6th South East Europe Energy Dialogue

ELECTRICITY SYSTEM OPERATOR EAD

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New Power Market Model. Activities towards market integration in compliance with the New European Legislation

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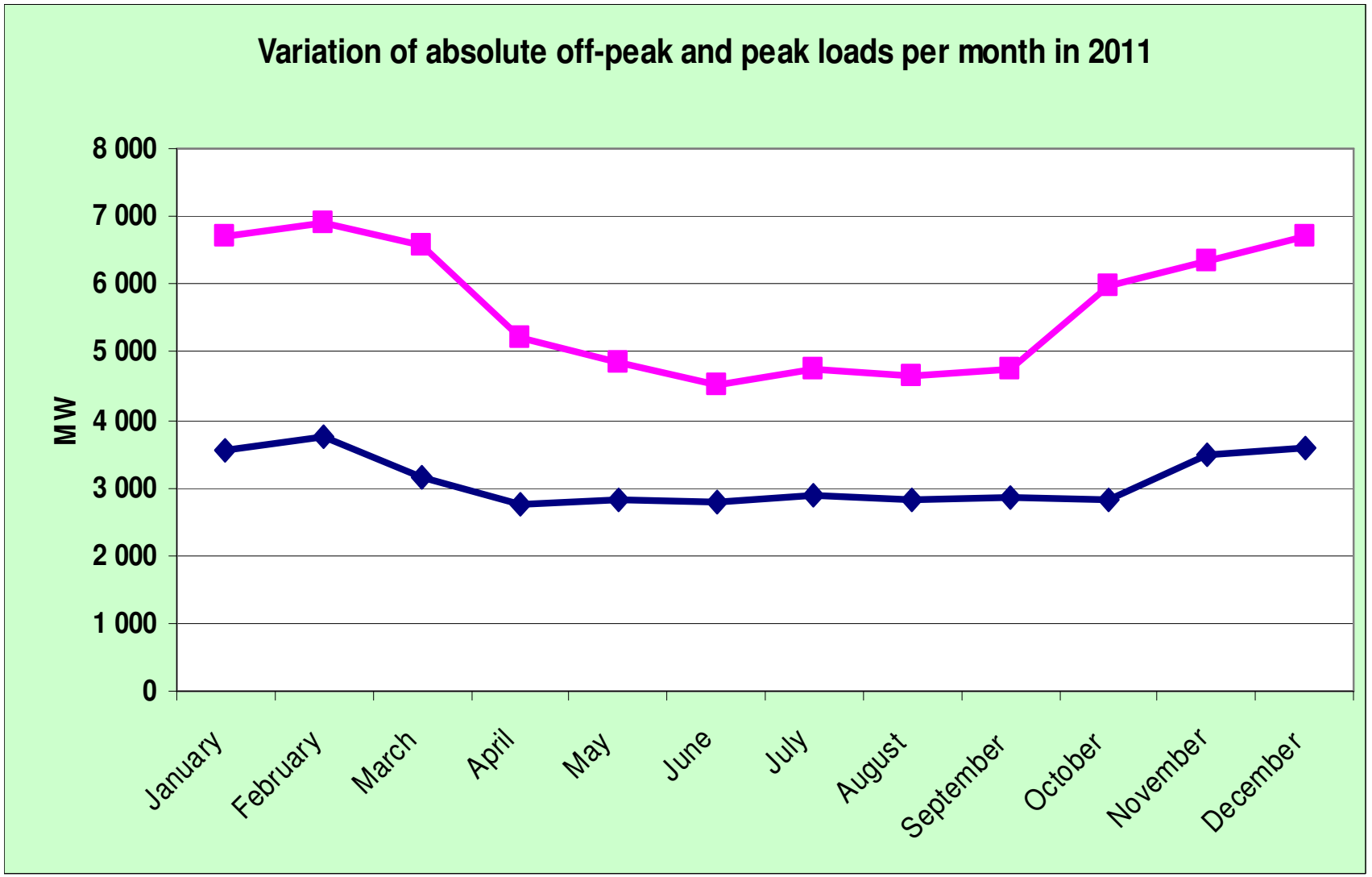
Basic Statistical Data

Показател Index	Година/ Year							Year 2011
	2004	2005	2006	2007	2008	2009	2010	
Брутна генерация от ЕЦ към ЕПМ PP gross generation fed into transmission grid	41 539	44 259	45 710	43 093	44 831	42 573	46 260	**50 700**
Потребление и собствени нужди от ЕЦ PP consumption and auxiliary services	6 146	6 233	5 980	6 067	5 890	5 307	4 689	**6 587**
Нетна генерация към мрежата Net generation fed into transmission grid	35 393	38 026	39 730	37 026	38 941	37 266	41 571	**44 113**
Физически внос Physical import	741	799	1 139	3 058	3 097	2 662	1 168	**1 450**
Нетна генерация към ЕПМ + внос Net generation fed into transmission grid + import	36 134	38 826	40 869	40 084	42 038	39 928	42 739	**45 563**
Загуби от пренос и трансформация Transmission and transformation losses	742	844	881	872	905	847	895	**951**
Брутно потребление от ЕМП Gross consumption from transmission grid	35 392	37 982	39 988	39 212	41 133	39 081	41 844	**44 612**
Потребление ПАВЕЦ PSPP consumption	289	549	471	590	718	927	988	**1 199**
Физически износ Physical export	6 620	8 380	8 391	7 538	8 441	7 731	9 613	**12 111**
Нетно потребление от ЕПМ Net consumption from transmission grid	28 483	29 053	31 126	31 084	31 974	30 423	31 243	**31 302**

Basic Statistical Data



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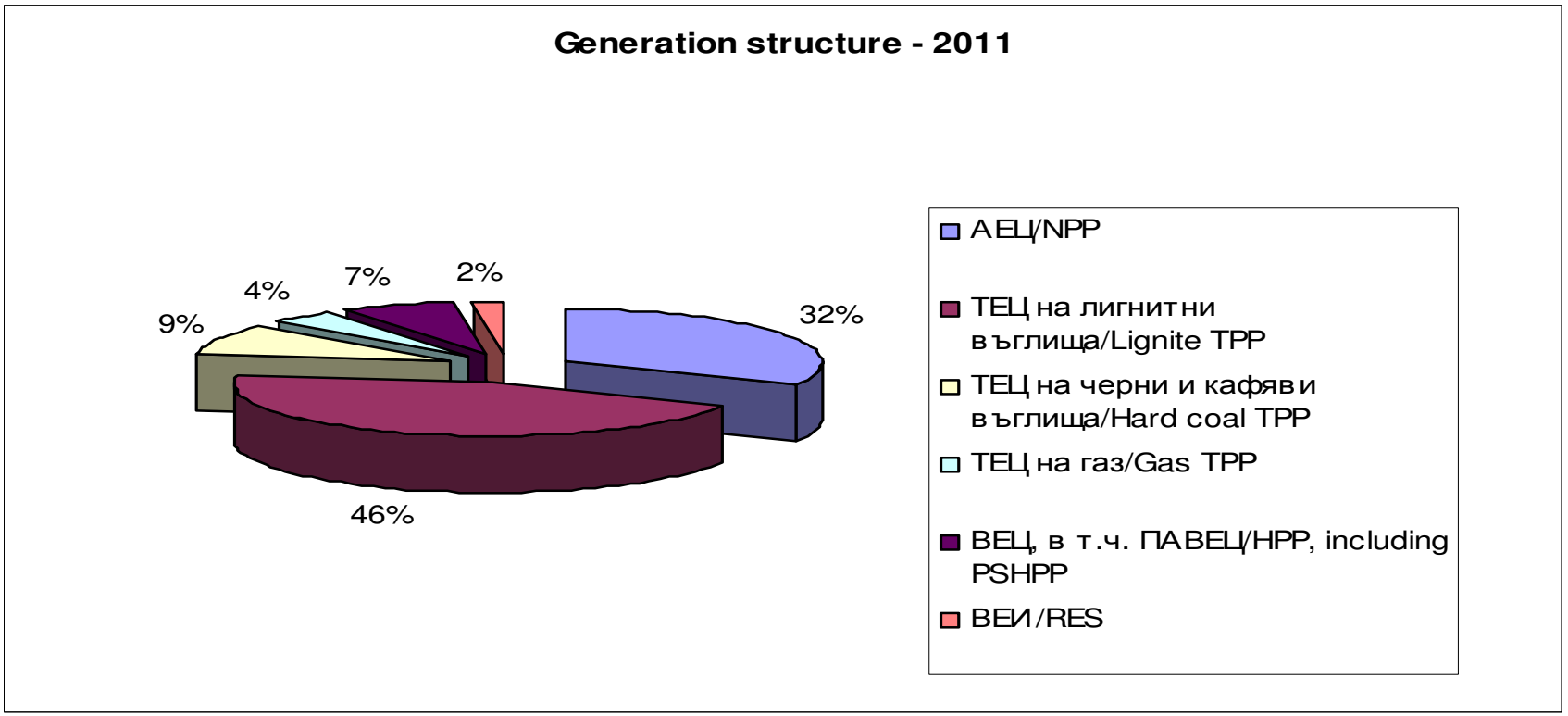
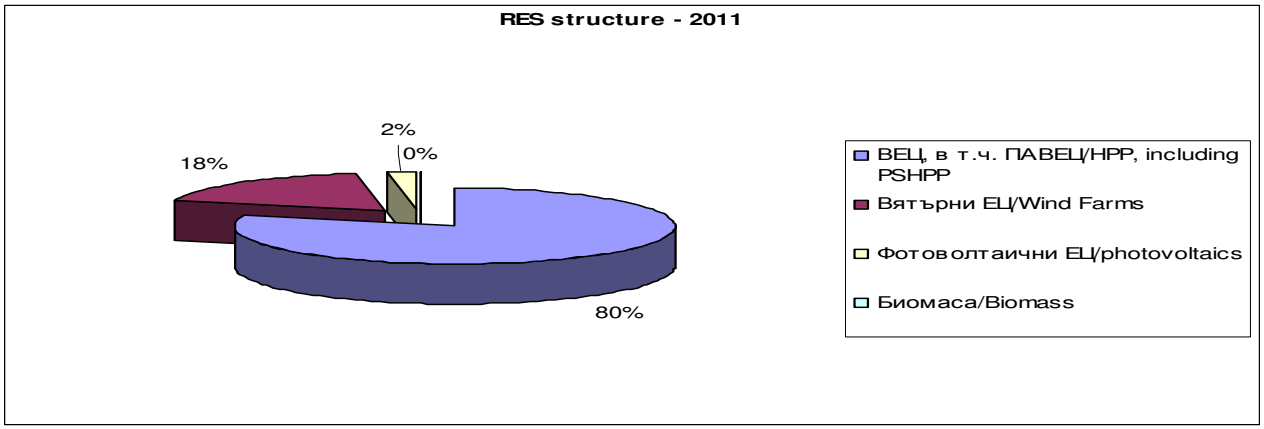
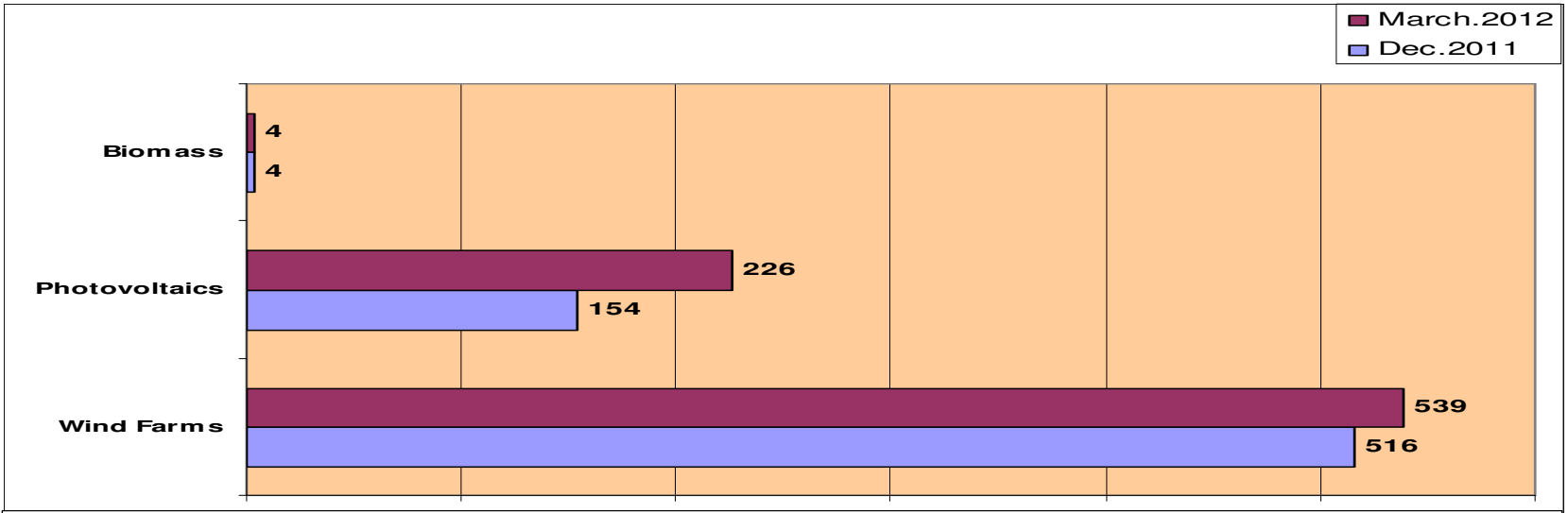
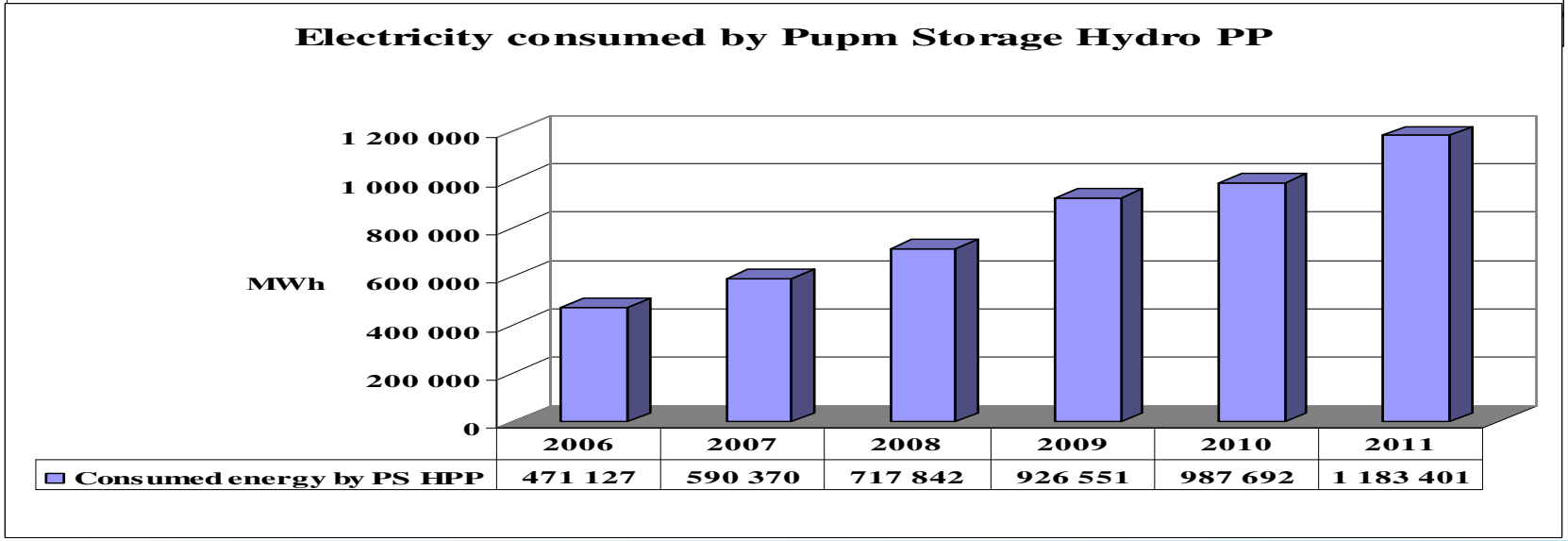




Basic Statistical Data

Progress in RES installed capacities (MW)





Bulgarian Electricity Transmission Grid

Bulgarian Electricity Transmission Grid Development

1. ESO EAD published on its web site a list of the sites and elements of the transmission grid which has to be reconstructed and built for the secure operation of the transmission grid, in accordance with the current legislative criteria.
2. The prognosis reported gross electricity consumption by 2020 approximately 42 000 GWh.
3. The period 2010-2015 is characterized with staged decommissioning of big thermal power plants and accelerated construction of RES, in accordance with Directive 2009/28/EC.
4. The total capacity projected for decommissioning in TPP till the end of 2015 is up to 2175 MW.
5. The new generation capacities planned for construction during 2010-2020 are around 4100 MW, from which: 1000 MW NPP, 2100 MW RES and 1000 MW TPP.
6. The investments necessary for the transmission grid development till 2020, are estimated on 258 mln. EUR.

New Energy Legislation

New Energy Legislation

1. **Law for Renewable Energy Generation**
2. **Energy Law** – final coordination of the amendments. Expected date to be in force – as from June 2012
   a. ESO will become the Independent Transmission Operator and owner of the transmission assets
   b. All responsibilities and obligations in respect of the Regulation 714/2009/EO and Directive 72/2009/EO are foreseen
3. **New Market Rules** – in force as from July 2011. The day ahead market and balancing market are not implemented yet, but in 2011 - the "dry run" period started

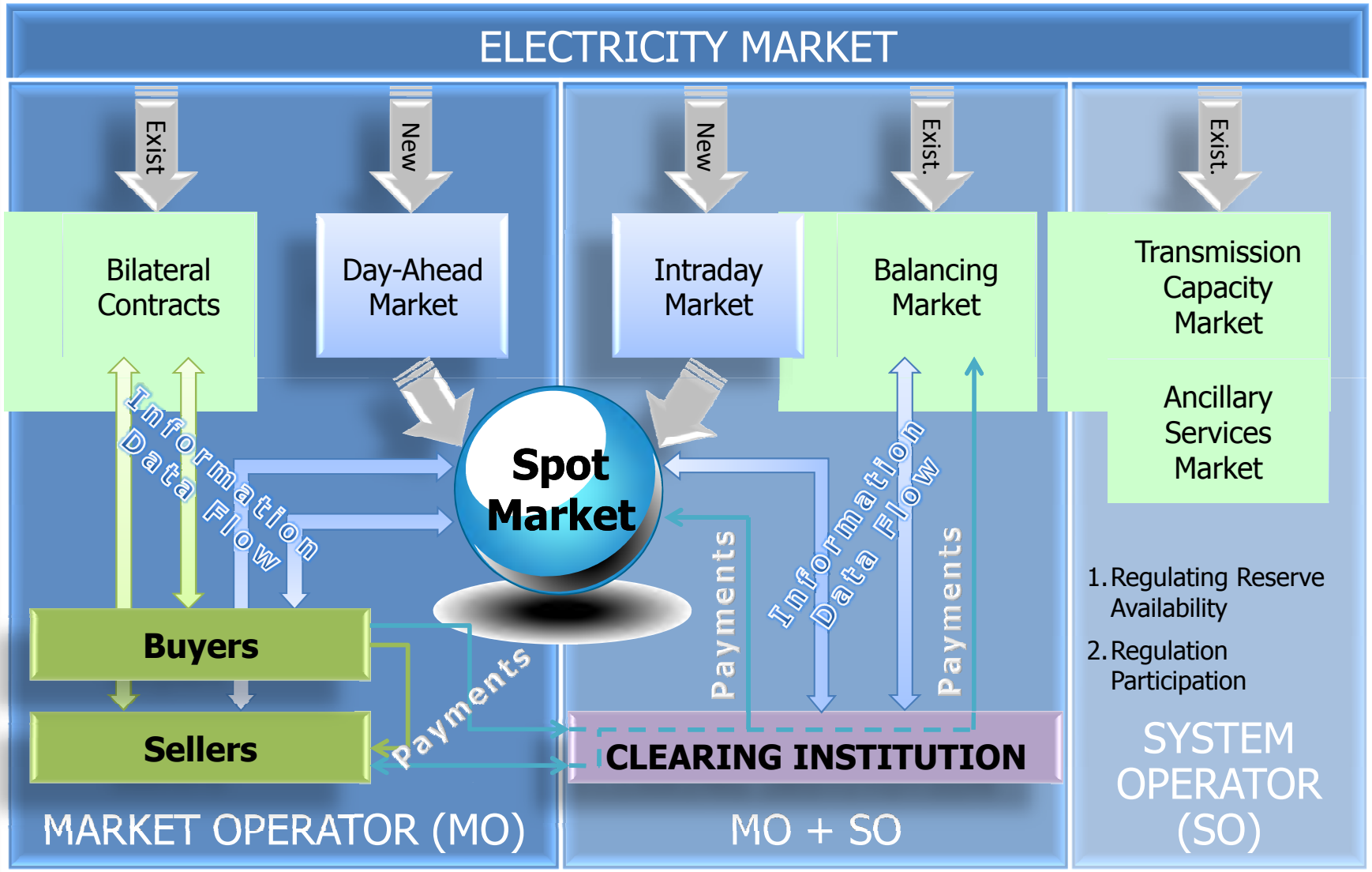
New Energy Legislation

Energy Law. Third energy package.
Restructuring of NEK and ESO

ESO	NEK
1 System control	1 Generation HPP, PSHPP
2 Transmission Investments and Development	2 Public Supply/ Supplier of last resort
3 Electricity Market Administration	3 Electricity Trading

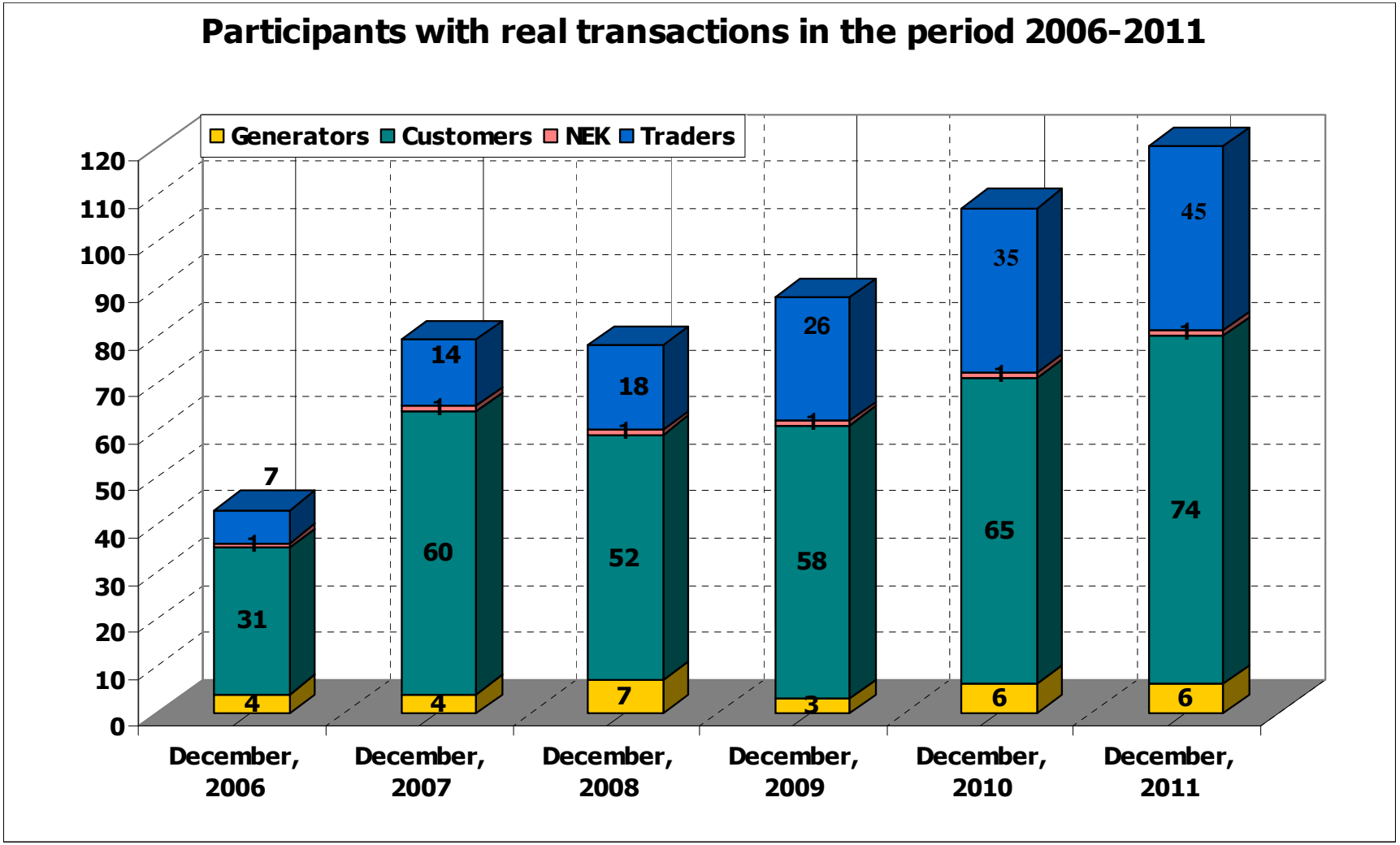
Electricity Market Model

Electricity Market Structure

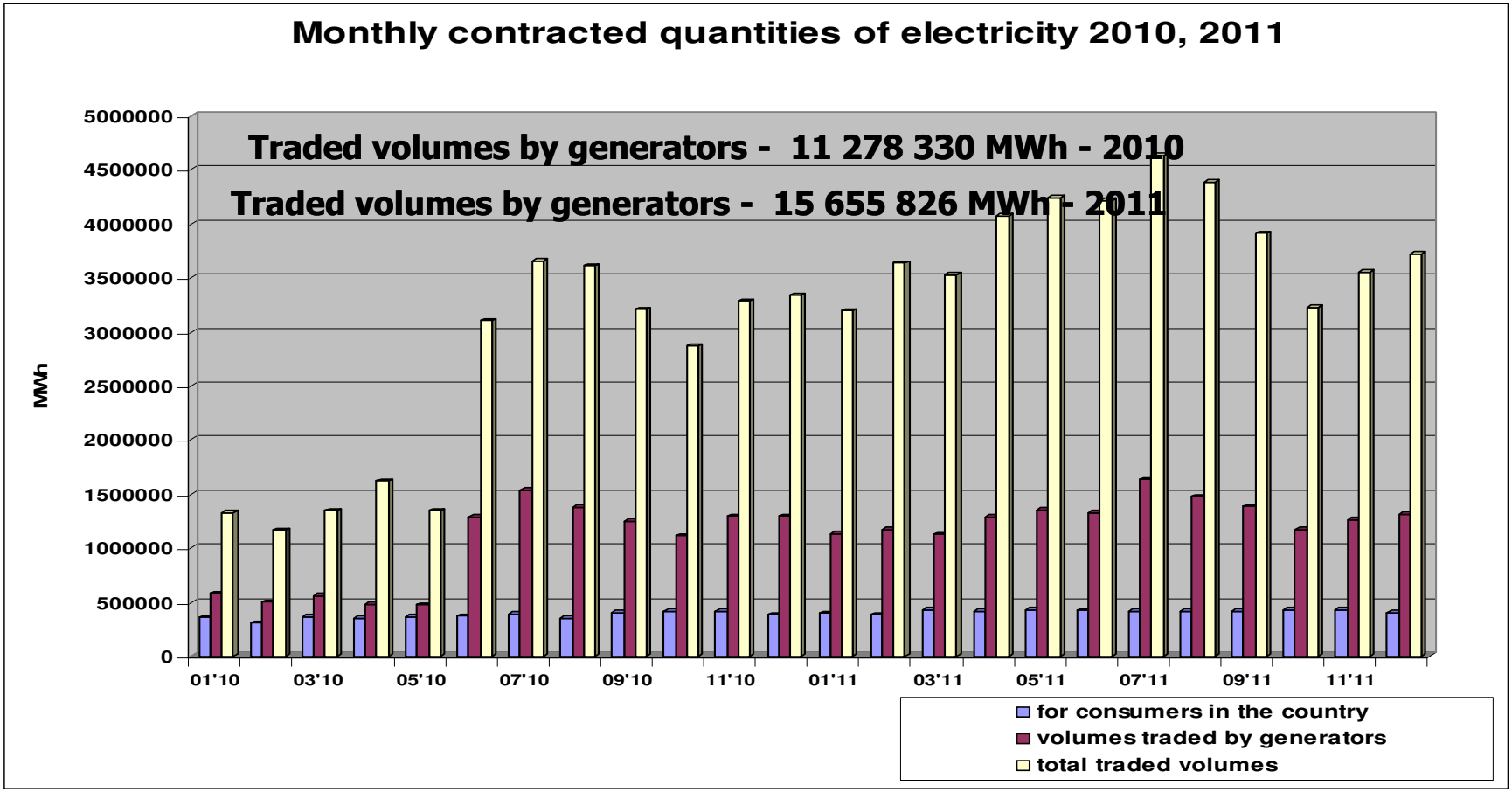


Current Electricity Market Model

Electricity Market Participants



Current Electricity Market Model

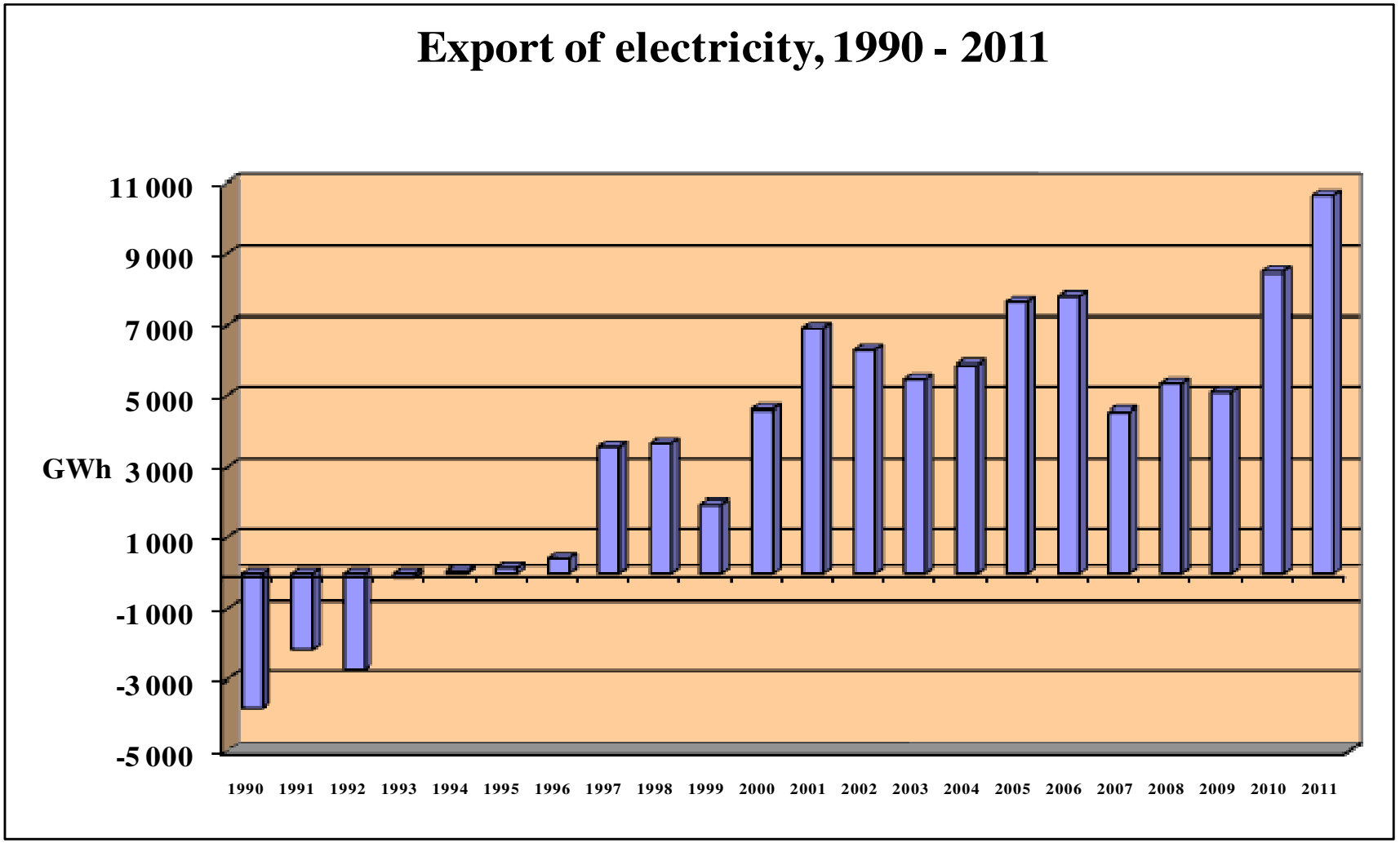


From 2004 ESO EAD registers hourly transactions at freely negotiated prices.

In 2011 the regulated market covers 68%, and the liberalized market – 32%.

Current Electricity Market Model

Export of electricity 1990 – 2011
2011 – absolute record – **23.4% from the net generation**



Cross-border capacities allocation mechanism

YEARLY ALLOCATION in SEE (April'12)

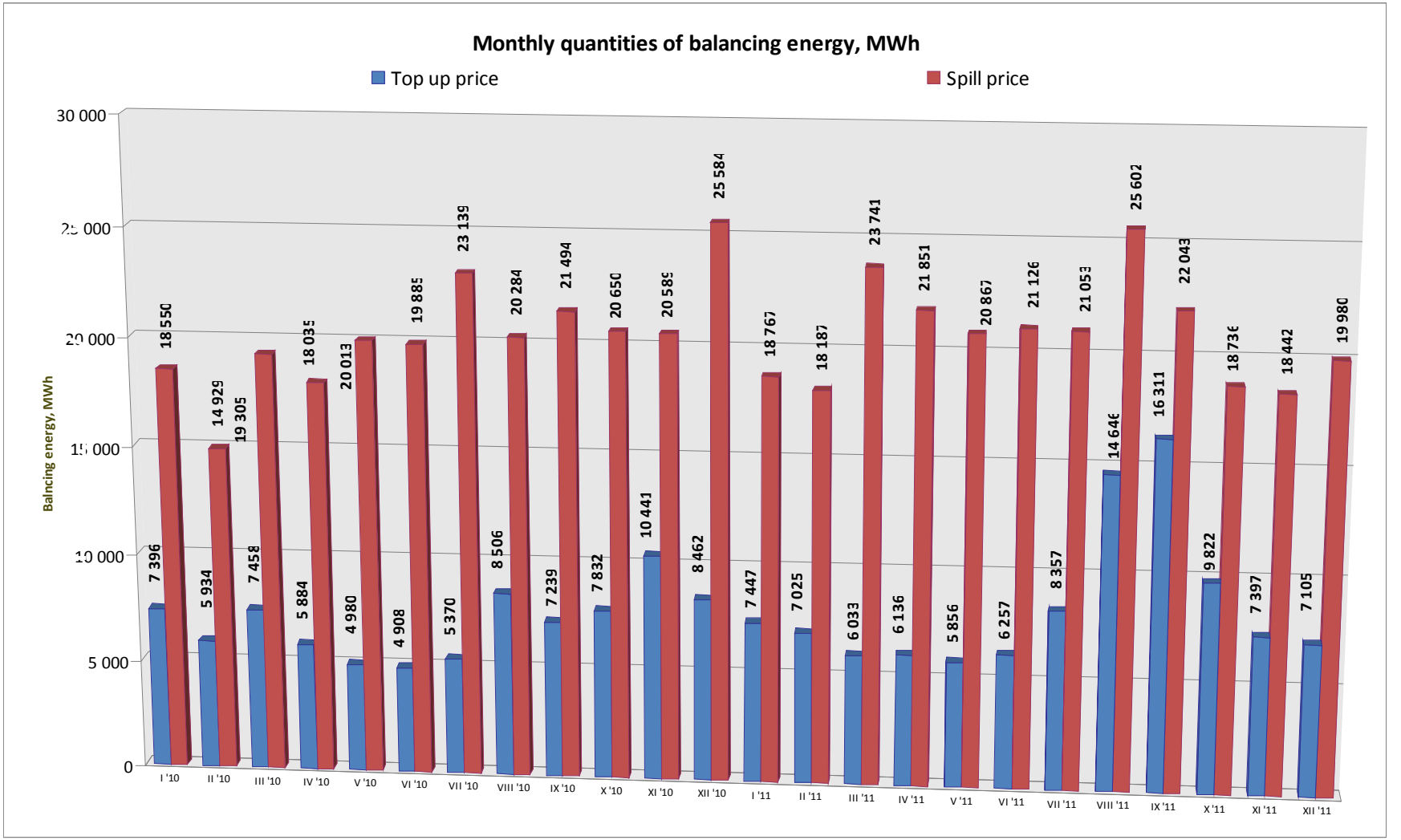
MONTHLY ALLOCATION in SEE (April'12)

Current Electricity Market Model

2010 and 2011 electricity market imbalances

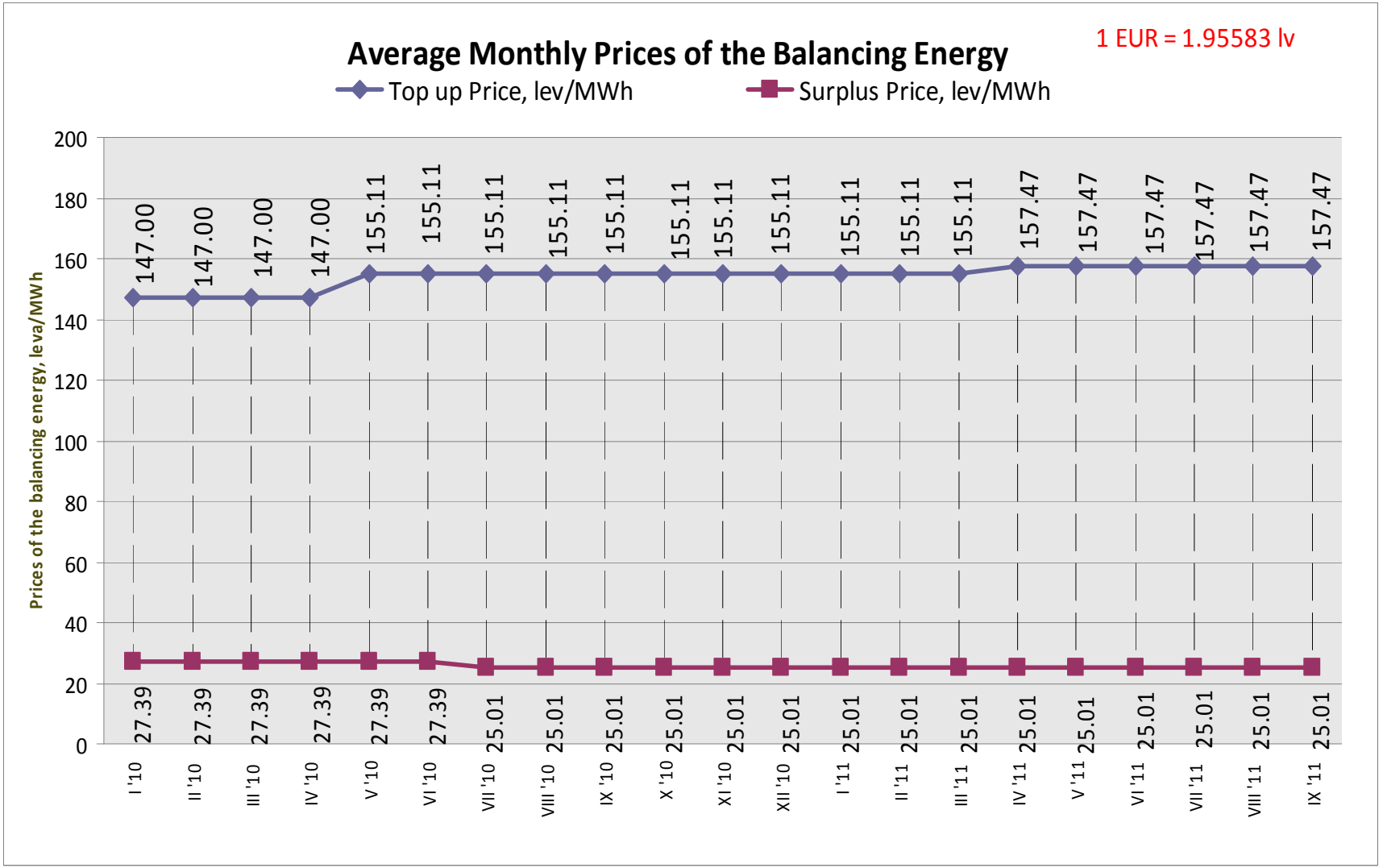
Average energy deficit –2.09%

Average energy surplus -5.17%



Current Electricity Market Model

2010 and 2011 balancing energy prices



New Electricity Market Model

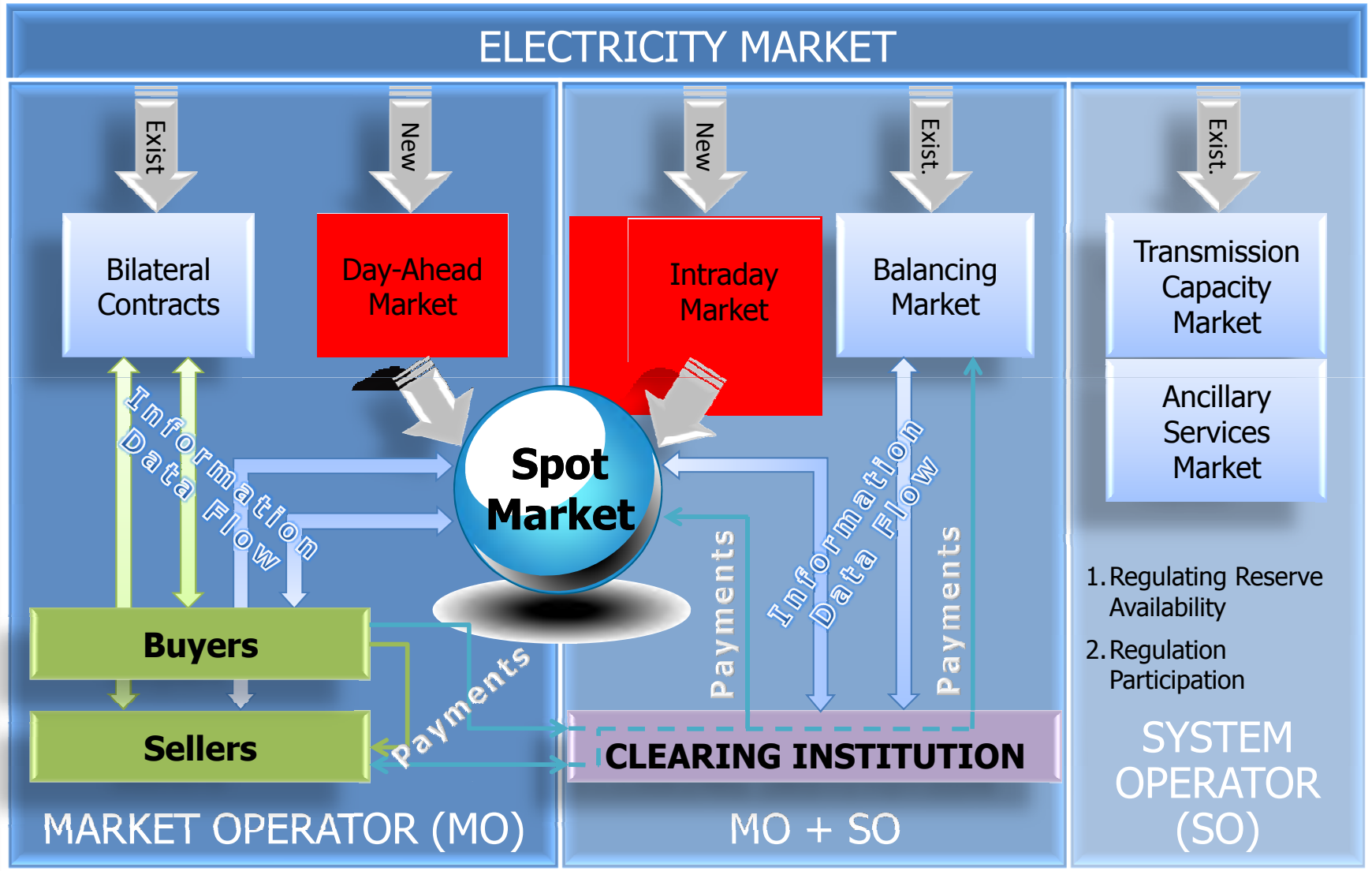
New market model in line with the new Electricity Market Rules

The new organization of the market should provide:

1. **Introduction of hourly schedules for all transactions notwithstanding at regulated or freely negotiated prices**
2. **Notification of schedules on a daily basis, in the day D-1**
3. **Introduction of balance groups arrangements and a new registration procedure for the balance responsible parties**
4. **Introduction of new market relations between ESO and the balancing energy providers**
5. **Introduction of market mechanism in operation of the balancing market – separation of the energy the generator offers to the market from the energy that will be used by the Operator for regulation of the System**
6. **Introduction of a separate settlement for the balance responsible parties and the balancing energy providers**
7. **Regulation of the terms and conditions for participation of RES generators in the market**
8. **Regulation of terms and conditions for operation of an organized Day Ahead Market (power exchange)**

New Electricity Market Model

Electricity Market Structure



New Electricity Market Model

New market model in line with the European Trends and new Electricity Market Rules

As of January 2011 – parallel work in line with the current and the new market model

Financial settlement and payments – in line with the current model

As of October 2011– start of the tests with the "Day ahead market" module

Transition to real work in line with the new model – after licensing of the balance responsible parties and accomplishment of all stages of the testing period

New Electricity Market Model

Analysis of the Dry run process

61 balancing groups registered for the testing purposes

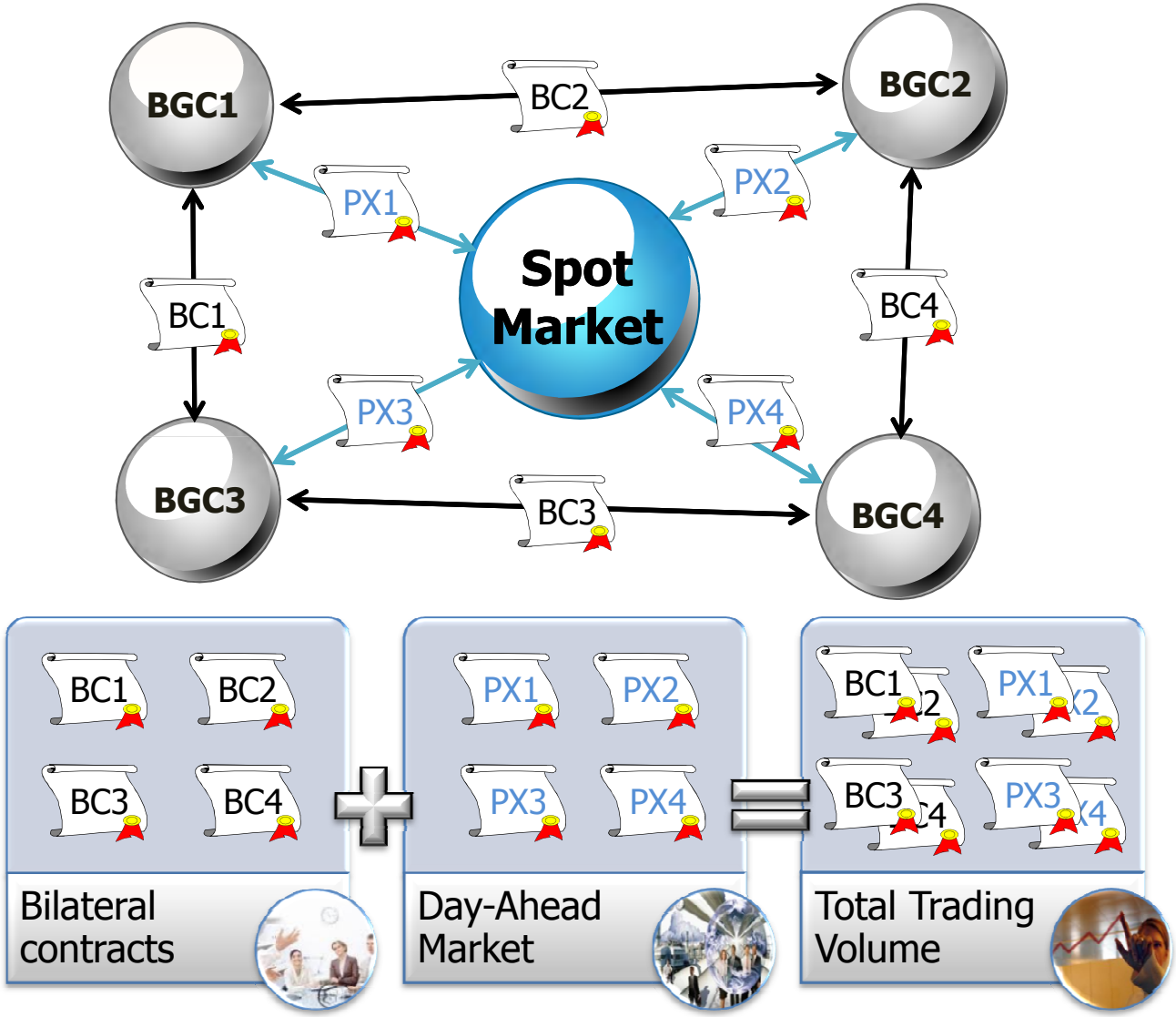
All generators, connected to the HV grid provide gross schedules for day D

All BRP provide net schedules for exchange with other BGs

The imbalances of the biggest balancing groups of Discos – in range up to 5% for deficit and surplus, with exception of the balancing group (grid) with the biggest wind farm location – up to 20% imbalances

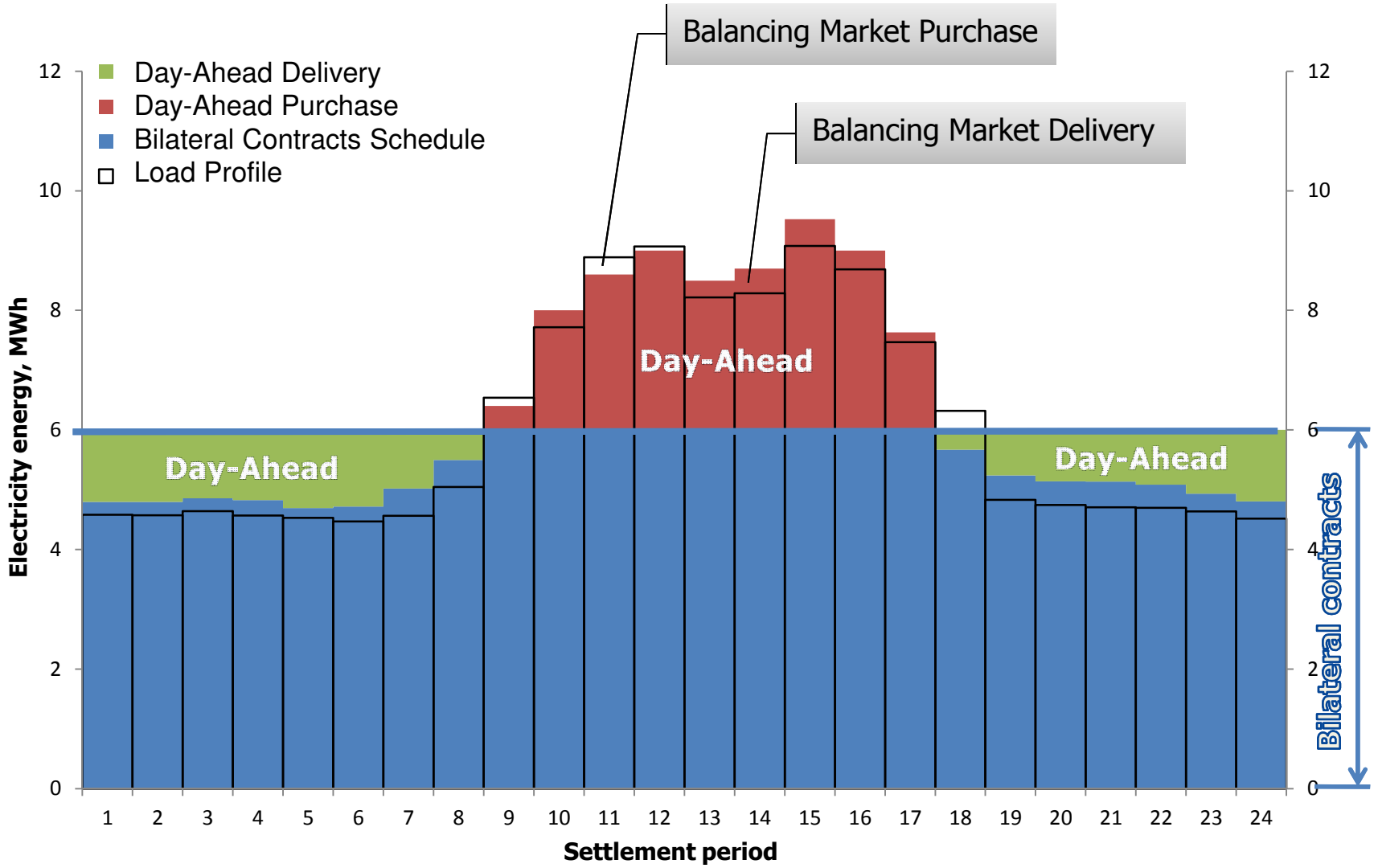
New Electricity Market Model

Day-Ahead Market Role



New Electricity Market Model

Day-Ahead Market Role



Daily trading schedule

Trading schedule

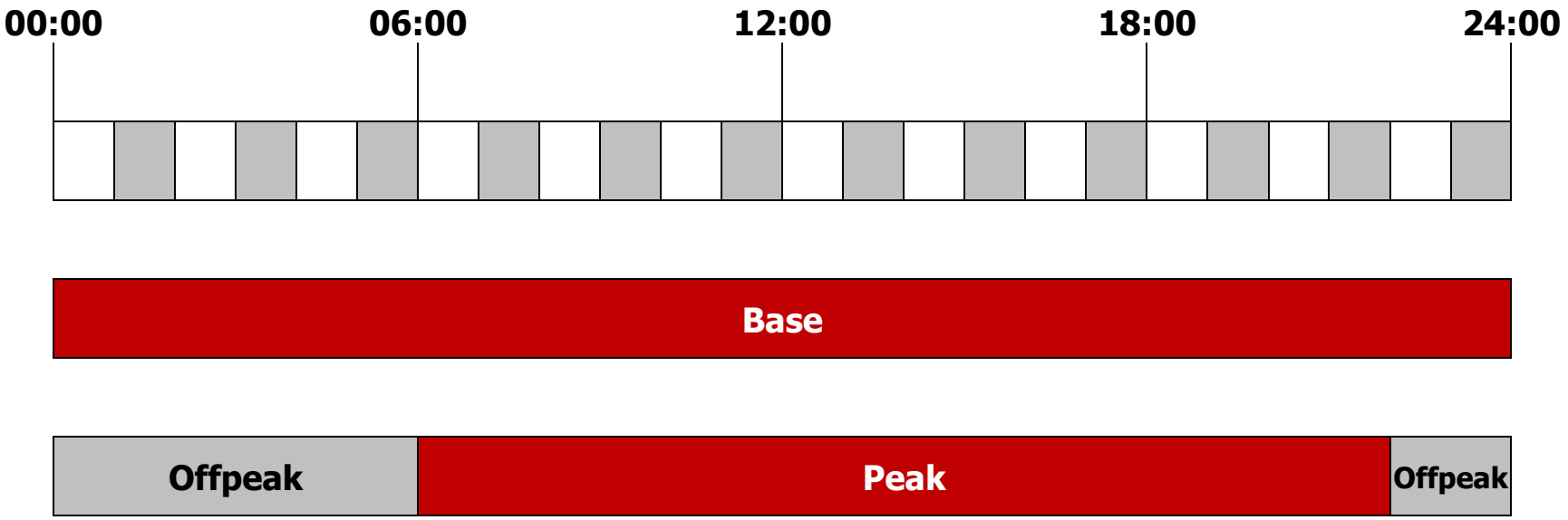
Hour	Trading stage
10:00	Daily spot market auction – gate open
11:30	Daily spot market auction – gate close
11:45	Auction: • offers validation process • market clearing price calculation (MCP) • market clearing volume calculation (MCV) • awarded volumes allocation process
11:50	Daily spot market auction final results
After 12:00	• trading system automatically generates nominations between corresponding spot market participants and spot market operator • balancing group coordinators receive the schedules with the awarded bids volumes from the corresponding spot market participants

Trading products

Hourly and block products

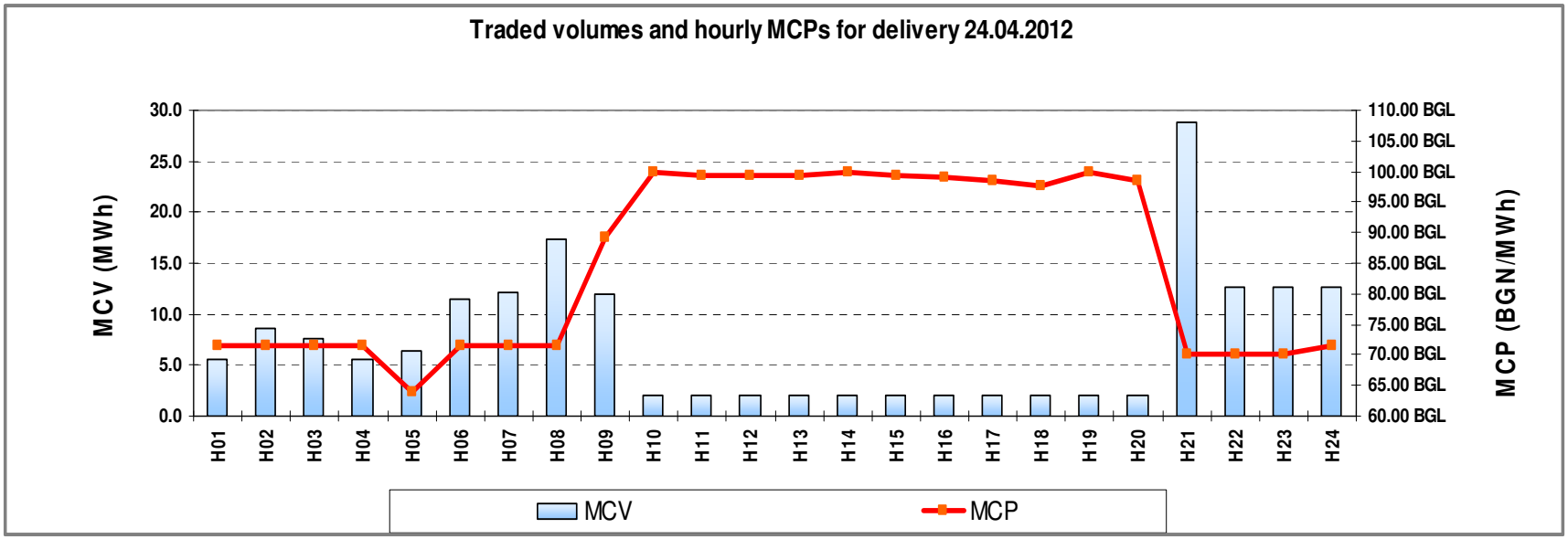
Day-Ahead market starts with 24 hourly products and 3 standardized block products which are to be integrated in the corresponding settlement periods. 1

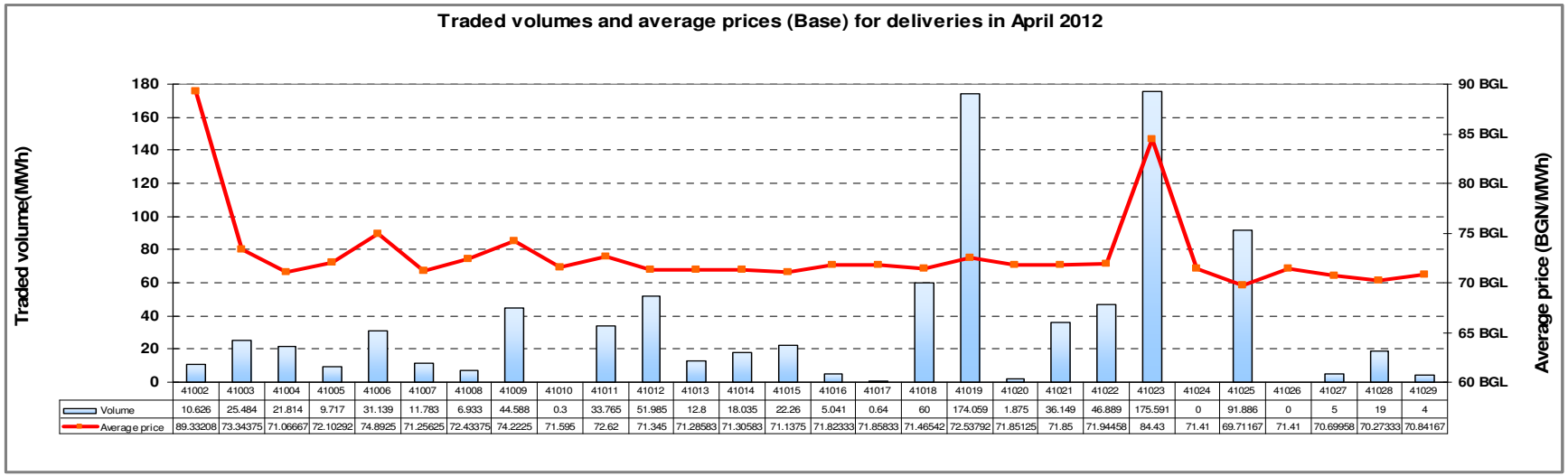
Additional block products could be implemented by the spot market operator, regarding electricity system load profile 2



New Electricity Market Model

Day ahead market – testing results

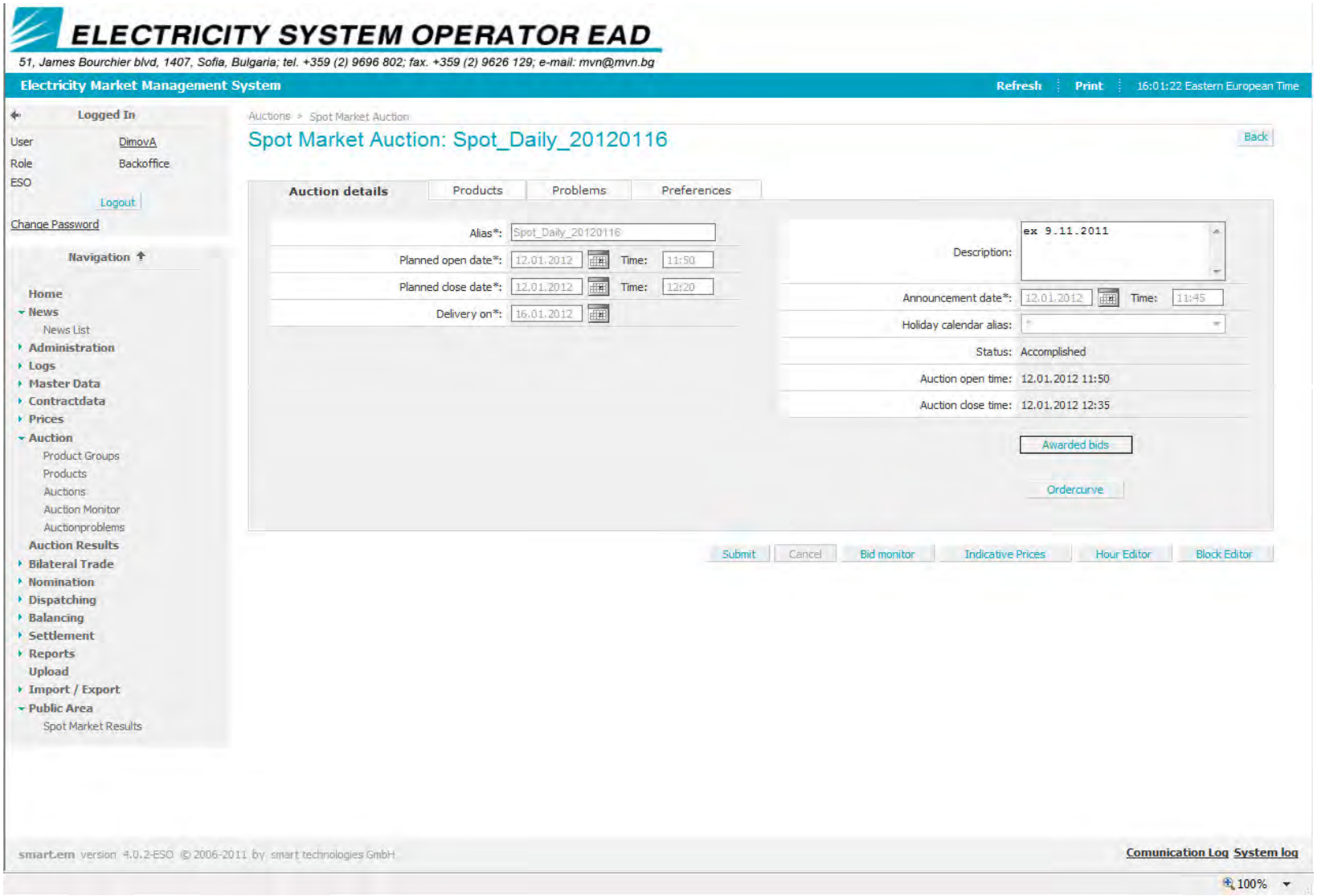




	41002	41003	41004	41005	41006	41007	41008	41009	41010	41011	41012	41013	41014	41015	41016	41017	41018	41019	41020	41021	41022	41023	41024	41025	41026	41027	41028	41029
Volume	10.626	25.484	21.814	9.717	31.139	11.783	6.933	44.588	0.3	33.765	51.985	12.8	18.035	22.26	5.041	0.64	60	174.059	1.875	36.149	46.889	175.591	0	91.886	0	5	19	4
Average price	89.33208	73.34375	71.06667	72.10292	74.8925	71.25625	72.43375	74.2225	71.595	72.62	71.345	71.28583	71.30583	71.1375	71.82333	71.85833	71.46542	72.53792	71.85125	71.85	71.94458	84.43	71.41	69.71167	71.41	70.69958	70.27333	70.84167

New Market Management System

Market Administration System



Regional market. Bilateral Activities

On 30 November 2010 the Ministry of economy, energy and tourism of Bulgaria and the Ministry of Economy, Commerce and Business Environment of Romania signed a Memorandum for market coupling of the Bulgarian and Romanian markets

Expert group was established with representatives of Transelectrica, Opcom, ANRE and RO-Ministry on the one side and ESO, SEWRC and BG-Ministry on the other side

Road map for cooperation aiming to implement a common electricity market was coordinated on December 2011

Regional market. Bilateral Activities

Road map activities

- **Definition and approval of the ToR Project**

31 March 2012

- **Signature of the Master Agreement between NRAs, TSOs and MOs**

01 November 2012

- **Lunch of the project**

15 November 2012

- **Development of Common Operational Rules and Agreements to NRAs for approval**

March 2013

Regional market. Bilateral Activities

There are almost no "isolated markets" in Europe. Markets are coupled through the power exchanges.

Draft CACM NC is in a phase of public consultation. The working draft version of the document is accessible for all interesting parties on the following address:
https://www.entsoe.eu/resources/network-codes/capacity allocation and congestion management

CACM NC regulates the issues in respect of capacity calculation, day ahead and intraday market coupling.

Conclusion

The Third Energy Package sets strong requirements in respect of market development and market integration. No room for any further delay in undertaking measures by the relevant institutions

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THANK YOU FOR YOUR ATTENTION

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