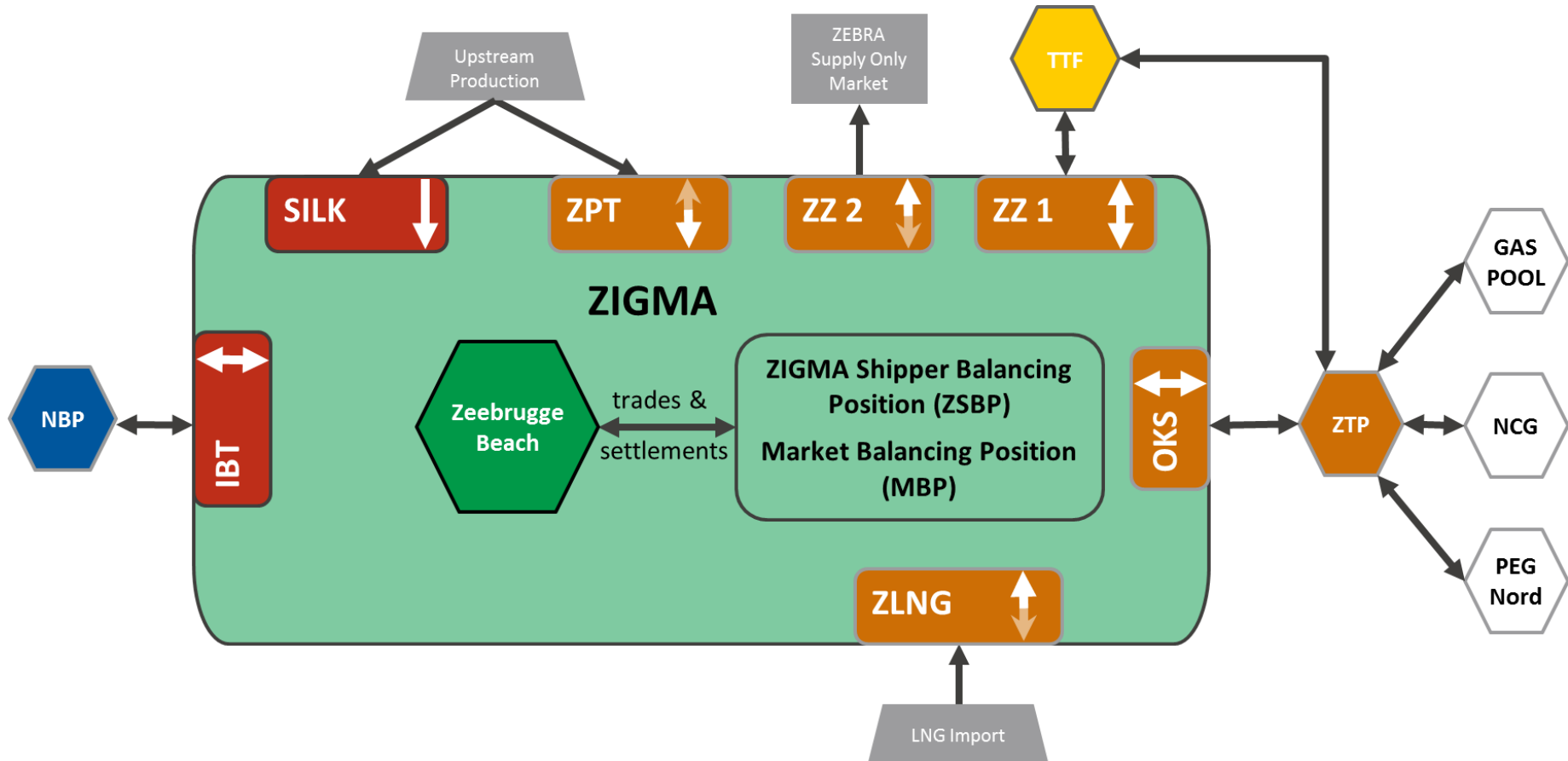
Fluxys / IUK Interactions

Fluxys

➤ Maintains & operates their system physical grid in Belgium

➤ Contracts for capacity at the various entry/exit points **(FSTA)**

➤ Provides ZIGMA flow nominations to the Balancing Agent

➤ Liaises with IUK regarding the physical flow at IZT

IUK

➤ Maintains & operates the Interconnector Pipeline and terminals

➤ Contracts for capacity at Bacton and SILK **(IAA)**

➤ Provides ZIGMA flow nominations to the Balancing Agent

➤ Liaises with Fluxys regarding the physical flow at IZT

Balancing Agent
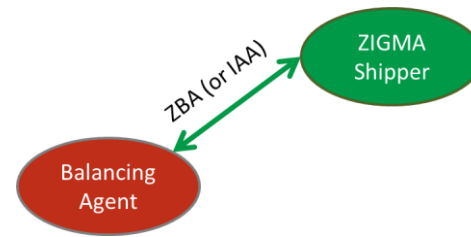
Performed by IUK

Main activities governed by ZBA (or IAA)

- ➤ Aggregates TSOs' data
- ➤ Reports on Individual Shipper Balancing Positions
- ➤ Reports on Market Balancing Position
- ➤ Manages intra-day settlements (if Market Threshold exceeded)
- ➤ Manages end-of-day settlements (every day)

Balancing Agent takes balancing actions via the Zeebrugge Beach Exchange

- ➤ Limits operational complexity
- ➤ Provides transparency

Interconnector

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Zeebrugge Beach Operator

Performed by Huberator

Responsible for the following trading services

➢ Matching the Zeebrugge Beach trading nominations

- between shippers
- between a shipper and the exchange platform

➢ Providing the corresponding allocation to the shipper and the ZIGMA Balancing Agent

Note: A Shipper only wanting to flow gas through ZIGMA will not need to be registered with Huberator **(HSA)**. They will need a contract with the Balancing Agent.

PRISMA Operator
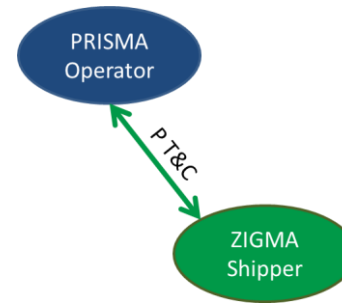
- Manages the Capacity Platform

- Organises auctions for (bundled) products (day-ahead, monthly, quarterly and yearly capacity)

- Sends the results of the auctions to the TSOs

  - quantity sold

  - successful Shippers

  - offered premium on the reserved price

- Informs the successful Shippers

Interconnector

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# Exchange Operator
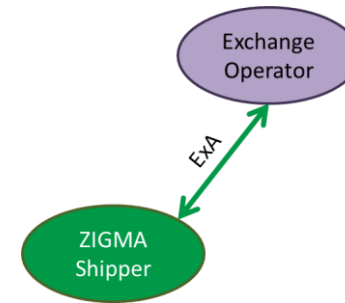
Provides an independent and anonymous trading platform

- ➢ Where parties can place bids and offers
- ➢ For standard commodity products
- ➢ Sends trade nominations to the Zeebrugge Beach Operator

Trading place where the Balancing Agent performs the intra-day and end-of-day settlements related commodity transactions

Interconnector

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Summary of all Contracts
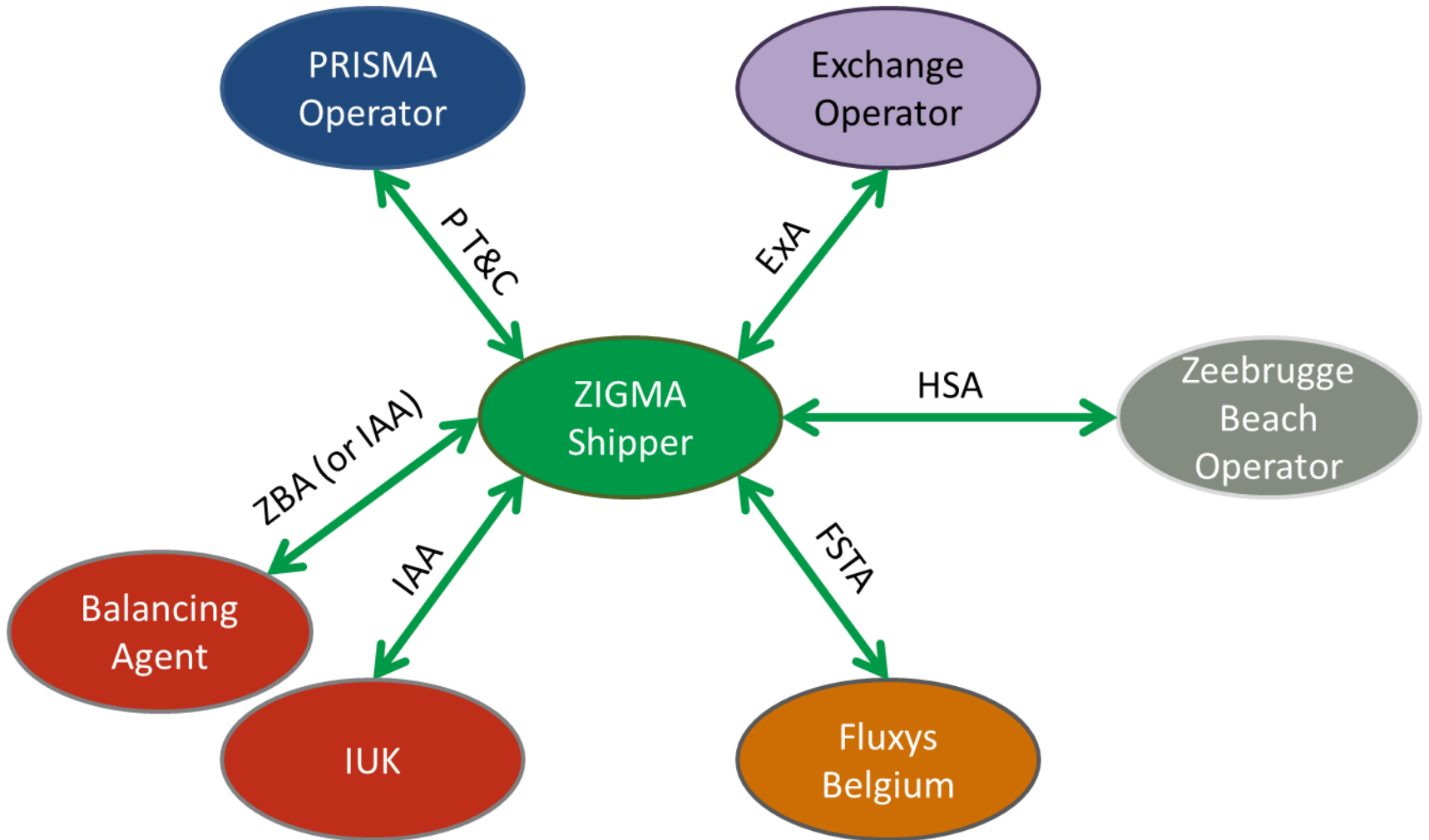
Flow and Trading Examples: 1

Transport from NBP to ZTP
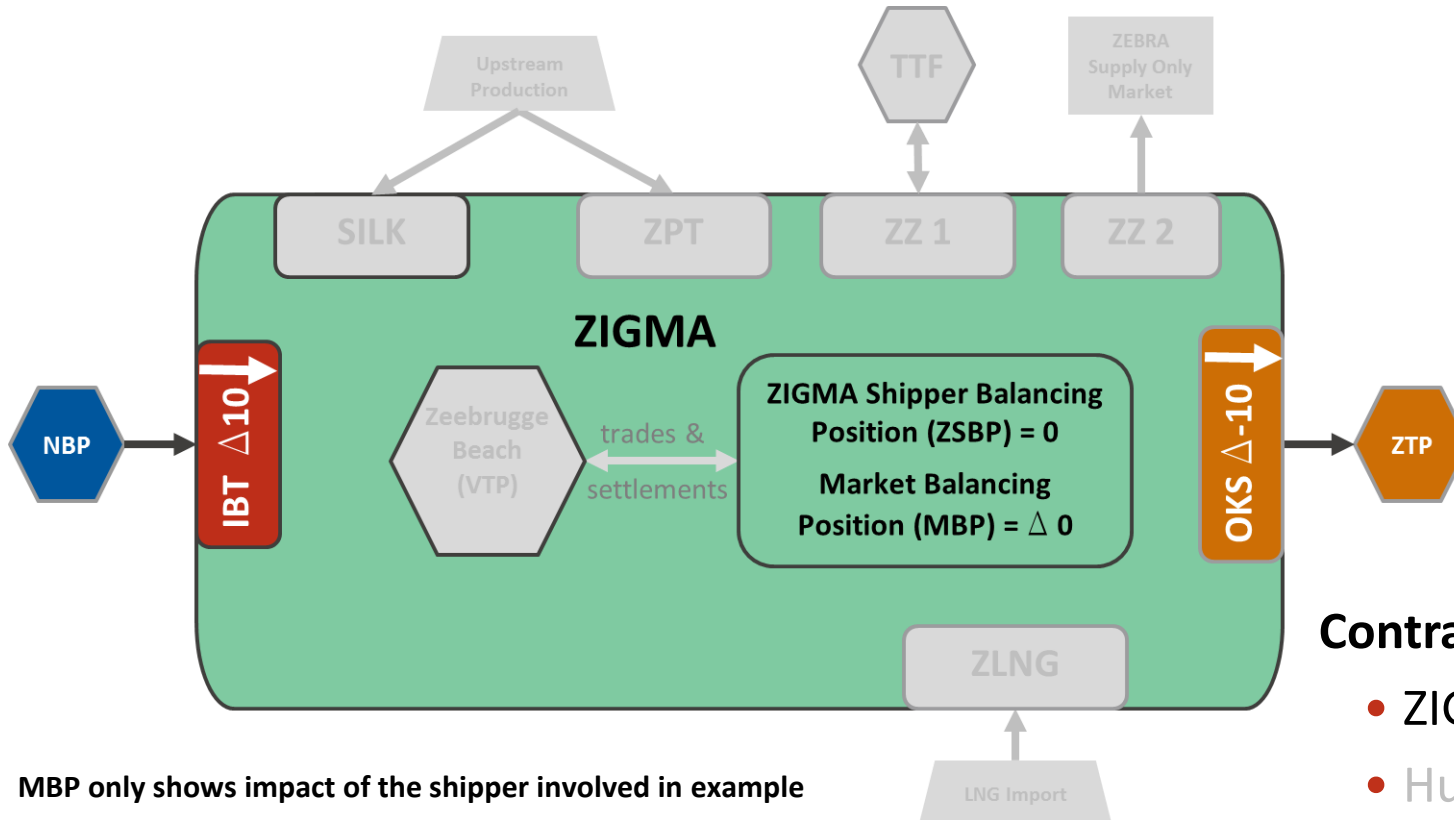
Contracts

- ZIGMA BA
- Huberator HSA
- Fluxys STA
- IUK IAA
- NGG UNC etc

Flow and Trading Examples: 2

Transport from NBP and ZTP to TTF and ZIGMA VTP

MBP only shows impact of the shipper involved in example

Contracts

- ZIGMA BA
- Huberator HSA
- Fluxys STA
- IUK IAA
- NGG UNC etc

Flow and Trading Examples: 4

Belgian industrial client sources gas on ZIGMA VTP

MBP only shows impact of the shipper involved in example

Contracts

- ZIGMA BA
- Huberator HSA
- Fluxys STA
- IUK IAA
- NGG UNC etc

Flow and Trading Examples: 5

Shipper takes gas in ZIGMA to NBP (will balance its position later or will be settled in cash)

ZIGMA Shipper Balancing Position (ZSBP) = -5

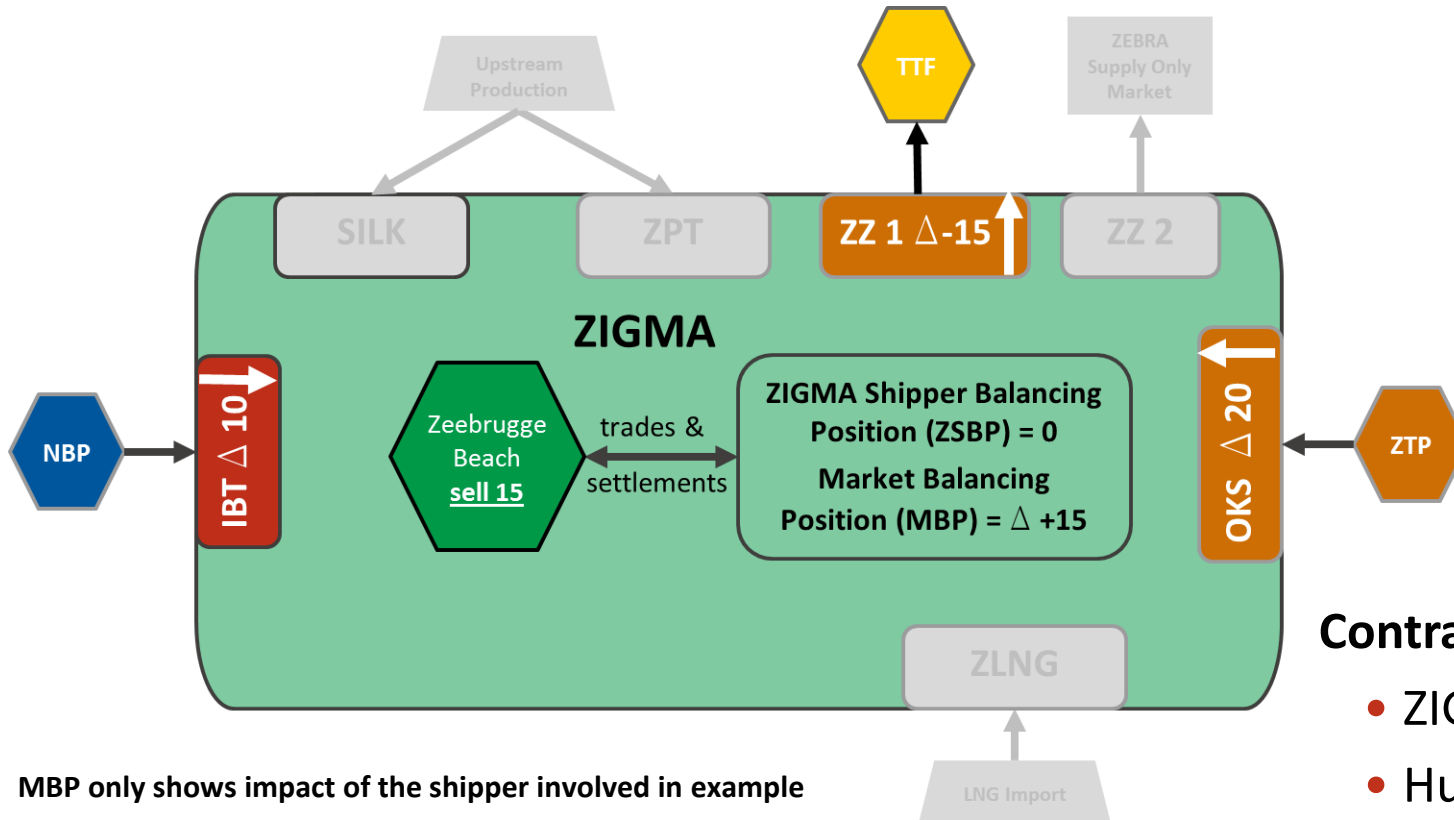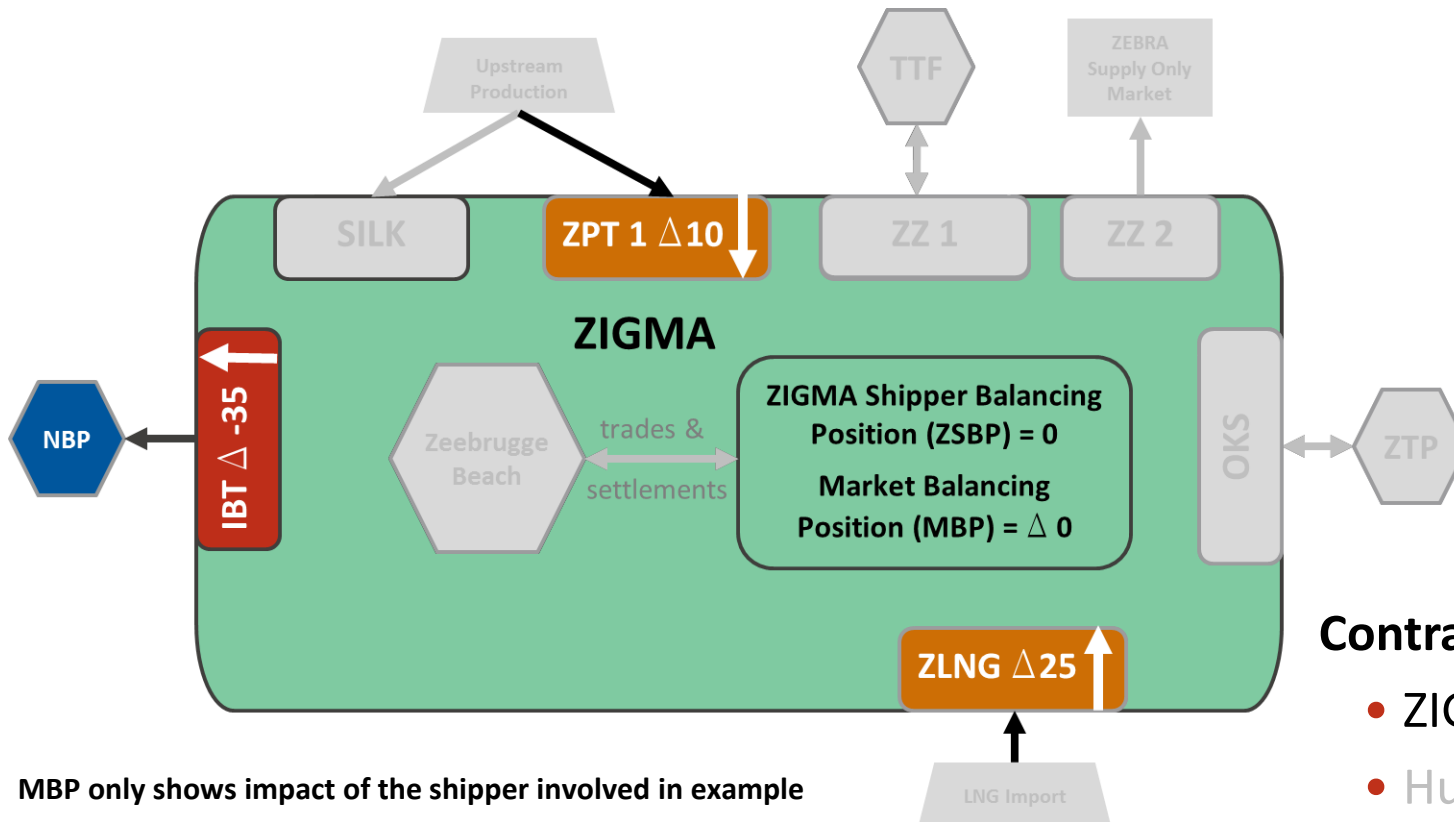**Market Balancing Position (MBP) = $\triangle$ -5**

MBP only shows impact of the shipper involved in example

Contracts

- ZIGMA BA
- Huberator HSA
- Fluxys STA
- IUK IAA
- NGG UNC etc

Flow and Trading Examples: 6

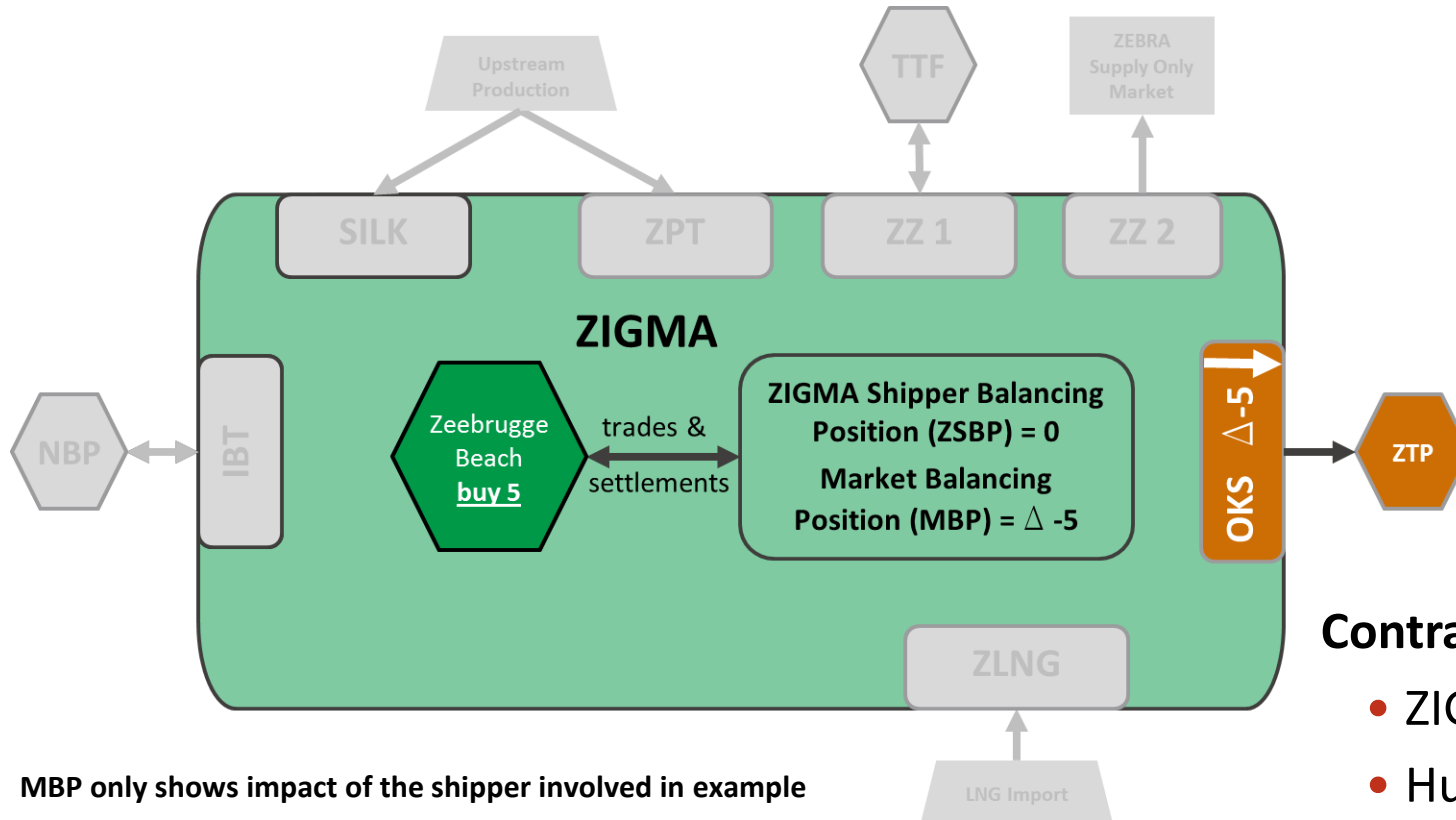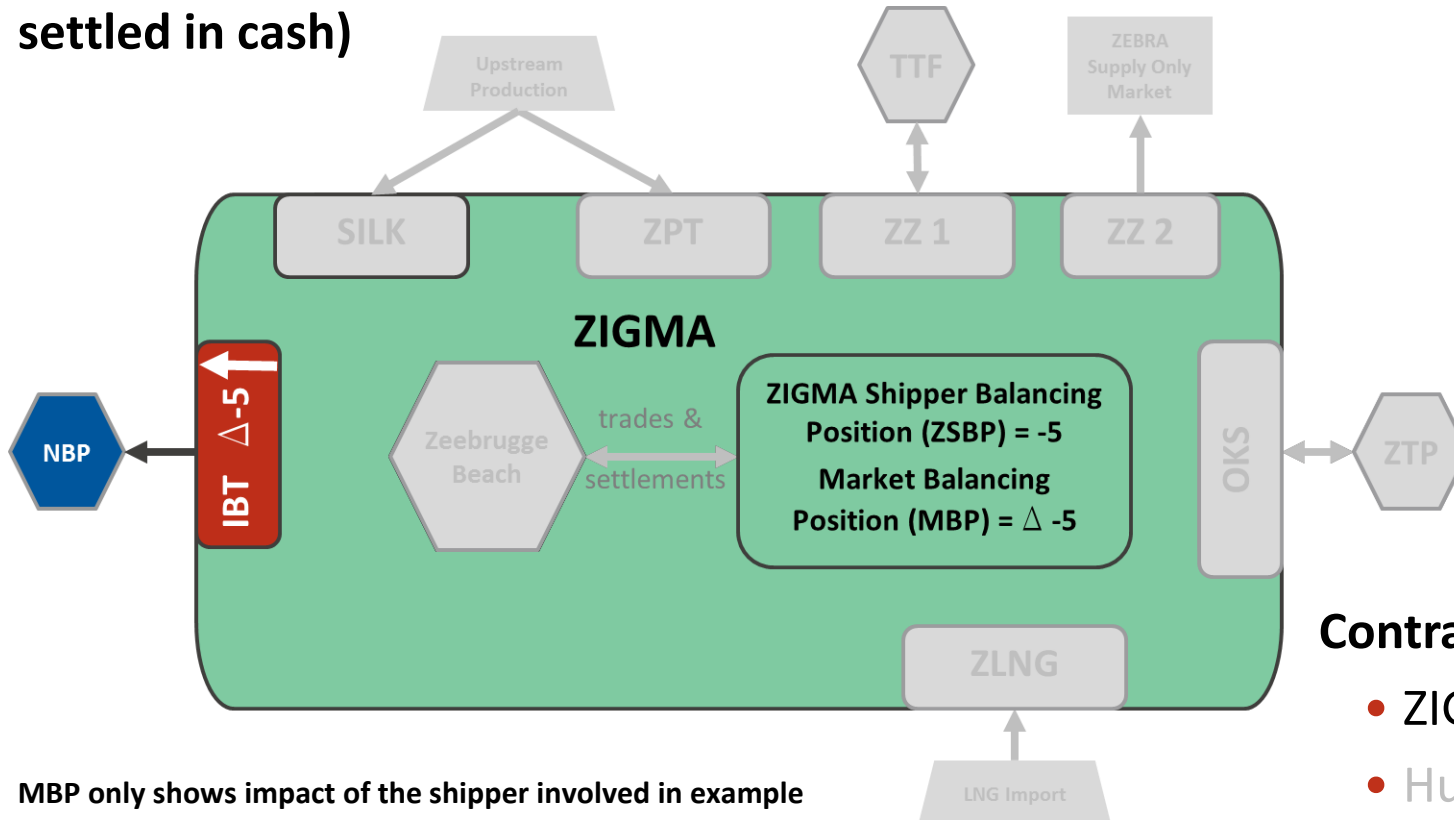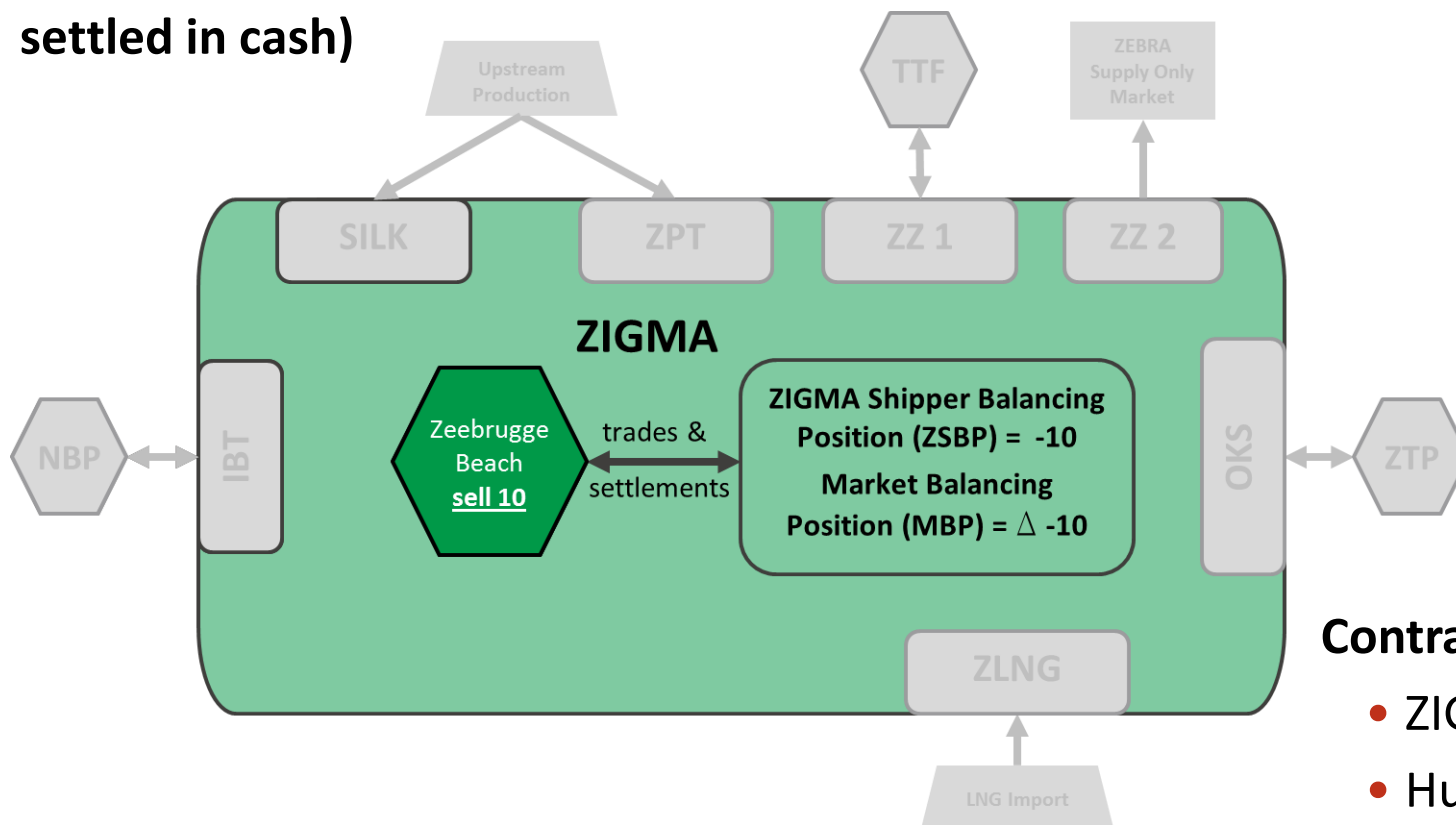**Trader sells 10 on spot market (will balance its position later or will be settled in cash)**

MBP only shows impact of the shipper involved in example

Contracts

- ZIGMA BA
- Huberator HSA
- Fluxys STA
- IUK IAA
- NGG UNC etc

PART 3: Balancing & WDO

Main Concepts for Balancing

Key balancing concepts

Cumulated imbalance position

ZIGMA reaction zone

Excess

Market threshold

Shortfall

Intra-day

End-of-Day

Time

6   12   18   24   6
           Day   Day+1

—— ZIGMA User Balancing Position = sum of all ZIGMA allocations

—— Market Balancing Position = sum of all Shipper Positions

Market based balancing system
- Aggregated Market Balancing Position allowed to fluctuate within pre-defined thresholds (Market Thresholds)
- No limit on intra-day variations of individual ZIGMA User imbalances
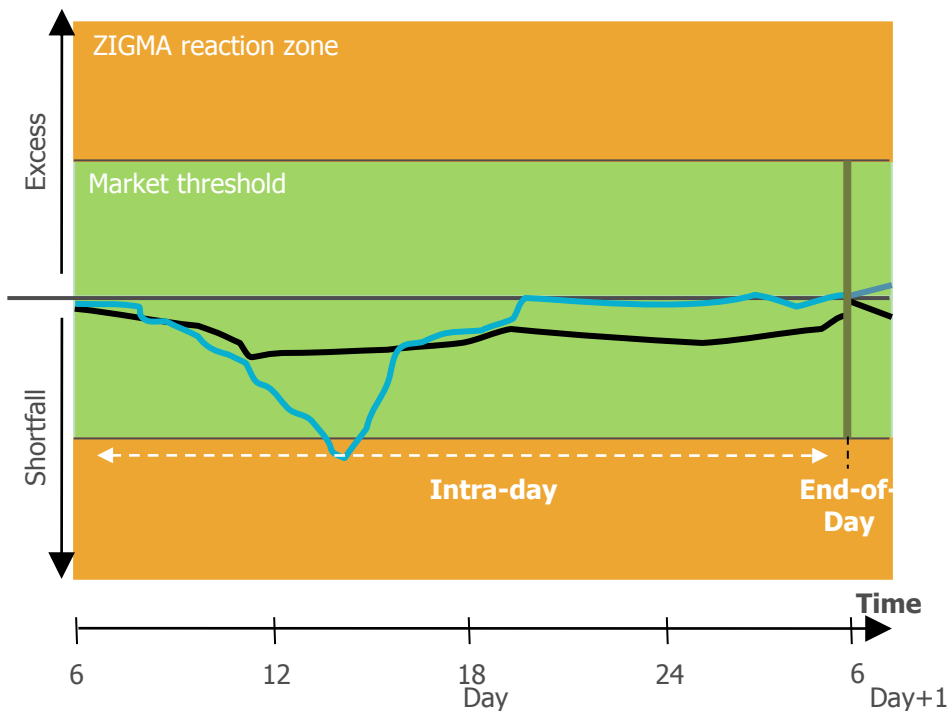
Daily balancing regime
- Individual ZIGMA User Balancing Position settled to zero at the end of the gas day
- In line with EU framework

Balancing Agent (BA) acts as residual balancing operator
- Intra-day: BA acts on the market balancing position (sell / purchase gas) when it goes beyond threshold
- End-of-Day: BA settles all ZIGMA Users to zero

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Composition of ZIGMA User Balancing Position (ZBP) and Market Balancing Position (MBP)

Main principles

ZIGMA User Position at start Gas Day = 0

$$ZBP_h = ZBP_{h-1} + \text{Imbalance of hour h}$$

Imbalance of hour h for ZIGMA User equals to

- The sum of ZIGMA User' entry allocations; and
- Minus the sum of ZIGMA User' exit allocations; and
- Plus/Minus confirmed VTP deals; and
- Plus/Minus ZIGMA User Position settlement in case of Market Shortfall/Excess; and
- Plus/Minus corrections in case of extreme metering errors

The Market Balancing Position equals the sum of all ZIGMA User Balancing Positions before settlements

Balancing information is issued hourly to each ZIGMA User by H+30

Forecast information will be issued hourly from 3pm the day before

Balancing Positions: Full Market View

Intra-Day Settlement

No impact for ZIGMA User 1

ZUBPh,x: ZIGMA User x Balancing Position at hour h
MBPh: Market Balancing Position at hour h
MT+: Upper Market Threshold
MT-: Lower Market Threshold

MT+

MT-

ZUBPh,1
ZUBPh,2
ZUBPh,3
MBPh

①
②
③=①+②

Intra-day settlement

Interconnector

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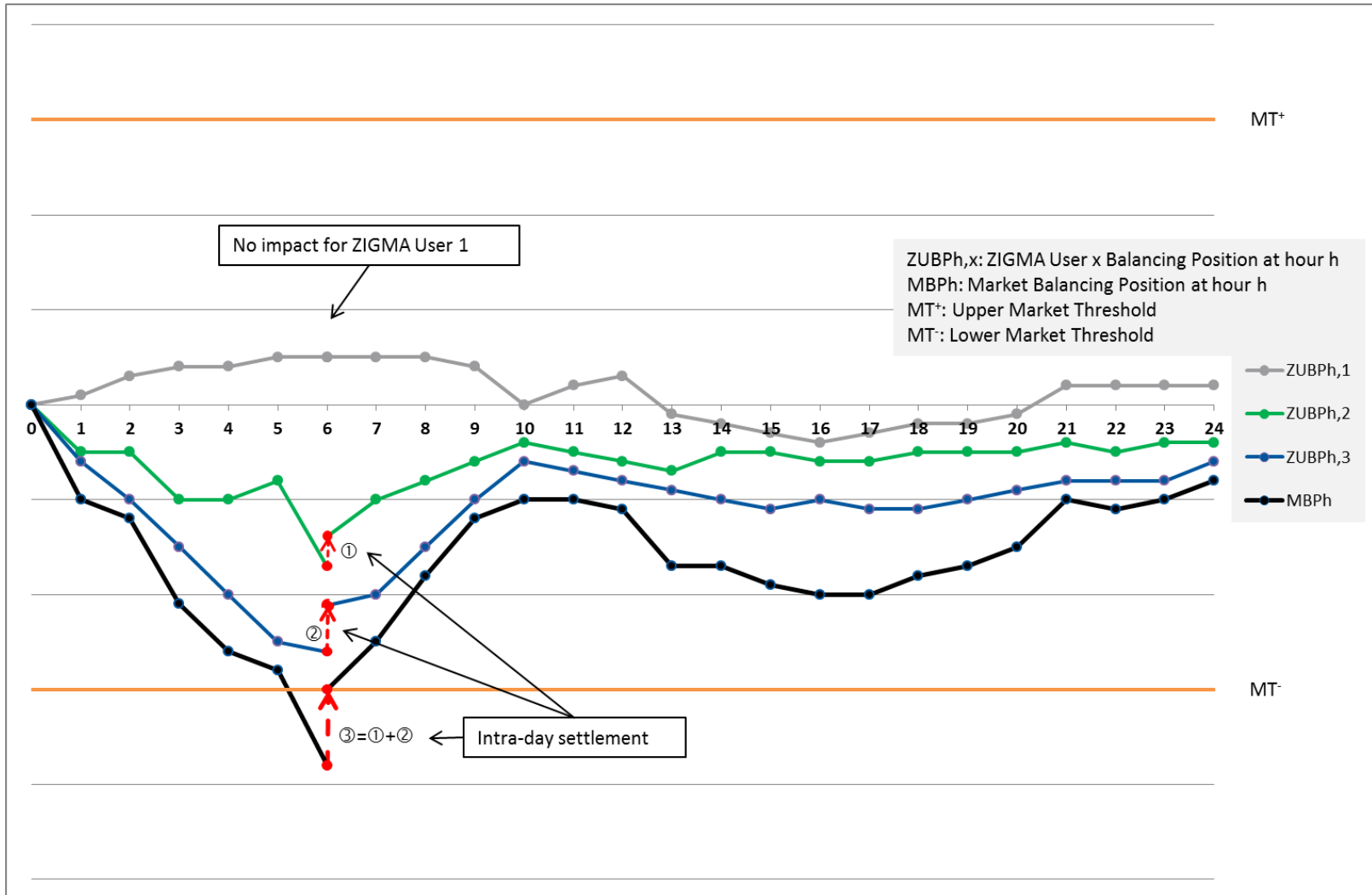
Within Day Obligations

WDOs required to reflect the physical limitations

➢ Core of the Entry-Exit zone is a single pipeline

➢ At high flows reduced flexibility to cope with imbalances
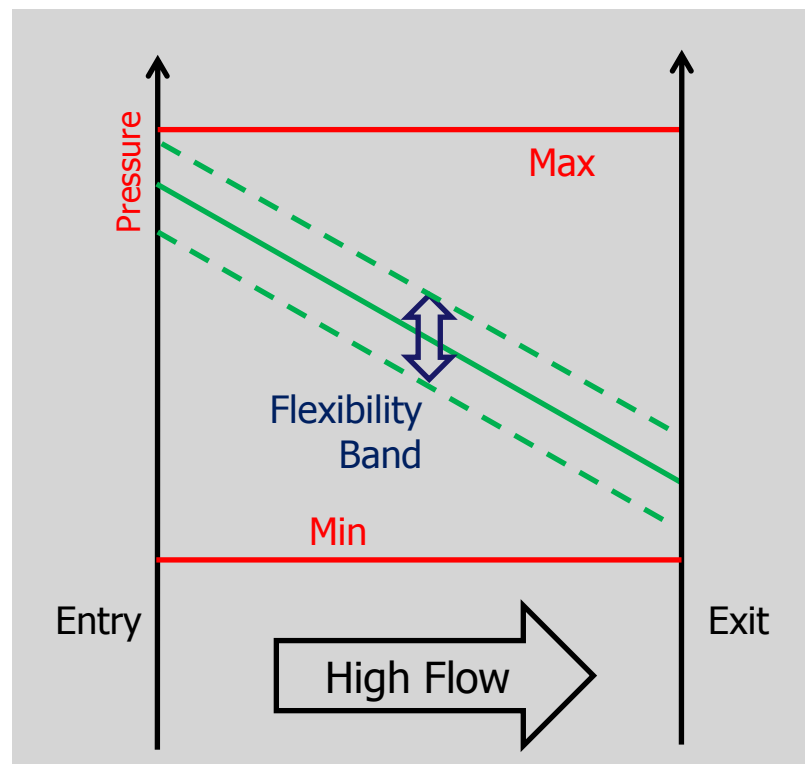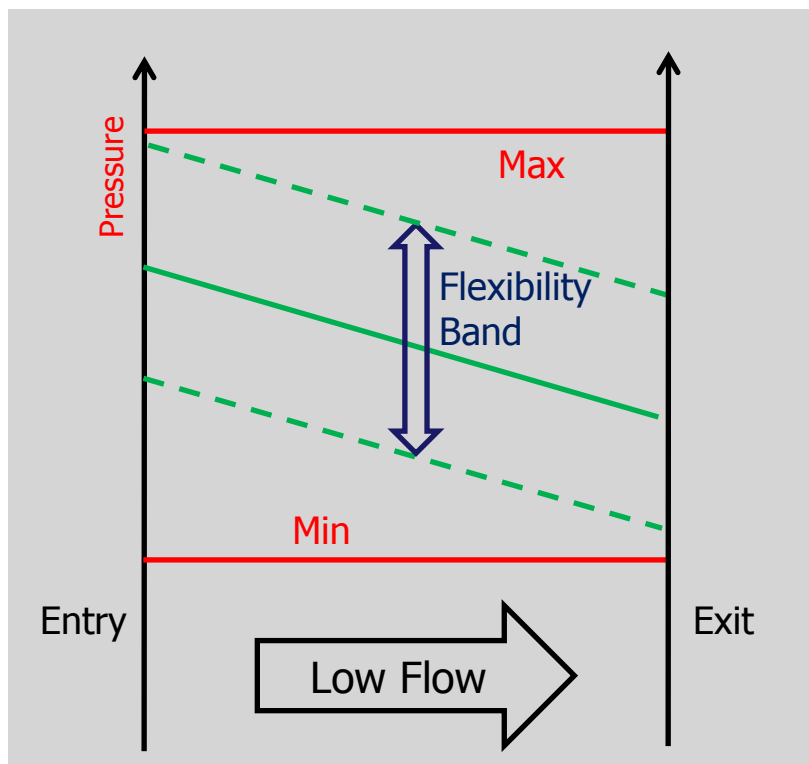
Within Day Obligations

Market Threshold

➢ Within-day cash-out prices set to incentivise market to keep within Market Threshold

➢ End of day cash-out prices set to mitigate incentives to have imbalances between adjoining entry/exit systems

Market Threshold (with nomination curtailment)

➢ Applied when insufficient flexibility from IUK and Fluxys to cover the delay between breach and physical correction

➢ Causing Shippers would have their nominations curtailed

  • Keeps ZIGMA balancing position within Market Threshold

➢ *Should only be required at times of very high physical demand*

Network Emergencies

➢ Curtail nominations if they put system integrity at risk

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PART 4: The Consultation & Timing

Concept Document

Consultation launched 8 April 2014, closes 6 May 2014

Consultation Letter

- ➤ Sets out the consultation process, timeline and how to respond
  - Includes specific questions

Concept Document

- ➤ Introduces IUK & Fluxys Belgium's proposed cross-border Entry-Exit zone, ZIGMA
  - Brings together the Interconnector Pipeline, Zeebrugge area and Zeebrugge Beach (becomes Virtual Trading Point)
- ➤ Sets out key concepts for implementing new European regulation
  - CAM across the 3 TSOs
  - BAL within ZIGMA
- ➤ Covers interim period, up to 2018, and the enduring regime

Timeline

Date	Action
8 April 2014	Consultation opens
25 & 28 April 2014	Industry Workshops on ZIGMA • Brussels (25 April 2014) • London (28 April 2014)
6 May 2014	Consultation closes
13 May 2014	Non-confidential responses published
May 2014	IUK, Fluxys Belgium and NGG review responses and refine proposals
Late 2014	NGG UNC mod consultation (Summer 2014) *NRA 'minded to' opinion (September 2014)* Fluxys Belgium STA, ACT, TP consultation (Late 2014) IUK IAA consultation (Late 2014)
1 November 2015	Implementation (subject to the required agreements and approvals and subject to process and system changes)

The consultation can be found on IUK, NGG or Fluxys' websites

PART 5: Conclusions & Wrap Up

Conclusion

ZIGMA creates a well connected market area
- ➢ Provides gas sourcing from Norway, UKCS and LNG
- ➢ Connects the NBP, ZTP and TTF
- ➢ Links into the GB, Belgian & Dutch downstream markets

Optimal flexibility provided
- ➢ Market based balancing model
- ➢ Zeebrugge Beach becomes the virtual hub for ZIGMA
- ➢ Potential for Storage/Flexibility services

First class reliable assets maintained to the highest standards
- ➢ Synergies leading to efficiency gains for better competitive position

Model in line with the regulations
- ➢ Based on Entry-Exit model already known by the industry

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Contact Details

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ZIGMA Industry Workshop

25 April 2014 Brussels

28 April 2014 London

Back-up slides

Main concepts for balancing

Key balancing concepts

Cumulated imbalance position

- ZIGMA reaction zone
- Excess
- Market threshold
- Shortfall
- Intra-day
- End-of-Day

Time

6   12   18   24   6
Day   Day+1

— ZIGMA User Balancing Position = sum of all ZIGMA allocations

— Market Balancing Position = sum of all Shipper Positions
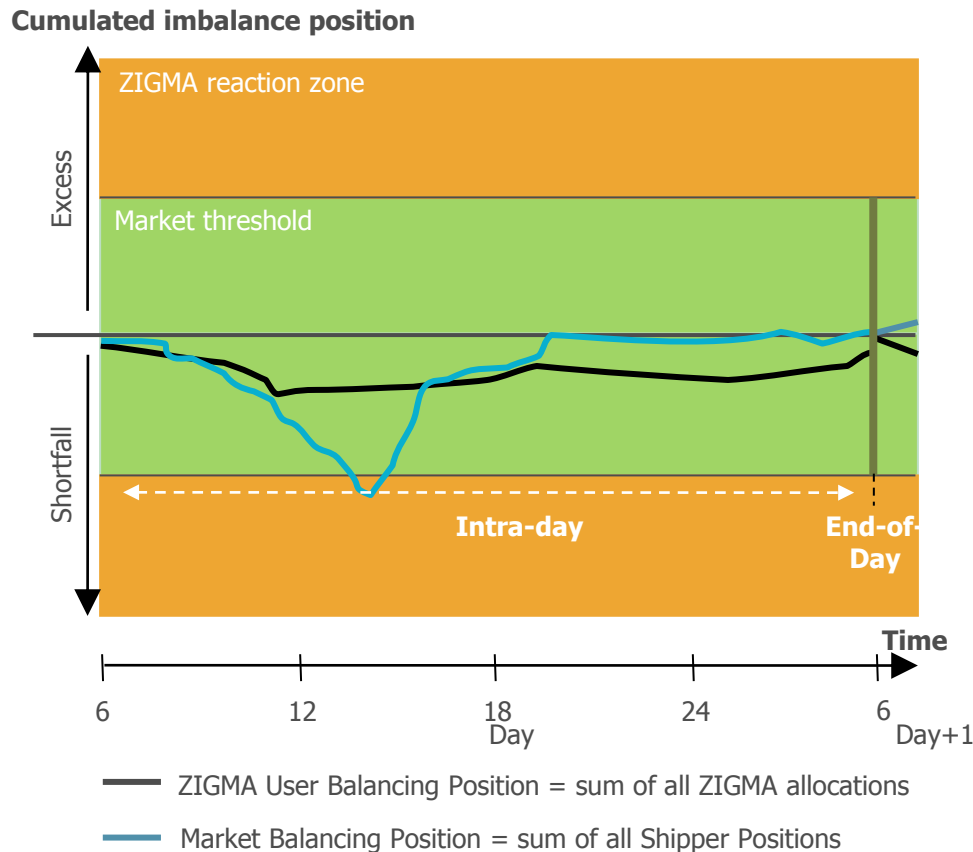
Market based balancing system

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Daily balancing regime

- Individual ZIGMA User Balancing Position settled to zero at the end of the gas day
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- Intra-day: BA acts on the market balancing position (sell / purchase gas) when it goes beyond threshold
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Interconnector

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Composition of ZIGMA User Balancing Position (ZBP) and Market Balancing Position (MBP)

Main principles

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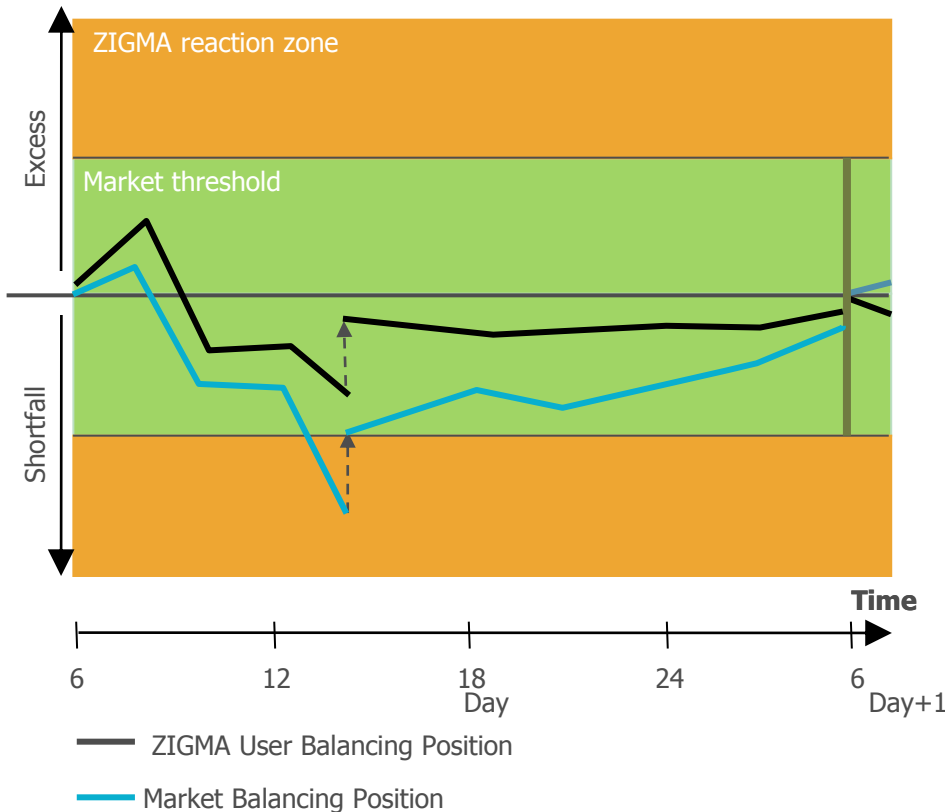$$ZBP_h = ZBP_{h-1} + \text{Imbalance of hour h}$$

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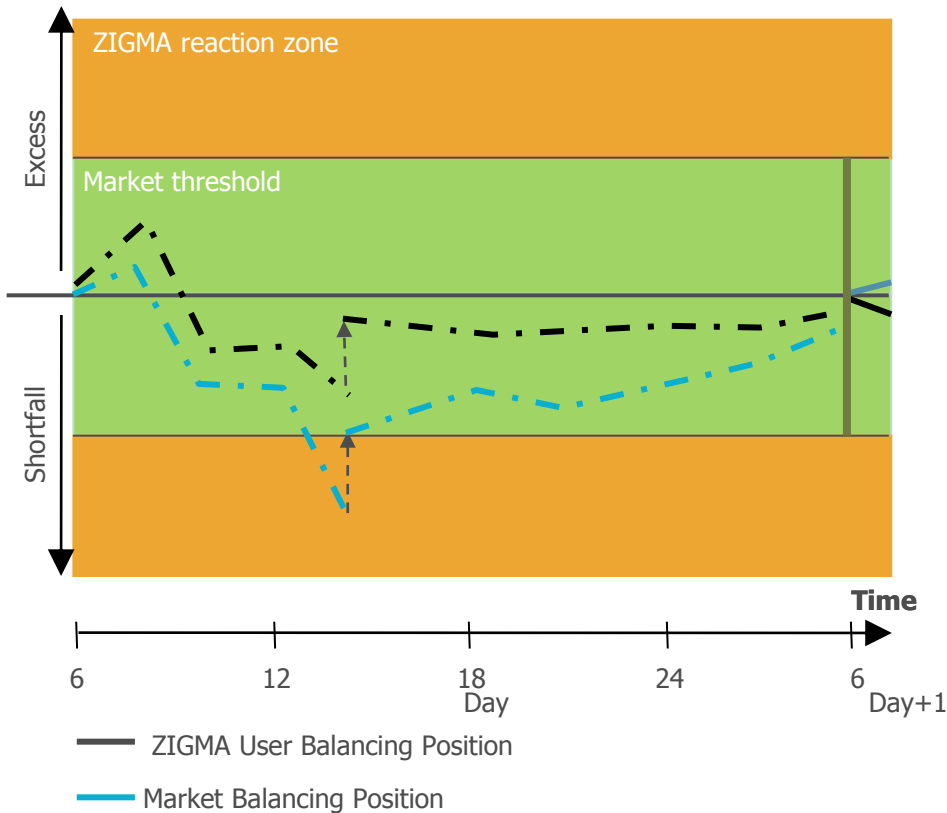
Balancing information is issued hourly to each ZIGMA User by H+30

Forecast information will be issued hourly from 3pm the day before

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Forecasted ZIGMA User Balancing Position (ZBP) and Market Balancing Position (MBP)

ZIGMA reaction zone

Excess

Market threshold

Shortfall

Time

6   12   18   24   6

Day   Day+1

— ZIGMA User Balancing Position

— Market Balancing Position

Main principles

ZIGMA User balancing position will be forecasted by Balancing Agent for the remaining hours of the day, based on

- The confirmed quantities, based on the nominations by the ZIGMA User
- Plus/Minus confirmed VTP deals (as known to date)
- Plus/Minus potential settlements resulting from forecasted Market Balancing Position exceeding thresholds
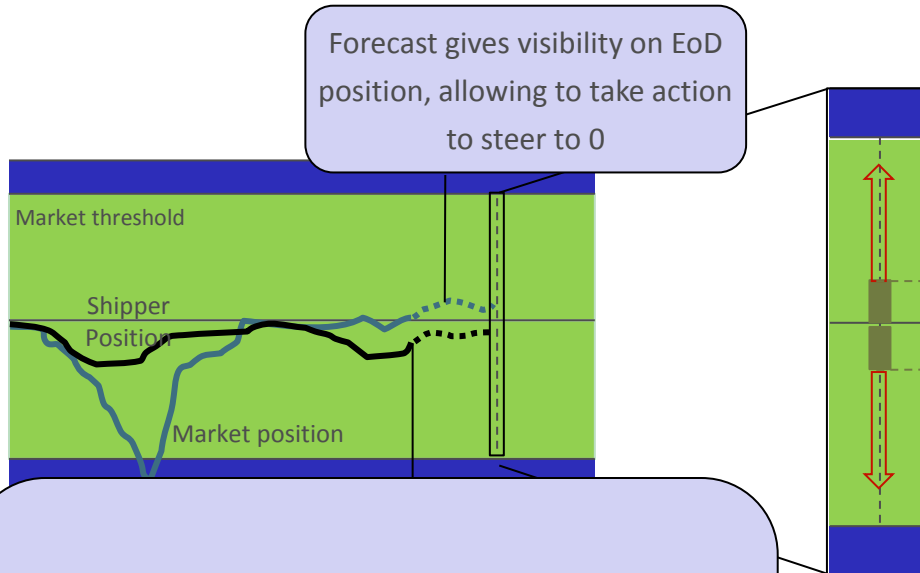
The Forecasted Market Balancing Position equals the sum of all forecasted ZIGMA User Balancing Positions

Together with steering information, updated forecasts will be issued hourly, <u>from day-ahead 3 PM</u>

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Daily reset per ZIGMA User (settlement in cash)

Last hours of gas day

Forecast gives visibility on EoD position, allowing to take action to steer to 0

Market threshold

Shipper Position

Market position

Shipper with exp. EoD imbalance could undertake
- Renomination within own booked capacity and technical limitation of installations
- Trading on VTP
- Subscription of add. within-day capacity
- EoD cash-out / in settlement (+ / - incentive)

EoD imbalance settlement
Individual by shipper, regardless of market position
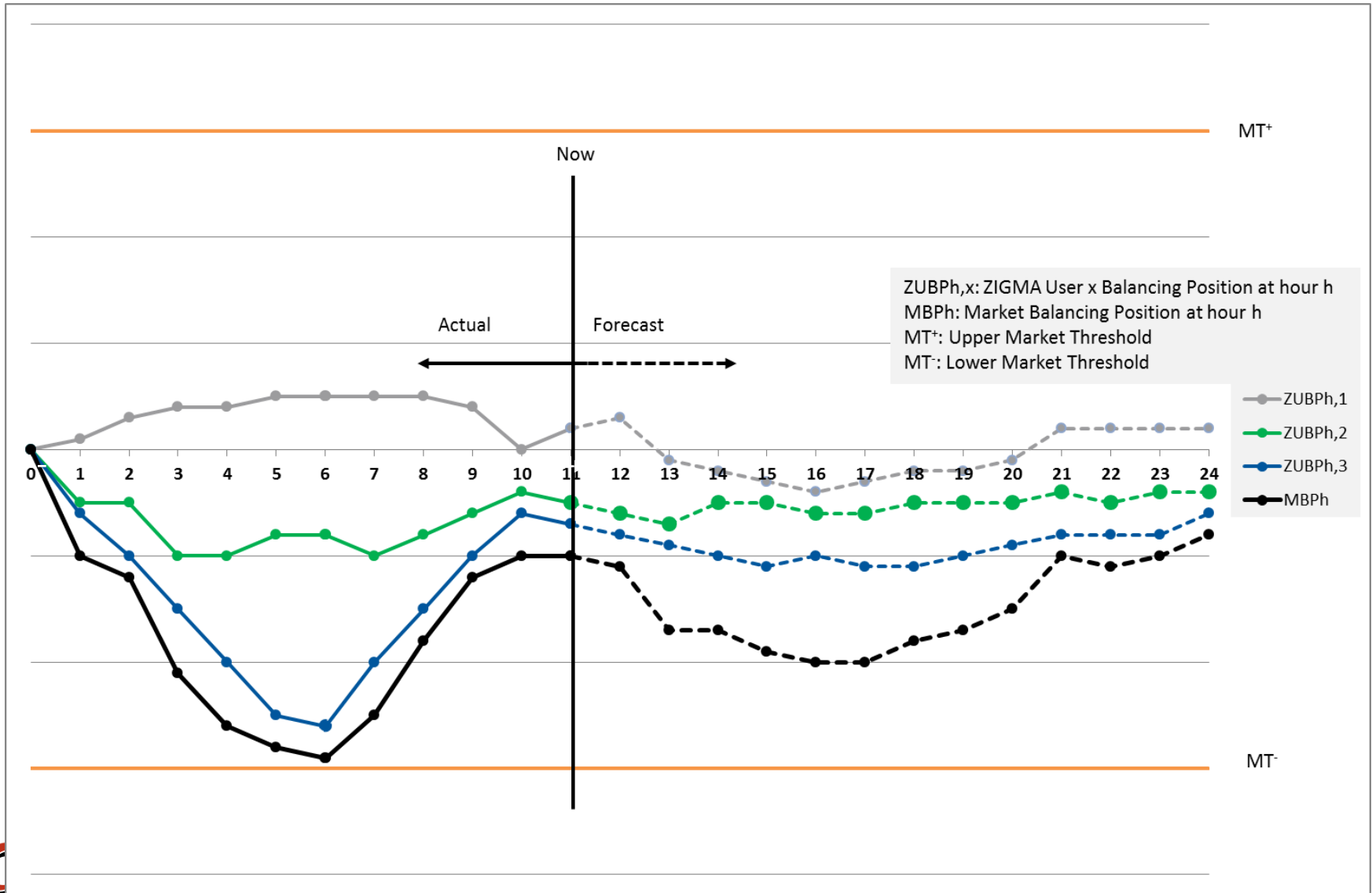
Cash-in at market price - incentive

Cash-in / out at market price
Size of shipper no-incentive zone based on shipper within-day imbalance (i.e. could vary by day)

Cash-out at market price + incentive
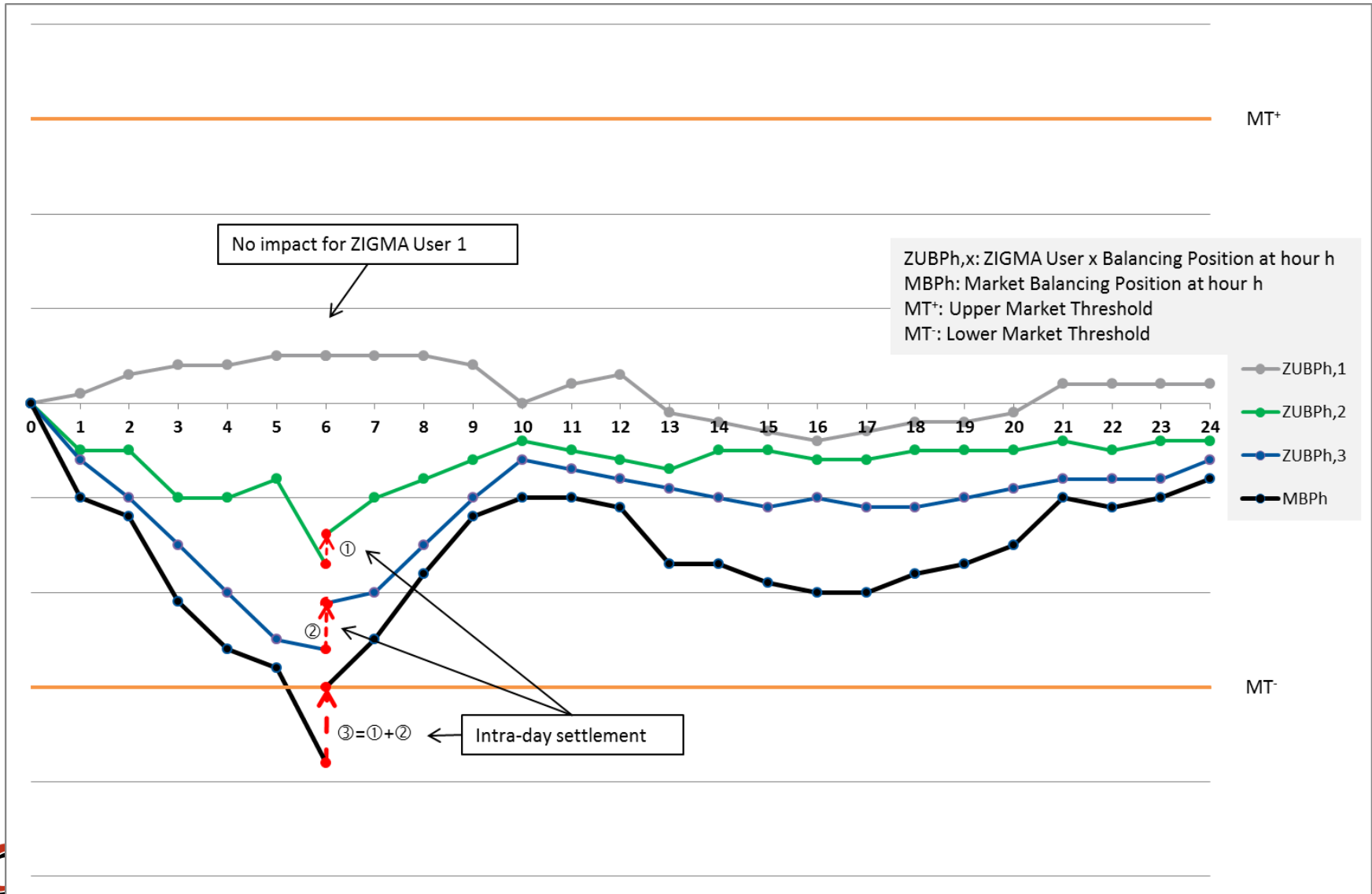
Interconnector

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Balancing positions: Full Market view

Actuals and Forecast

ZUBPh,x: ZIGMA User x Balancing Position at hour h
MBPh: Market Balancing Position at hour h
MT+: Upper Market Threshold
MT-: Lower Market Threshold

Balancing positions: Full Market view

Intra-Day Settlement

No impact for ZIGMA User 1

ZUBPh,x: ZIGMA User x Balancing Position at hour h
MBPh: Market Balancing Position at hour h
MT$^+$: Upper Market Threshold
MT$^-$: Lower Market Threshold

ZUBPh,1
ZUBPh,2
ZUBPh,3
MBPh

MT$^+$

MT$^-$

① ② ③=①+②

Intra-day settlement

Balancing positions: Full Market view

End-of-day Settlement

ZUBPh,x: ZIGMA User x Balancing Position at hour h
MBPh: Market Balancing Position at hour h
MT+: Upper Market Threshold
MT-: Lower Market Threshold

MT+

MT-

ZUBPh,1
ZUBPh,2
ZUBPh,3
MBPh

End-of-day settlement