The Romanian Electricity Market liberalisation towards EU access and best practices undertaking

In 2005 a new trading platform including rules, procedures and trading systems introduced the multi-market concept in Romanian electricity market.

Participants’ number

Theoretical opening

Generation & Distribution restructuring

After 1989, consumption decrease encouraged competition

spot market launch before privatisation

2000-2005 increasing opening degree

Romanian Way

In 2005 a new trading platform including rules, procedures and trading systems introduced the multi-market concept in Romanian electricity market.

Market restructuring
Since the beginning of the liberalisation process (2000 – separation of the monopolistic activities from the commercial ones), Opcom, the Romanian electricity market operator has administered inter alia a daily market. The market operator is perceived and utilised by the ministry and energy regulator as a key tool to ensure competition, transparency, non discriminatory access to energy and reference price. In 2005 new spot trading mechanisms (day-ahead market) were launched at Opcom allowing two-side bidding which will further ensure the best liquidity in Eastern Europe. A trading platform was created in 2005 at Opcom to provide public auctions (CMBC) for physical forward contracts. Since 2008 Opcom is providing Day Ahead counterpart service. With its two days healthy payment procedure this contribution is even more valuable during the financial crisis.

There are four important aspects which positively impacts market transparency and fairness:

- Due to Electricity Act provisions Opcom publishes daily all established market prices;
- Through forward trading mechanism the traded contracts become public;
- 1 MW standard products’ granularity provides access to the energy for all players including the low market share participants;
- Mandatory auctioning on Opcom markets for state owned producers (Order 2009/445) permits the newcomers entry.
The Multi-Market Concept: Romanian Electricity Market

- **Bilateral Contracts Market**
  - Regulated contracts
  - Negotiated contracts
  - PCCB PCCB-NC
  - Weeks, Months, Years

- **Day Ahead Market**
  - Voluntary
    - Producers
    - Suppliers
    - Network operators
    - One day ahead

- **Balancing Market**
  - Mandatory
    - Dispatchable producers
    - Dispatchable consumers
    - Several hours before real time operation

- **Ancillary Services Market**
  - Mandatory
    - Qualified suppliers for ancillary services
    - Based on acquisition periods

- **Allocation of ATC Market**
  - Allocation of ATC periods
  - Producers and suppliers
SUBJECT OF TRADING

is sale-purchase of:

- Electricity
- Ancillary services
- System services
- Transmission services
- Distribution services
- ATC
OPCOM
Market Operator
(Member of APEx & EuroPEX)

1 Transmission Operator
1 System Operator
39 Distribution Operators
171 Producers
181 Suppliers

Electricity Market
100 % Competitional

LICENCED PARTICIPANTS
MARKET PARTICIPANTS

Legal entities, holders of a valid License

- Participants on Bilateral Contracts Market
- Participants on DAM
- Participants on Balancing Market
- Balancing Responsible Parties
- Participants on Ancillary Services Market
- Participants on auctions for ATC allocation
WHOLESALE ELECTRICITY MARKET

**Regulated Market**
- Portfolio contracts with firm quantities and regulated prices
- Ancillary Services
- Transmission and distribution services

**Competition Market**
- Bilateral contracts between producers and suppliers
- Import contracts
- Export contracts
- Supply contracts, other than for captive consumers at regulated prices
- Trading on DAM
- Trading on BM
Bilateral contracts

- regulated;
- traded on centralized market of bilateral contracts;
- freely negotiated;

Day Ahead Market

- operated by SC Opcom SA;
- voluntary;
- based on participants offers;
- close auction in anonymous environment;
Balancing Market

- operated by TSO;
- mandatory for dispatchable producers;
- producers must offer all available capacity;
- may participate dispatchable consumers;
- tendering process starts after DAM closing in D-1 day.

The imbalances of BRP

- supported by BRPs for which:

0< Measured Net Position - Contracted Net Position > 0

- values based on costs/incomes of Balancing Market;
- are paid separately the imbalances of Dispatchable Units notifications.
DAY AHEAD MARKET
(DAM)
Participants are legal entities, holders of a valid license issued by ANRE and registered on DAM:

- Producers;
- Suppliers;
- Network operators (purchasing electricity in order to cover losses in network);
- TSO (to compensate unscheduled exchanges);
- Sale offers & buy offers (simple price-quantity offers for each type of trading interval);

- Trading interval: 1 hour
- Trading zone: Romania
TRADING MECHANISM

1. aggregate bids and are ordered in terms of decreasing-price → aggregate demand curve;

2. aggregate offers and are ordered in terms of increasing price → aggregate supply curve;

3. intersection of aggregate demand curve and aggregate supply curve sets MCP and traded quantities.
DAY AHEAD MARKET
- TENDERING PROCESS -

**D-2**
- 12:00
- 15:00
- 18:00

MO validates informations related to priority production

**D-1**
- 07:00
- 11:00

Opening of trading session

Closing time for offers

- TP submit bids and offers for D day
- MO validates bids & offers

MO submits to TSO notified and validated quantities of priority production

Deadline for correcting inconsistencies in the Final Notifications

TP - Trading Participant
TSO - Transmission and System Operator
MO - Market Operator
DAM - Day Ahead Market

- Up to 25 pairs price-quantity for each trading interval
- Bids and offers are for whole participant portfolio
- Submission way: web interface or XML files

Lei / MW

MW

P 1
P 2
P...
P 25
**DAY AHEAD MARKET - MATCHING PROCESS**

**D-2**

- Opening trading session
- Closing time for offers

**D-1**

- 07:00
- 11:00
- 12:00
- 12:30
- 13:00

**Key Points**

- **MO calculates MCP and traded quantities for each trading interval of the day ahead**
- **TP may submit contestations related to transactions concluded on DAM**
- **MO publishes market results**
- **MO sends Trading Confirmations to TP**
- **MO establishes and sends the Physical Notifications and final confirmations**
- **MO validates informations related to priority production**
- **Deadline for correcting inconsistencies in the Final Notifications**
- **TP submit Final Notifications for each type of priority production**

**Definitions**

- **TP** - Trading Participant
- **TSO** - Transmission and System Operator
- **MO** - Market Operator
- **DAM** - Day Ahead Market

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*Note: The diagram visually represents the timeline and key processes involved in the day ahead market matching process.*
PIATA DE ENERGIE ELECTRICA
-Procesul de programare-

**D-2**
- 12:00
- 15:00
- 18:00

MO validates informations related to priority production

TP submits Final Notifications for each type of priority production

Deadline for correcting inconsistencies in the Final Notifications

**D-1**
- 07:00
- 11:00
- 12:00
- 12:30
- 13:00

Opening trading session

• TP submit bids and offers for D day
• MO validates bids & offers

Closing time for offers/bids

MO submits to TSO notified and validated quantities of priority production

MO establishes and sends the Physical Notifications and final confirmations

• MO publishes market results
• MO sends Trading Confirmations to TP

TP may submit contestations related to transactions concluded on DAM

MO calculates MCP and traded quantities for each trading interval of the day ahead

14:00 15:00

TSO verifies and approves the Physical Notifications

BRP’s submit to TSO Physical Notifications for block exchanges

TP- Trading Participant
TSO- Transmission and System Operator
MO- Market Operator
DAM- Day Ahead Market
ENERGY CONTRACTING

Demand forecast  Buy on DAM  Sell on DAM  Physical Notification

Bilateral Contracts
ADJUSTMENTS ON BALANCING MARKET

Real time load curve

Physical Notification

Adjustment on BM
PERFORMANCE
OF
DAY AHEAD MARKET
Average number of participants on DAM

2005 July- 2011 May

nr de participanți

- Red: Participanți care au oferitat
- Blue: Participanți care au tranzacționat
The quantities offered and traded daily

2005 July – 2011 May

Bids = 46,3 TWh
Offers = 49,6 TWh
Cleared = 34,9 TWh
Traded monthly volumes on DAM during
2005 July – 2011 May

Total volume traded: 34.9 TWh
Monthly average volume traded: 491 GWh
Highest monthly volume traded: 896 GWh (2011 March)
Monthly share of DAM transactions related to internal consumption

11.2%
Monthly weighted average of MCP [Euro/MWh]

2005 July – 2011 May

MCP weighted: 43,3 Euro/MWh
Monthly value of traded volumes on DAM
2005 July – 2011 May

= 2,205 mld lei
= 635 mil €

Contractual relationships = X * Y

Failure of fulfill Payment obligations
Rezultatele aplicării procedurii de suspendare (la data de 01.07.2008):  
• 480 complain files  
• 100 suspensions were applied  
• 69 suspensions were removed (payments)  
• 31 suspensions in force  
• Value of invoices from files ~ 17 mil. lei
Contractual relationships = X + Y

S.C. OPCOM S.A. provided full design and implementation of central counterparty mechanism through:

• Designing mechanisms to guarantee compliance with legislation and banking regulations;
• Prepared procedures for receipts and payments;
• Selected the Central Account Bank;
• Purchased IT system in order to provide centralized settlement and a good interface between Areva application and platforma Areva Central Account Bank and;
• Training of participants and own employers.
Trading on the centralised markets for bilateral contracts managed by OPCOM

The Centralised Market for Bilateral Contracts awarded through public auctions

The Centralised Market for Bilateral Contracts with Continuous Negotiation
The Electricity Law No 13/09.01.2007:

Art. 29 – (1) The electricity competitive market operates according to the regulations issued by the competent authority (the Romanian Energy Regulatory Authority - ANRE)

(2) In a competitive market, electricity trades are run either wholesale or retail.

(3) The competitive wholesale market operates based on:

   (a) Bilateral Contracts concluded consequent to auctions organized in the centralized market;

(4) In the competitive retail market, providers sell electricity to eligible clients through bilateral contracts at negotiated prices or through standard offers.

By the Order No 42/09.11.2005 the Regulation concerning the organized framework for the trading of bilateral contracts for electricity was approved. This regulation applies for producers and suppliers licensed by the Romanian Regulatory Authority as well as for consumers using their eligibility right and for the Romanian Power Market Operator – SC OPCOM SA.

Trading liquidity backed by two successive Minister’s Orders: state owned generators, the 5 biggest (ord.408/2006), respectively all (ord.445/2009) obliged to trade further only in OPCOM markets.

Transparency boosted by the Electricity Law requirement: "Prices cleared on the electricity centralised markets are published on daily basis as related operator responsibility (Art.40, para (4))"
The Centralised Markets for Bilateral Contracts

Regulatory framework

The Centralised Market for Bilateral Contracts awarded through public auctions – CMBC

- **ANRE notice No 32/2008**

- **Trading:** at OPCOM’s headquarters

- **Published offers:** Selling or buying offers for random delivery periods and for random daily loads determined according to the initiator’s requirements

- **Participation in the auction sessions** is conditioned by the posting of tender guarantees.
The Centralised Markets for Bilateral Contracts

Regulatory framework

The Centralised Market for Bilateral Contracts with Continuous Negotiation CMBC – CN

- **ANRE notice No 33/2008**

- **Trading**: online, from the workstations of the registered market participants

- **Published offers**: Standard selling or buying offers, for **standard** delivery periods and for **standard** daily loads.

- **Participation in the auction sessions** is conditioned by the posting of **tender guarantees**.
Ordinance No 408/12.06.2006

- Addressed to: SN Nuclearelectrica SA, SC Hidroelectrica SA, SC Complexul Energetic Craiova SA, SC Complexul Energetic Rovinari SA and SC Complexul Energetic Turceni SA.

- The selling of all the available wholesale electricity volume must be done on the Centralised Markets for Bilateral Contracts managed by SC OPCOM SA.

Ordinance No 445/10.03.2009

- Addressed to: Regiei Autonome pentru Activitati Nucleare, electricity generators under the authority of the Ministry of Economy.

- Starting with 31 March 2009, the selling of all the available wholesale electricity volume must be done on the Centralised Markets for Bilateral Contracts managed by SC OPCOM SA.

- Exception: electricity volumes related to the regulated contracts, electricity volumes traded on the Balancing Market and the electricity volumes related to the contracts in delivery.
The Centralised Markets for Bilateral Contracts

General functioning principles: the calendar of activities

Addressing the trading intent and submission of the offer and the corresponding framework contract

6 working days in advance (D-6)

Publishing the auction announcement: the initiator, the date, the time, the framework contract, the offer

5 working days in advance (D-5)

Conducting the auction on:

I) CMBC
II) CMBC-CN

1 hour in advance

12 hours since the end of the auction

Notifying and publishing the results of the auctions

3 working days since the auction

Signed the framework contracts

For the market participant – period of time for:
- analysing the offer and the contract proposed by the initiator of the auction;
- posting and submitting the tender guarantees at OPCOM.

For the market operator – period of time for:
- receiving and registering the tender guarantees and the responding offers.
The Centralised Market for Bilateral Contracts awarded through public auctions (CMBC)

The functioning principle

Addressing the trading intent of buying/selling and submitting the offer and the corresponding framework contract

Opening the responding offers, matching the offers, determining the winning offer in the public auction

Publishing the auction announcement: the initiator, the date, the time, the framework contract, the offer

Notifying and publishing the results of the auctions

Public auction session

For the market participant – period of time for:
• analysing the offer and the contract proposed by the initiator of the auction;
• posting and submitting the tender guarantees at OPCOM.

For the market operator – period of time for:
• receiving and registering the tender guarantees and the responding offers

6 working days in advance (D-6)
5 working days in advance (D-5)
1 hour in advance
12 hours since the end of the auction
3 working days since the end of the auction
The Centralised Market for Bilateral Contracts awarded through public auctions (CMBC)

Results: delivered electricity volumes and market share
The Centralised Market for Bilateral Contracts with Continuous Negotiation (CMBC-CN)

Functioning principle (1)

Addressing the trading intent of buying/selling and submitting the offer and the corresponding framework contract

Publishing the auction announcement: the initiator, the date, the time, the framework contract, the offer

For the market operator – period of time for:
- analysing the offer and the contract proposed by the initiator of the auction;
- posting and submitting the tender guarantees and the responding offers

For the market participant – period of time for:
- receiving and registering the tender guarantees and the responding offers

Electronic auction session

The initiator of the auction and the market participants who have posted valid tender guarantees enter the offers in the trading system

Notifying and publishing the results of the auctions

Signing the framework contracts

6 working days in advance (D-6)

5 working days in advance (D-5)

1 hour in advance

12 hours since the end of the auction

3 working days since the auction

(D-6)
The Centralised Market for Bilateral Contracts with Continuous Negotiation (CMBC-CN)

Results

65 market participants are currently registered to the CMBC-CN

5.559 contracts were offered for trading, representing 1.562.631 MWh;

1.012 contracts were concluded, representing 160.132 MWh.
BALANCING MARKET

GOALS:
Real time system balancing
Congestion Management

MANDATORY PARTICIPATION

ADMINISTRATOR
System and Transmission Operator

PARTICIPANTS
• licensed producers operating dispatching units
• qualified producers to supply ancillary services
• licensed consumers operating dispatching loads
Balancing Market

Main Characteristics

- Operation is done by BMO, within Transelectrica

- Balancing Market Operator (BMO) is responsible for:
  - registration of the Participants for BM,
  - collecting and verification of the Offers,
  - realization of necessary quantities calculation for the settlement of BM.

- TSO is the contractual party for every Participant on BM, for all of transactions on this market

- Offers of Dispatchable Units and Consumption

- Mandatory market— all capacities must be offered
Purposes and means

**Balancing Market**

- **Objectives:**
  - Setting in real time, on commercial bases of the balance between consumption and production of electricity
  - Commercial Management of network congestions

- On Balancing Market there are **tranzactions** for:
  - Secondary regulation
  - Fast tertiary regulation
  - Slow tertiary regulation
Balancing Market

BM is centralised and mandatory

- On BM, TSO buys and/or sells active electric energy
  - from/to participants to BM which have dispatchable units/consumption, in order to compensate the deviations from the scheduled production and consumption of electric energy

- the Producers are obliged to offer on this market for:
  - Upword regulation, the whole quantity of electricity which is available supplementary of the Notified quantity
  - Downword regulation, the whole Notified quantity

- the Offers and Transactions on Balancing Market are done for every dispatchable unit/consumption
Balancing Market

- Centralised mandatory – official operates since 1st of July 2005;
- Starts the day before delivery day, after the physical notification were accepted by TSO; transactions are in real time during delivery day;
- Operates at dispatchable units level (ETSO code);
- Simple hourly offers (price-quantity pairs);
- Upward and downward regulation offers;
- Unique offer – don’t need separate offers by type;
- Allocation of capacity offers by type of regulation is automatically done by the informatic system of BM;
- Selected offers are paid at the offer price or marginal price.
Balancing Market

Price

Secondary
Fast tertiary
Slow tertiary

Offer curve

Production

Regulation at decreasing
Regulation at increasing

$q$
$q$

Qmin
Qprogramat
Qmax
**Trading Day**

- BRP transmit physical notifications
- OPCOM transmit the physical notification from DAM
- TSO publish aggregate production program, forecast demand, imports and exports
- Closing time of BM

**Delivery Day**

- TSO confirm daily offers
- TSO confirm physical notifications
- Select slow tertiary regulation
- Select fast tertiary regulation

15.00
- Producers make offers on BM
- Check and approve the physical notifications

16.30
- Check and approve offers on BM

17.00
- TSO confirm daily offers

19.00
- TSO confirm physical notifications

-01.00
-00.15
Real time operation

BALANCING MARKET
Balancing Market

Balancing market Prices

- Fast and slow tertiary regulation:
  - Payment based on the price offered ("payment on offer")

- Secondary regulation:
  - Payment based on marginal cost of supply

- Transaction:
  - Is payed only for actual balancing energy delivered
  - Delivery failure creates imbalance and it is penalized as such
OPCOM ROLE IN BALANCING MARKET

1. The settlement of the transactions concluded on the Balancing Market
Balancing Market

- Participant settlement -

\[ VZ = \sum q \times p \]

**Participant pays**  \( q \times \text{price} \)

- Secondary Regulation  PM
- Fast Tertiary Regulation
- Slow Tertiary Regulation  Offer Price

**Participant receives**  \( q \times \text{price} \)

- Secondary Regulation  PM
- Fast Tertiary Regulation
- Slow Tertiary Regulation  Offer Price
- Starting Up
Prices for excess and deficit

Price for excess

Price for deficit

\[
\text{Price for excess} = \frac{\sum \text{Value of power reductions } (P - C_1)}{\sum \text{Quantities of power reductions } (P - C_1)}
\]

\[
\text{Price for deficit} = \frac{\sum \text{Value of power increasing } (C_2 - P)}{\sum \text{Quantities of power increasing } (C_2 - P)}
\]
Balancing responsibility and BRP
Balancing responsibility and BRP

Obligations regarding the balancing

*The balancing responsibility rests upon the Licensed Participants for:*

- **Assuring the physical balance** between:
  - Measured production, programmed acquisitions and imports of electricity
  - Measure consumption, programmed sales and exports of electricity
- **Assuming the Financial responsibility at TSO** for all Physical imbalances registered
PROGRAMMING

- Notification energy block exchanges between different parties responsible for balancing
- Notification international energy trade
- Notification of production / consumption aggregate
- Notification of production for each dispatchable unit / consumption dispatchable

Preliminary conditions:
- Bilateral Exchanges are allowed only between BRP recorded to TSO.
- All participants in the DAM should be part of a BRP
- All producers and suppliers (consumers) should be part of a BRP
BALANCING MARKET ADJUSTMENTS

Real time operation

Physical notification

Adjustment in the Balancing Market
ROLE OF OPCOM IN BALANCING MARKET

2. Settlement of BRP Imbalances
**BRP Imbalance - Settlement -**

\[ NCP = \text{Sales} - \text{Purchases} + \text{Export} - \text{Import} + \text{DAM}_{\text{sales}} - \text{DAM}_{\text{purchases}} \pm E_{\text{balancing}} \]

\[ NMP = \text{Production} - \text{Consumption} \]

**Imbalance** = **NMP** - **NCP**

Negative Imbalance  
(Quant. x Price for deficit)

Positive Imbalance  
(Quant. x Price for excess)

**BRP pays**

**BRP receives**
Redistribution of the Revenues / Costs from the System Balancing

- Balance Account - Revenues / Costs of TSO from the System Balancing
- Balance Account - Revenues / Costs of TSO from BRP Imbalances
- Revenues of TSO from the Imbalances from Notification

Settlement Operator

BRP
We thank for your attention!