BALANCING SYSTEM IN POLAND

Vienna, December 12th 2017
GAZ-SYSTEM - INTRODUCTORY INFORMATION

100% SHARES HELD BY STATE TREASURY

CERTIFIED TSO FOR NATIONAL TRANSMISSION SYSTEM IN POLAND

CERTIFIED ISO FOR THE YAMAL-EUROPE PIPELINE IN PL

LNG TERMINAL IN ŚWINOUJSIE (OPERATED BY ITS SPV, POLSKIE LNG)
POLISH GAS MARKET - CASE STUDY

TIMELINE

- 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 September – 2nd Interim Measures Report approved by NRA
COOPERATION WITH GAS EXCHANGE

► TGE allows buying and selling gas on gas exchange based on market prices, transactions are anonymous.
► 2011 start of cooperation
► Net code (IRiESP) statements request of cooperation between Gas Exchange and TSO at VTP in areas:
  ► transactions realized at Virtual Trading Point of Gas Exchange
  ► Nominations at Virtual Trading Point of Gas Exchange (as shipper nominations)
► Transaction done at Gas Exchange is valid for contractors and realized by TSO
BALANCING AREAS IN POLAND

- E-gas balancing area
- L-gas balancing area
- TGPS balancing area (transit)
- Typically local character
  - (2 subsystems: Lw1 and Lw2)
- No connection with any other systems
- 8 entry points (production)
- 80 exit points
  - 4 exit points to end users
  - 3 DSOs connected
- All gas sources belong to one Producer
- Local Production meets end users’ demand
- Only 3 active Shippers
TGPS BALANCING ZONE - CHARACTERISTICS

TGPS - Polish part of Transit Gas Pipeline System Yamal - Europa

- **Entry points:**
  - **Kondratki** (connection point, Belarus)
  - **Mallnow** (connection point, GASPOOL - Gascade)
  - **PWP reverse** (contractual connection point, H-gas balancing zone)

- **Exit points:**
  - **Mallnow** (connection point, GASPOOL - Gascade)
  - **PWP** (virtual interconnection point based on physical points between TGPS and H-gas balancing zone)
H-GAS BALANCING ZONE - CHARACTERISTICS

**62 entry points**
- IPs
- LNG Terminal
- Production

**902 exit points**
- IPs
- End users (industry)
- DSOs (23)

**Interconnection points:**
- **BY → PL:** Tietierowka, Wysokoje
- **UA → PL:** Drozdowicze
- **PL → UA:** Hermanowice
- **PL → CZ:** Cieszyn
- **PL → DE (ONTRAS):** GCP GAZ-SYSTEM/ONTRAS
- **PL → Yamal (transit):** PWP
H-GAS BALANCING ZONE - BALANCING ACTIONS

Platforms

TGE trading platform (Polish gas exchange)

Balancing platform

- an interim measure in place since October 2015:
- implemented before entry into force of BAL NC in January 2014
- currently only locational products on the eastern border available

Trade within adjacent balancing zone

- GASPOOL
- approved by NRA

Merit order

- WD title product on TGE trading platform
- WD and DA locational product on the balancing platform
- WD and DA title product on the trading platform within the adjacent balancing zone
- balancing services

Balancing actions undertaken by TSO so far:

at TGE trading platform (WD title products):

- after the end of a gas day
- based on net total Shippers’ imbalance

introduction of balancing services - 1st Jan 2016
TRANSMISSION SYSTEM - STORAGE COOPERATION

Technical Facilities:
- 2 Salt cavern storages
- 4 storages based on depleted fields

Contractual facilities:
- „GIM Kawerna”
- „GIM Sanok”
- „IM Wierzchowice”
NOMINATION/ RENOMINATION CYCLES (BAL NC)

14:00 D-1
Nomination deadline for gas day D (NOMINT)

3:00 D
Last possible renomination (NOMINT) for gas day D (quantity change for last hour of gas day)

16:00 D-1
- Confirmation deadline (rejection / confirmation of nomination) for gas day D (NOMRES)
- Start of renomination procedure for gas day D (renomination cycle starts every hour)

- Two hour lead time is required for renominations
In case of not preserving that rule, renomination is rejected
NOMINATION AND MATCHING PROCESS

Shipper 1 → TSO A → TSO B → Shipper 2

Nomination: H0 NOMINT01G
Confirmed quantities: H0+120 NOMRES 08G
Confirmed quantities: H0+120 NOMRES 08G
Confirmed quantities: H0+45 DELORD 26G
Confirmed quantities: H0+90 DELRES 27G

MATCHING: H0
NOMINATIONS – DATA EXCHANGE (INT NC)

- Document based and interactive data exchange
- **Data exchange format** Edig@s - XML (4.0. or 5.1. version):
  - Messages: NOMINT, ACKNOW, NOMRES
- **Data exchange protocol**: AS4
- Interactive data exchange - possibility to use web-portal - Information Exchange System IES - for submitting nomination (edig@s messages are automatically generated in Edig@s 5.1)
COMMERCIAL BALANCING

Shipper’s Balance

All entry points:
1. Import
2. Storages
3. Production
4. Virtual Trading Point - entry
   • Gas Exchange
   • Bilateral transactions (OTC)

All exit points:
1. Export
2. Exit points to DSOs
3. End users connected to transmission system
4. Storages
5. Virtual Trading Point - exit
   • Gas Exchange
   • Bilateral transactions (OTC)

- Daily balancing regime
- Shipper’s provisional imbalance is calculated after 4 hours, 8 hours of gas day and after gas day
- Final imbalance calculated after the end of the gas month, based on final allocations
- Imbalance settlement for each gas day (based on final allocations)
TSO calculate **Shipper’s Daily Imbalance** for each gas day as **difference between gas amount delivered at entries and withdraw at exits** from balancing area/zone by Shipper at each gas day.

\[
\text{DIN} = \sum A_{WE} - \sum A_{Wy}
\]
TOLERANCE
TOTAL NETWORK USERS IMBALANCE WITHIN AND OUTSIDE TOLERANCE

Total Shippers' imbalance (within and outside the tolerance): October 2015 - February 2017

- Total shippers' imbalance within tolerance, kwh
- Total shippers' imbalance outside tolerance, kWh
TOLERANCE

E-gas Balancing area

Time of application: October 2015 – September 2017 – ?

Tolerance is determined according to the following method:

\[ DLN = 5\% \times \text{MAX} \left( \frac{R_{PWE} + R_{PWS}}{2} ; R_{PWY} \right) ; \]

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

2,5 % will be the level of tolerance between April 1st 2018 – 2019
TOLERANCE

IP Entries
Production
UGS Entry

100

100 ± 2.5

100 ± 5

100 ± 5

100

UGS Exits
IP Exits

DSO

\[
DLN = 0.05 \times \max \left[ \frac{(R_{PWE} + R_{PWy})}{2}; R_{PWy} \right]
\]
Marginal prices in accordance with BAL NC

**Marginal sell price** is equal to the lower of the two following prices:
- lowest price of any sales of title products, in which the TSO is involved in respect of the given gas day,
- CSRB in relation to this gas day, reduced by 10%.

**Marginal buy price** is equal to the higher of the two following prices:
- highest price of any purchases of title products, in which the TSO is involved in respect of the given gas day,
- CSRB in relation to this gas day, plus 10%.

where

CSRB is the volume-weighted average price from all transactions of TGE (Gas Exchange) session of the Intraday Market (RDB₇), related to the present gas day (index TGEGasID).
H-GAS BALANCING ZONE - BALANCING ACTIONS AT TRADING PLATFORM

TGE trading platform (Polish gas exchange)

TSO undertakes balancing actions at TGE trading platform (WD title products):
- after the end of gas day
- based on net total Shippers’ imbalance

![Graph showing transactions of GAZ-SYSTEM at TGE in the period: October 2015 - September 2017.](image)

- Quantity of gas bought for balancing purposes, MWh
- Quantity of gas sold for balancing purposes, MWh
IMBALANCE CHARGE – E-GAS BALANCING AREA

Marginal prices E-gas balancing area

PLN/kWh


KCKE KCSE max TSO purchase price min TSO sell price
H-GAS BALANCING ZONE - BALANCING SERVICES

- Balancing services procured in a market-based manner - non-discriminatory public tender procedure
- Details of procedure published at GAZ-SYSTEM website - portal dedicated to public procurement (public access, platform in Polish language only)
  - Description of Product/ Procurement criteria
  - Questions and answers
  - Results
- Tenders submitted via email or official correspondence
- Annual tender process:
  - 1st process in December 2015 - for the period January - September 2016 (till end of gas year)
  - 2nd process in September 2016 - for the period October 2016 - September 2017 (gas year)
  - 3rd process in September 2017 - for the period October 2017 - September 2018 (gas year)
- Description of Product/ Procurement criteria
  - Supply of gas at Branice entry point in quantities resulting from demand of end users supplied from this entry point
  - Balancing services used in case when no Shipper nominates Branice entry point
  - Price is determined by the tenderer
## H-GAS BALANCING ZONE - BALANCING SERVICES - QUANTITIES & PRICES

<table>
<thead>
<tr>
<th>gas year</th>
<th>quantity [kWh]</th>
<th>price [PLN/kWh]</th>
<th>costs [PLN]</th>
</tr>
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<tbody>
<tr>
<td>2015/2016</td>
<td>1 716 778</td>
<td>0,10593</td>
<td>181 858</td>
</tr>
<tr>
<td>2016/2017</td>
<td>2 533 424</td>
<td>0,08535</td>
<td>216 228</td>
</tr>
<tr>
<td>2017/2018</td>
<td>?</td>
<td>0,14578</td>
<td>?</td>
</tr>
</tbody>
</table>
POLISH GAS MARKET
INCREASE IN THE NUMBER OF PARTICIPANTS

Number of Shippers – gas E balancing area

- 2012-12: 103
- 2013-12: 37
- 2014-09: 20
- 2014-12: 57
- 2015-08: 59
- 2015-15: 68
- 2015-11: 52
- 2015-12: 89
- 2016-01: 67
- 2016-02: 93
- 2016-03: 95
- 2016-04: 96
- 2016-05: 97

- Shippers
- Shippers authorised to trade gas at TGE
Number of active participants of TGE

- active DAMg participants
- active IDMg participants
- TGE participants

SHORT TERM WHOLESALE GAS MARKET DEVELOPMENT
THANK YOU FOR YOUR ATTENTION
TGPS BALANCING ZONE - BALANCING ACTIONS

Platforms:

**TGE trading platform (Polish gas exchange)** implemented in March 2016 (DA title product available only), no transaction executed yet

**Balancing platform** (an interim measure) in place since March 2016

NRA approval to **trade within 2 adjacent balancing zones**:

- GASPOOL (Germany)
- H-gas balancing zone in Poland (TGE trading platform)

**Merit order:**

DA title product on **TGE trading platform**

WD and DA title products on the **trading platform within the adjacent balancing zones**

WD and DA title and locational products on the **balancing platform**

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No balancing action taken by the **TSO since 1st October 2015**

Shippers balance their own portfolio. Reasons:

- Typically transit character of the balancing zone
- Allocation rule at all entry and exit points: “allocation equals nomination”
- Interim imbalance charge (interim measure) - encouragement for Shippers to be balanced in this balancing zone