"Либерализацията на енергийния пазар: възможности за енергийни услуги, енергиен мениджмънт, енергийна ефективност"

инж. Васил Петев
ЗВМ ЕООД

„Либерализацията на енергийния пазар: участници, прогнози, добри европейски практики “, София,23 Юни 2015 г.

Съдържание

- ✓ Новият закон за енергийната ефективност, Директиви
- ✓ Цени
- ✓ Енергийни услуги – възможности, примери
- ✓ Изисквания на ENTSO_E от 01.01.2015
- ✓ Въпроси

Новият закон за енергийната ефективност

Задължени лица:
Търговци на енергия (електро, топло, газ, течни, твърди) – от 75 GWh свалено на 25 GWh;

Собственици на сгради за обществено обслужване в експлоатация с РЗП над 500 m2, а от 09.07.2015 г. – над 250 m2;

Собственици на промишлени системи (ПС) с годишно потребление на енергия над 3000 MWh

Системи за външно изкуствено осветление в населени места са над 20 000 жители.

Новият закон за енергийната ефективност

Някои неясни моменти:

Как АУЕР ще установява размера на продажбите (без транспорта)?!

Как ще се определят задълженията след като няма механизъм за контрол на продажбите?!

Няма възможност за прехвърляне на енергийни спестявания м/у незадължени лица!

На кого се издават сертификатите: реципиента на ЕЕ мерки, финансиралият мерките, изпълнителят на мерките, …?!

А задълженията постария закон? Остават ли?

Малко директиви и регламенти

Директива 2010/31/EU of 19/05/2010 за енергийното потребление на сградите (преработена)

Транспониране от страните членки до 2 години след влизане в сила (Юли 2012)

Член 9: сгради с почти нулево потребление на енергия, страните членки трябва да осигурят:

- **(a) до 31 Декември 2020, всички нови сгради да бъдат с почти нулево потребление на енергия ; и**
- **(b) след 31 Декември 2018, новите сгради, използвани за публична дейност или публична трябва да бъдат с почти нулево потребление на енергия**

Малко директиви и регламенти

Директива 2010/31/EU of 19/05/2010 за енергийното потребление на сградите (преработена)

Почти нулевото потребление на енергия изисква:

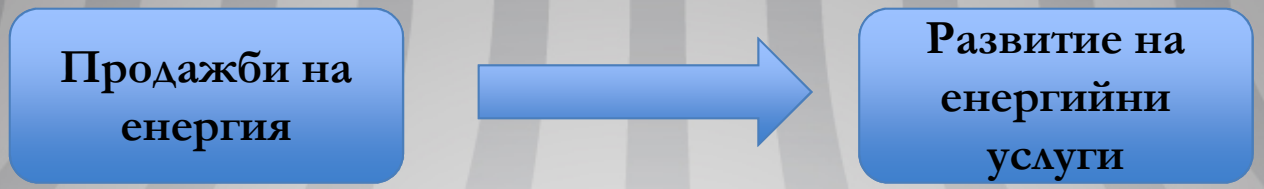
използването на значително ниво ВЕИ интегрирани в сградите;
(а енергийните спестявания в мрежите от намалени загуби при пренос и разпределение?!)

интегрирани EMS;

Нови бизнес отношения потребител/клиент – доставчик/снабдител

Малко директиви и регламенти

Директива 2010/31/EU създава коренно различна бизнес среда за ВСИЧКИ участници на пазарите на енергия



Малко директиви и регламенти

Регламент (ЕС) № 714/2009 относно условията за достъп до мрежата за трансграничен обмен на електроенергия

Регламент (ЕС) 1227/2011 относно интегритета и прозрачността на пазара за търговия на едро с енергия
REMIT, Implementing Act 7 януари 2015, deadline, 7 октомври 2015

Регламент(ЕС) № 543/2013 а представяне и публикуване на данни на пазарите за електроенергия
ETR - Electricity Transparency Regulation, 4 януари 2015

EMIR – European Market Infrastructure Regulation

MiFiD II – Markets in Financial Instruments Directive

CRD IV - Capital Requirements Directive IV

MAD II/ MAR - Update to Market Abuse Directive

REMIT

REMIT Table 1 (Standard Trades) – Part 1

Field Number	Field Name (in TRUM)	Comment
1	ID of the market participant/counterparty	Our ID
2	Type of ID used in field 1	As in the CEREMP
3	Trader ID as identified by the Organised Market Place	Do we have this?
4	ID of the other market participant or counterparty	Their ID
5	Type of code used in field 5	This is also from the CEREMP!
6	Reporting Entity ID	Which RRM?
8	Beneficiary of the party in field 1	When trading as agent
10	Trading capacity of the party in field 1	Agent or Principal
11	Buy/Sell Indicator	See TRUM for guidance
12	Initiator/Aggressor	Where do you get this from?
21	ContractID	Provided by OMP or counterparties
22	Contract Name	Determined by OMP
23	Contract Type	See TRUM for guidance
24	Energy Commodity	Gas or power?
25	Fixing Index or reference price	
26	Settlement Method	Cash or physical
27	Organised Market Place ID/OTC	MIC code of exchange/broker
28	Contract Trading hours	When the contract trades
29	Last trading date and time	
30	Transaction time stamp	To the millisecond (for on venue)
31	Transaction ID	This is the UTI
32	Linked Transaction ID	Use for spark spread etc.
33	Linked Order ID	Do we have this?
34	Voice Brokered	

REMIT

REMIT Table 1 (Standard Trades) – Part 2

35	Price	Per unit
36	Index Value	Relative value e.g. Platts + 2bp
37	Price Currency	Can also be a percentage
38	Notional Amount	See TRUM
39	Notional Currency	
40	Quantity/Volume	In this trade/order
41	Total Notional Contract Quantity	Number of units in the contract
42	Quantity Unit	For both 40 and 41.
43	Termination Date	Early terminations
44	Option Style	European/ Asian etc
45	Option Type	Call, put or other
46	Option Exercise Date	
47	Option Strike Price	
48	Delivery Zone or point	EIC code
49	Delivery Start Date	Multiple
50	Delivery End Date	Multiple
51	Duration	Ie Hour, Week etc
52	Load Type	Baseload, peak etc
53	Days of the week	
54	Load Delivery Intervals (Time)	Multiple
55	Delivery Capacity	1,1,1,etc
56	Quantity Unit	For delivery capacity
57	Price/Time Interval Quantity	For 54 and 55
58	Lifecycle Information	New/Modify/Cancel/Error

REMIT

REMIT Table 2 (Non Standard Trades) – Part 1

Field Number	Field Name (in TRUM)	Comment
	No trader ID	
11	Contract ID	
12	Contract date	Agreed by the counterparties
13	Contract type	
15	Price or price formula	Fixed or formula
16	Estimated notional	Currently not mandatory
18	Total notional contract quantity	Estimated total volume
19	Volume optionality capacity	Units per time delivery interval
21	Volume optionality	Variable/Fixed/Minmax/Complex
22	Volume optionality frequency	Daily/Monthly etc
23	Volume optionality intervals	e.g. Jan-Mar, Apr-Jun
24	Type of index price	Fixed/Simple Index/Complex Formula
24	Load type	Baseload/Peak/Off peak/Block/Shape/gas Day
25	Fixing index	Could be a list
26	Fixing index types	Spot/forward etc …
27	Fixing index sources	e.g. Argus.
28	First fixing date	
29	Last fixing date	
30	Fixing frequency	Daily/weekly etc.
31	Settlement method	Physical, cash, both

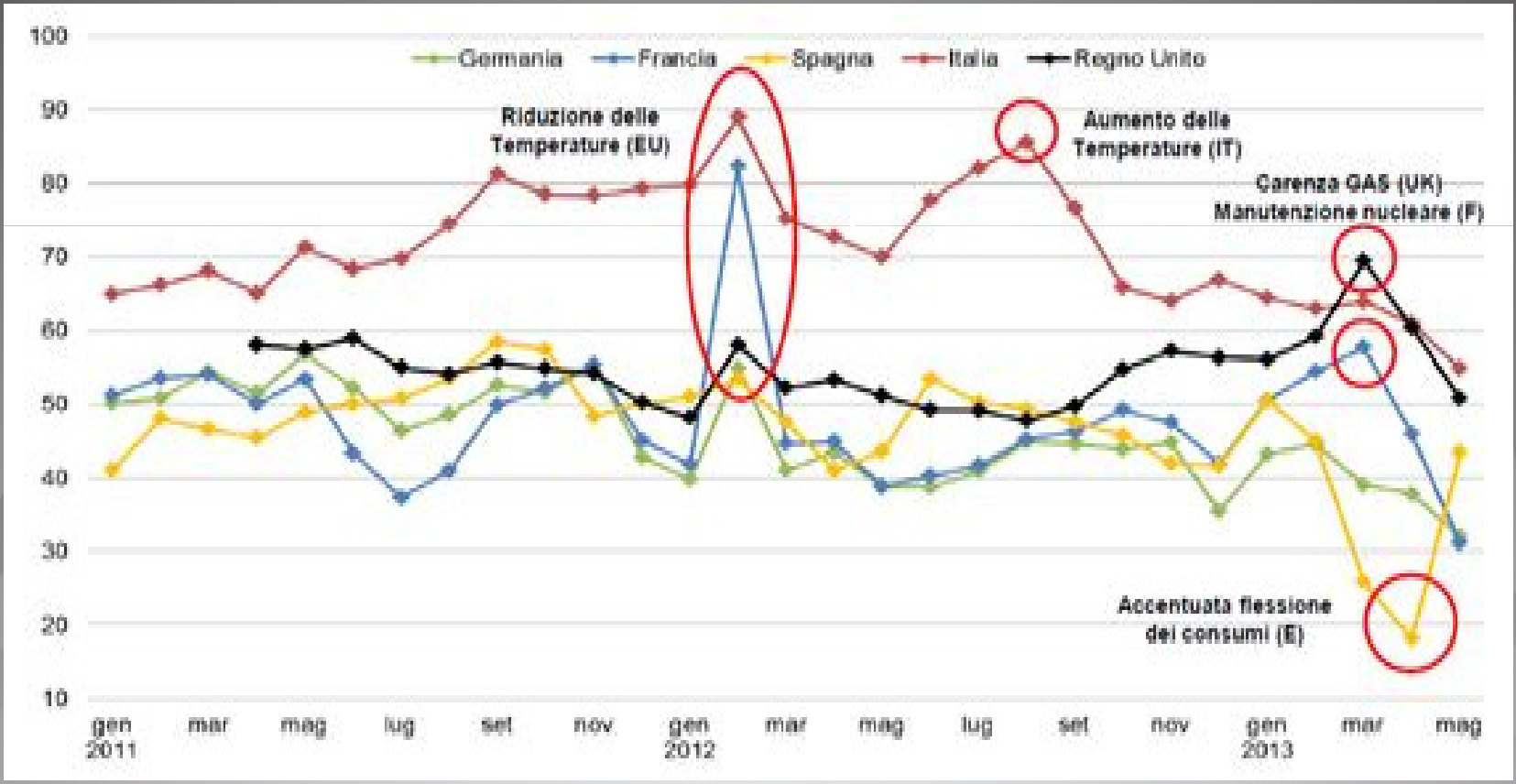
REMIT

REMIT Table 2 (Non Standard Trades) – Part 2

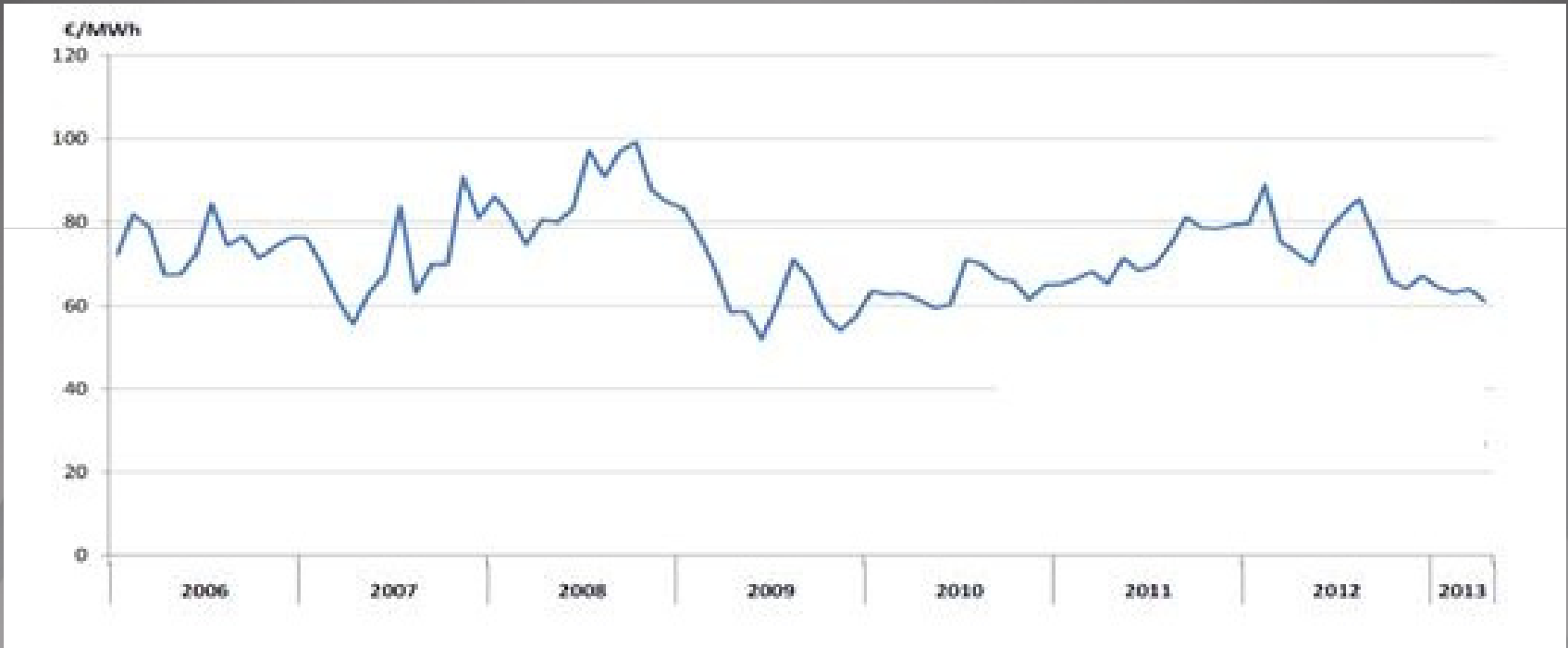
Field Number	Field Name (in TRUM)	Comment
32	Option style	European, Asian
33	Option type	Call, put
34	First option exercise date	
35	Last option exercise date	
36	Option exercise frequency	Daily, weekly etc.
37	Option strike index	Can be multiple
38	Option strike index type	Spot/forward etc
39	Option strike index source	
40	Option strike price	
41	Delivery point(s) or zone(s)	EIC Code(s)
42	Delivery start date	

Field	Description
Delivery start date	For the whole trade
Delivery end date	For the whole trade
Duration	Can be HH, H , D, W etc.
Load type	Can be Base, Peak , Shaped ,Block, Gas Day etc.
Days of week	Weekdays, weekends, All
Load delivery interval	One or more time intervals per block or shape
Delivery capacity	Multiple values, per time interval

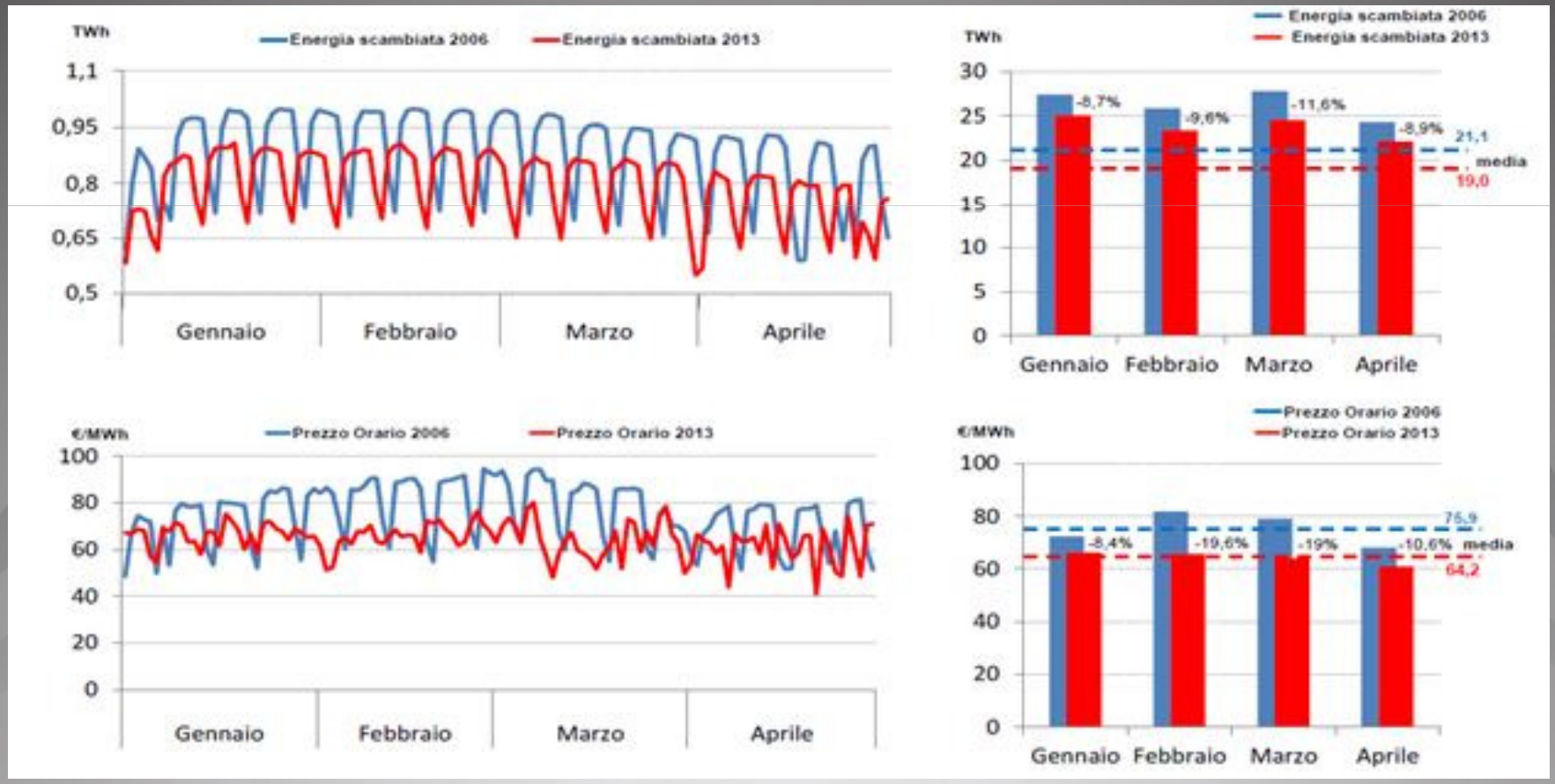
Цени: **влияещи фактори**



Цени: влияещи фактори



Цени: влияещи фактори

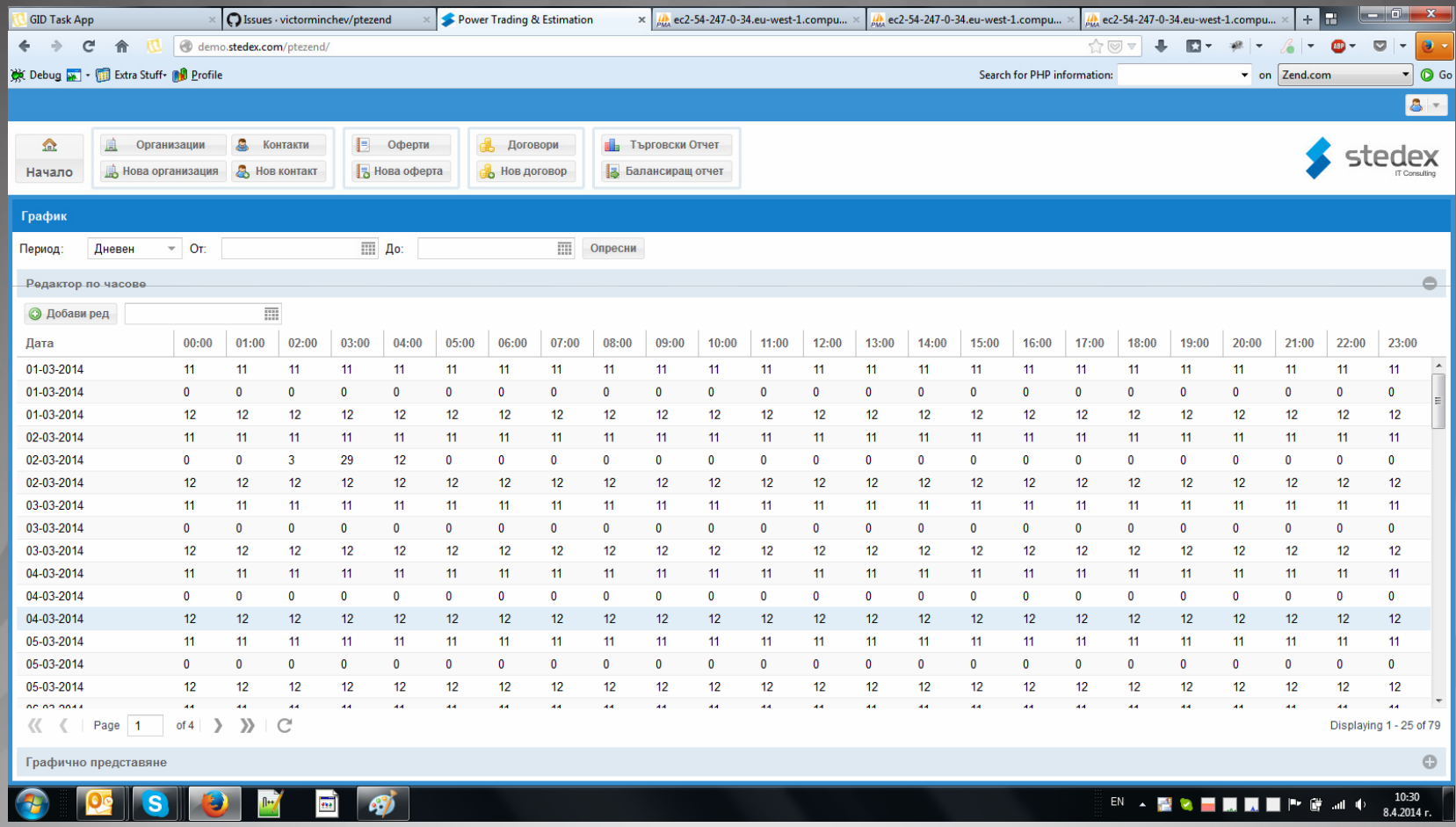


Енергийни услуги

Прогнозиране, графици

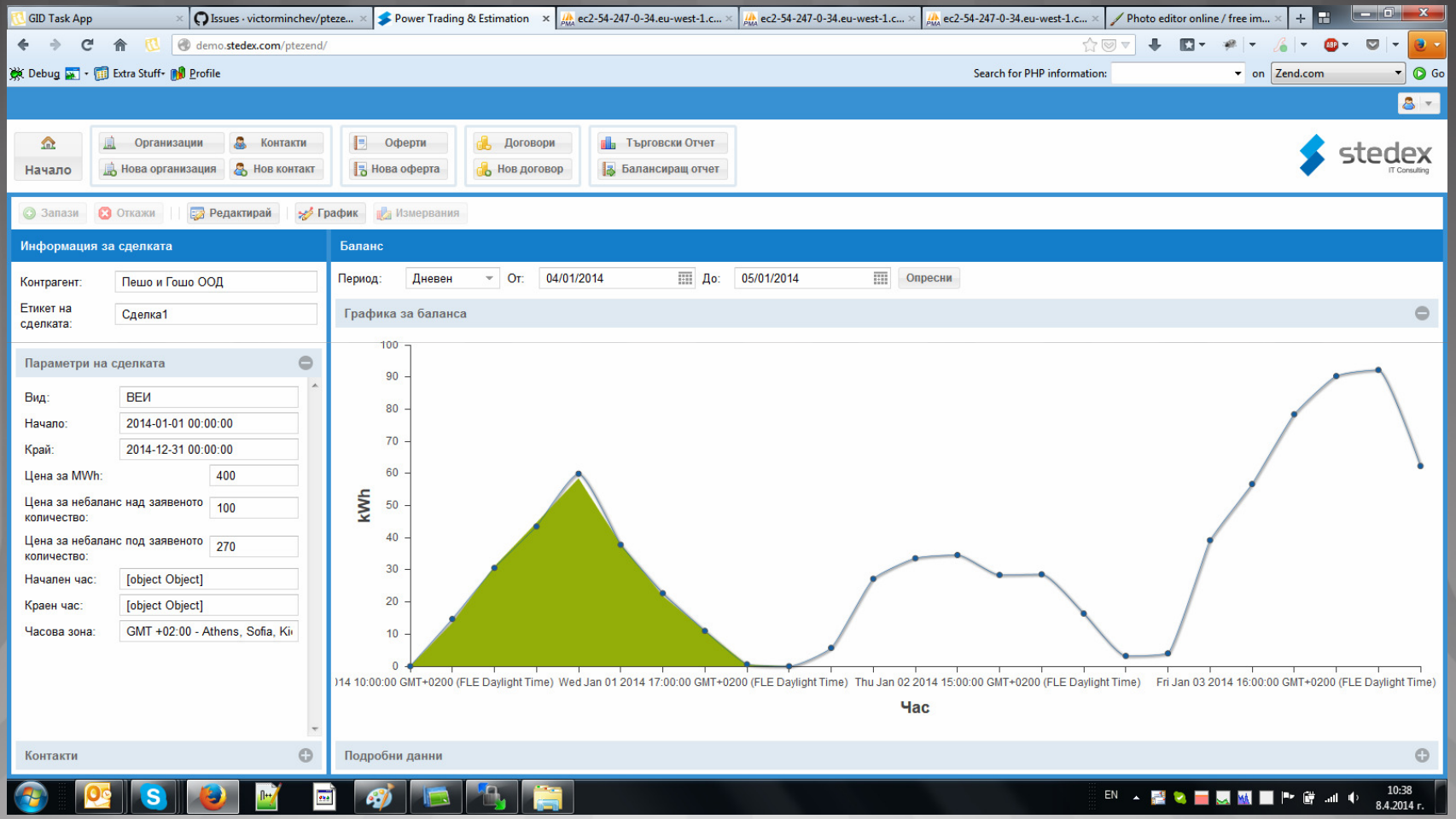
Енергийни услуги

Прогнозиране, графици



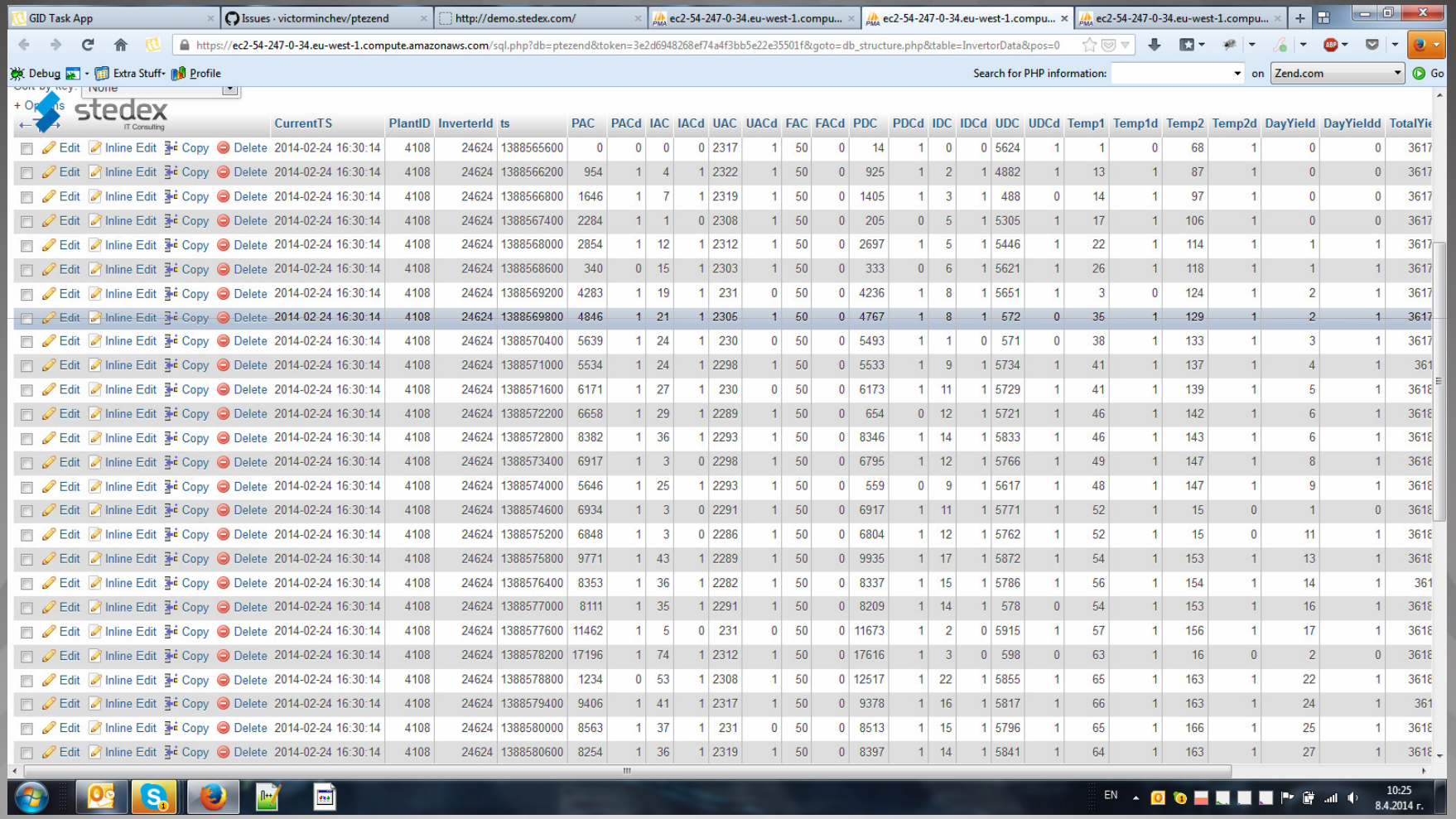
Енергийни услуги

Прогнозиране, графици



Енергийни услуги

Прогнозиране, графици



	CurrentTS	PlantID	InverterId	ts	PAC	PACd	IAC	IACd	UAC	UACd	FAC	FACd	PDC	PDCd	IDC	IDCd	UDC	UDCd	Temp1	Temp1d	Temp2	Temp2d	DayYield	DayYieldd	TotalYie
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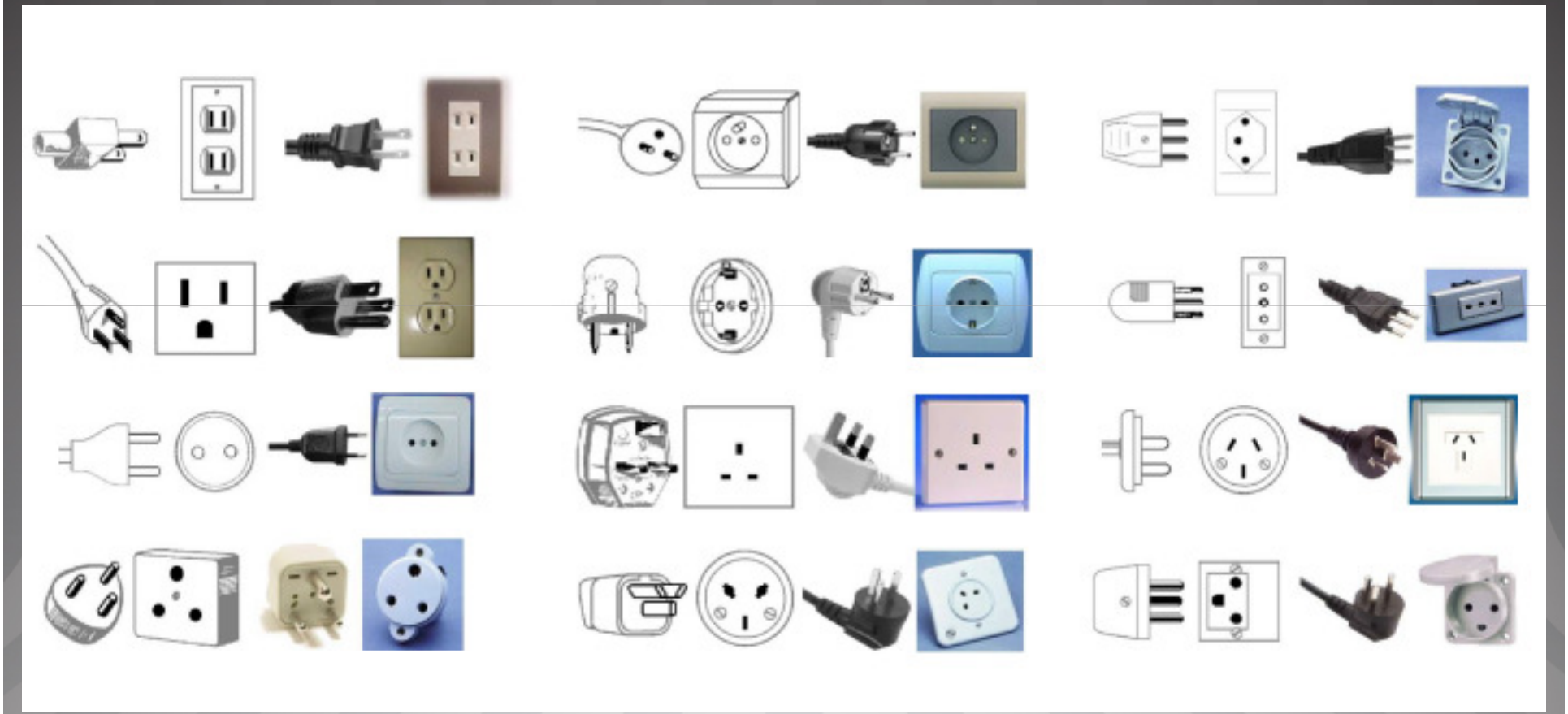
Енергийни услуги

Пазарът е навременен обмен и анализ на надеждна и сигурна информация

Енергийни услуги

Стандарти, норми, правила



Енергийни услуги

Security!

Енергийни услуги

Сигурността и поверителността - голямо предизвикателство за "либерализиран пазар"

ISO 27001 / PCI DSS / COBIT

Information gathering

Network mapping

Vulnerability scanning

Vulnerability testing

Management reporting

Енергийни услуги

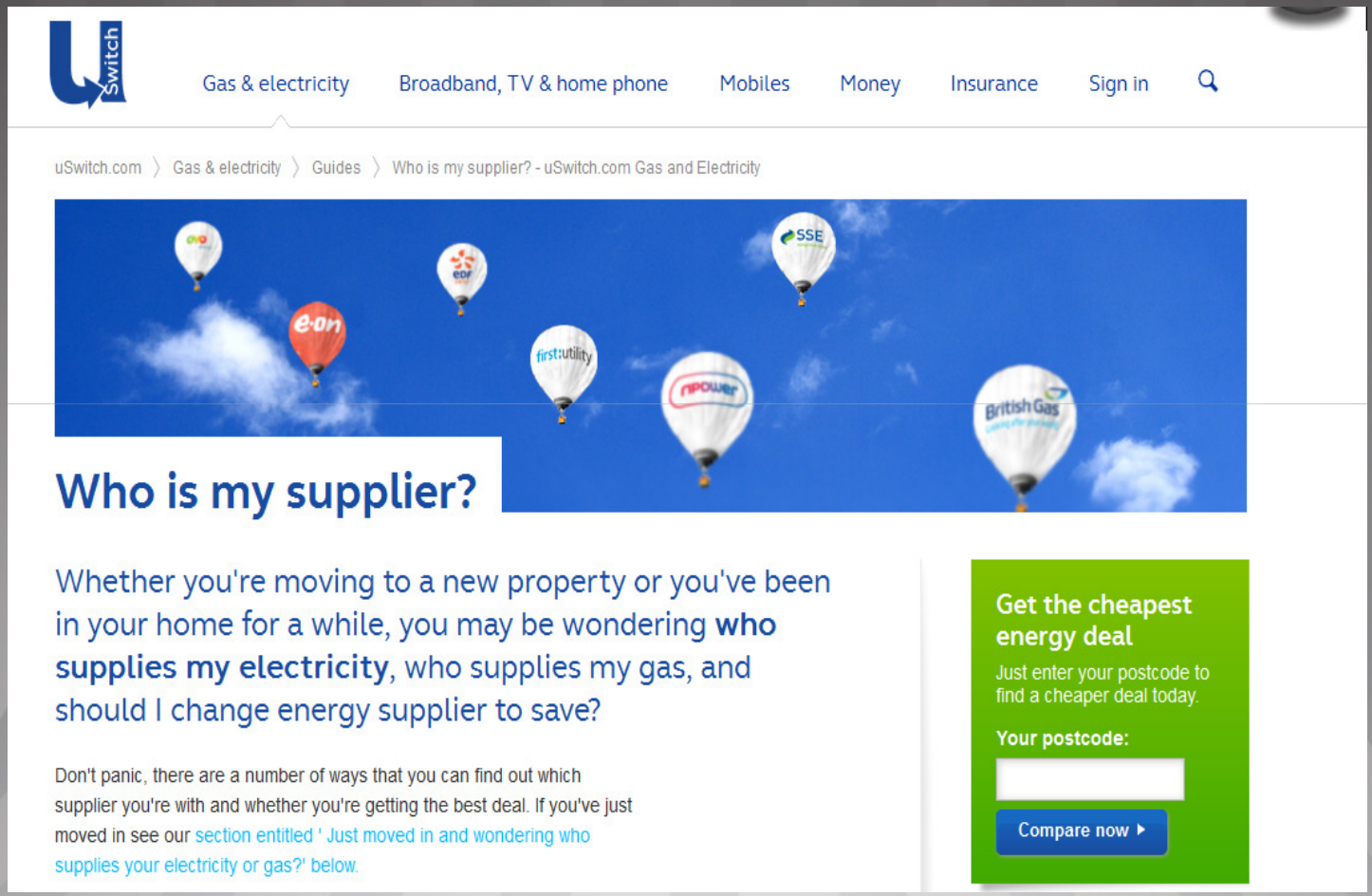
Правни “предизвикателства”

В момента в българската нормативна уредба, касаеща енергетиката:

Няма стандарти и процедури за ИТ и дори НЕ може да се докаже наличието на търговска сделка, вкл.

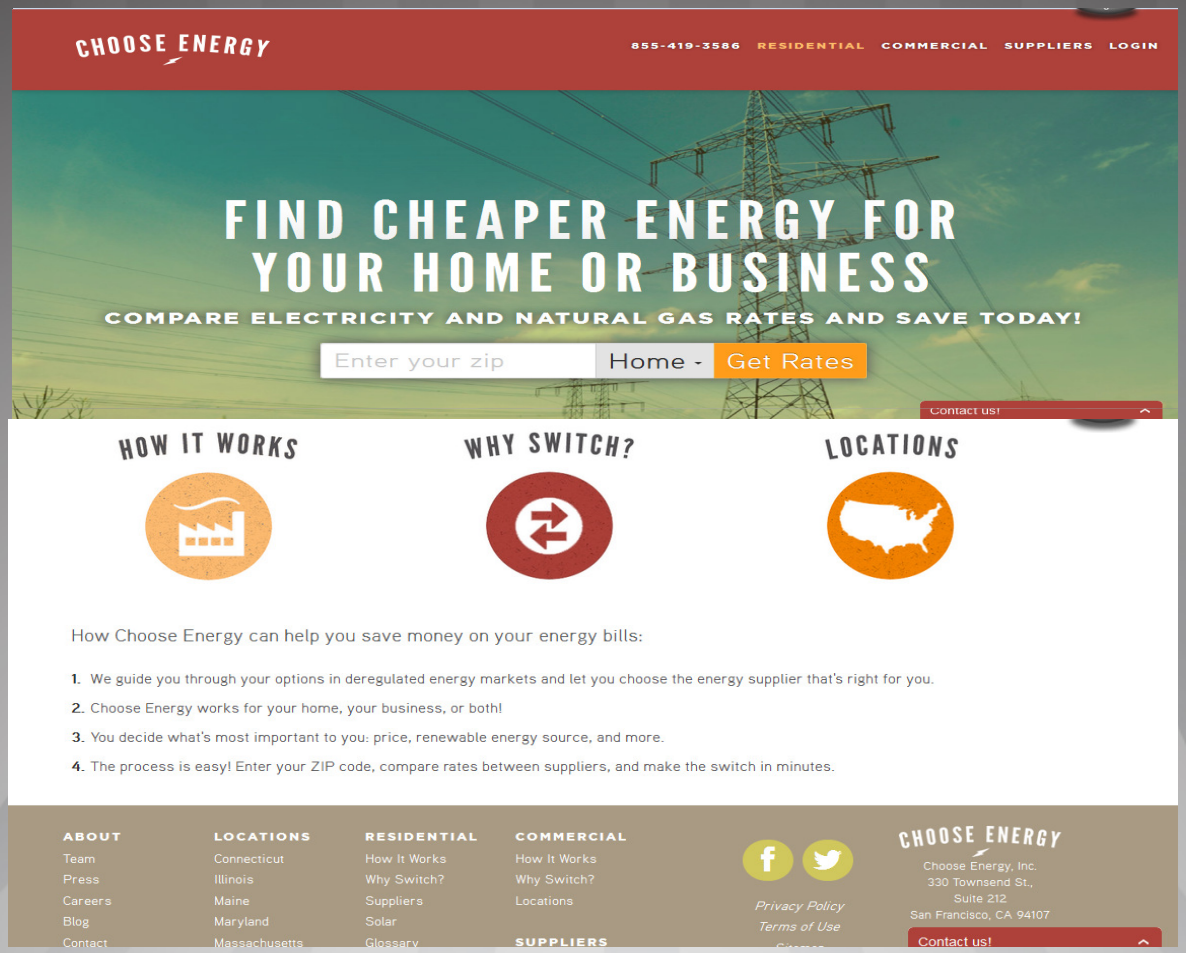
цена, количество, периоди…
няма изискване за период на съхранение на информацията,
за електронен подпис,
за получаване, …
за сървърите на които се съхранява информацията…

Енергийни услуги



http://www.uswitch.com

Енергийни услуги



https://www.chooseenergy.com/

Енергийни услуги

VIRTUAL ENERGY STORAGE

Енергийни услуги

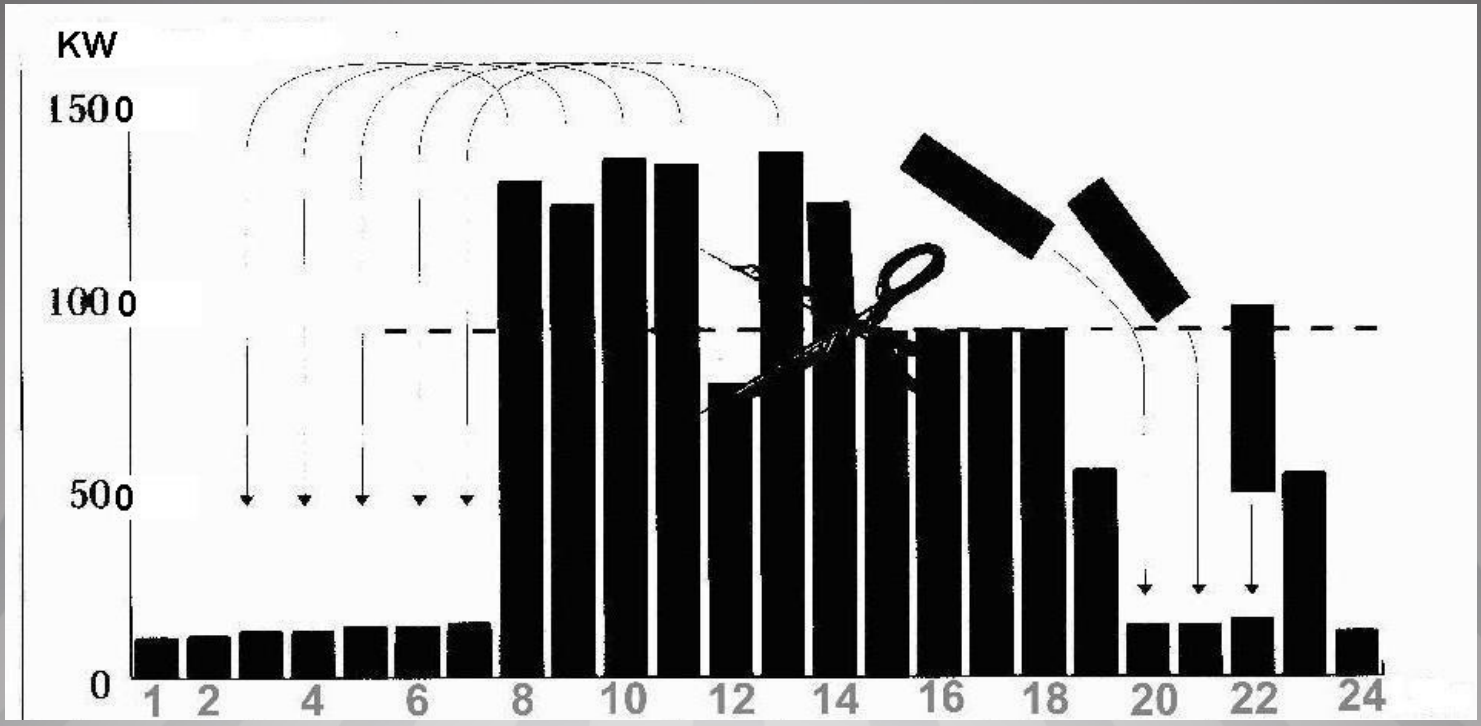
VIRTUAL ENERGY STORAGE

Енергийни услуги

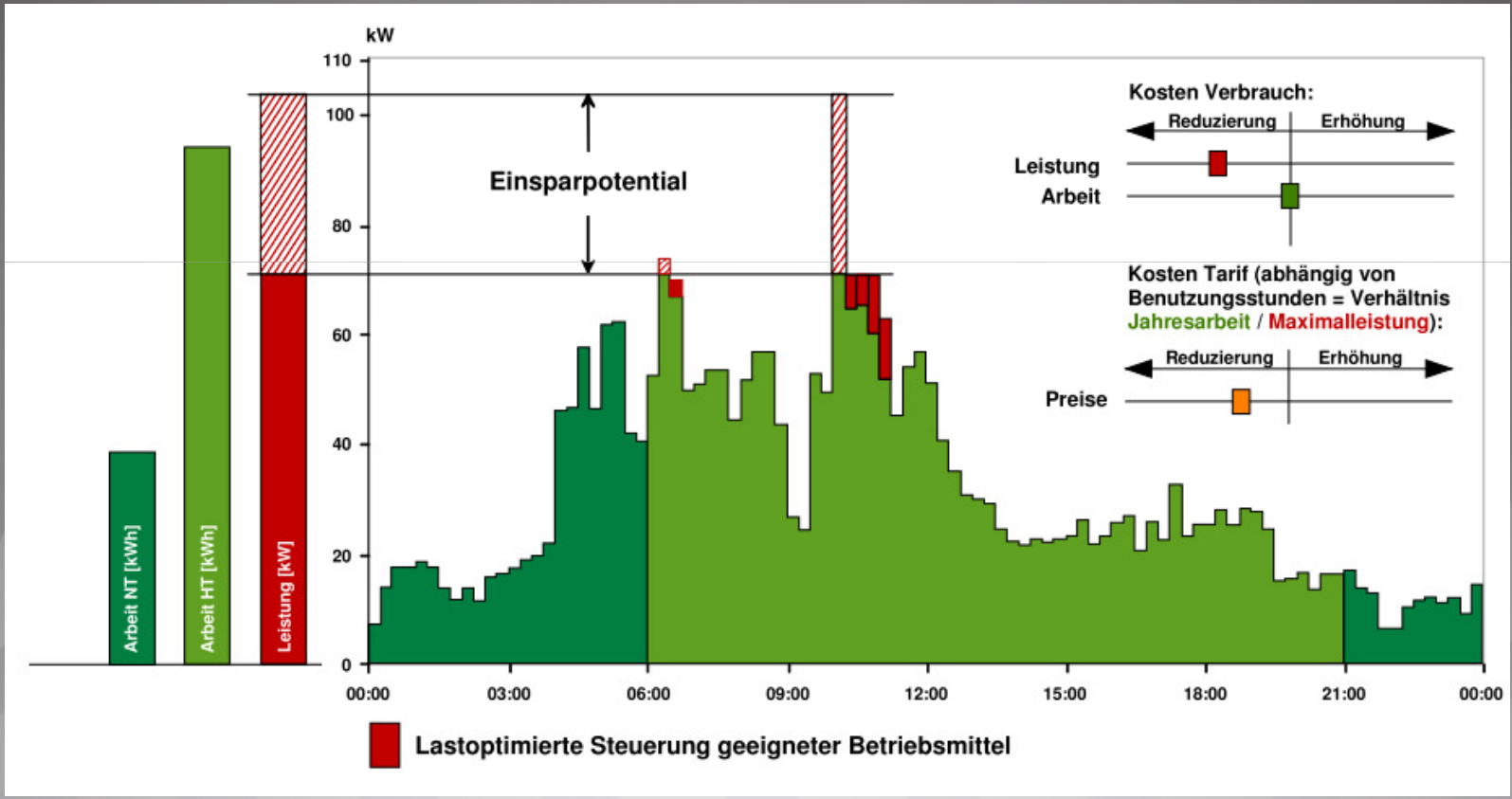
Energy Efficiency / Energy Performance Services

Енергийни услуги

Управление на натоварването



Енергийни услуги



Енергийни услуги

Пример за управление на консуматорите чрез система за управление на натоварването

Охлаждане на склад1

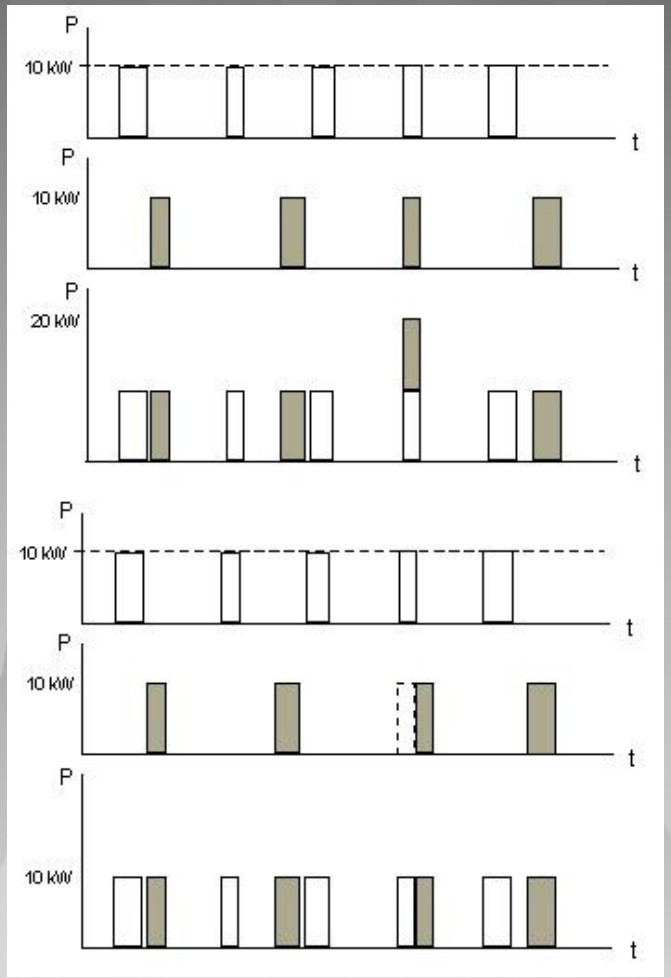
Охлаждане на склад2

Сума

Охлаждане на склад1

Охлаждане на склад 2

Сума



Без управление на натоварването

С управление на натоварването

Енергийни услуги

Вече и в София… ☺

Енергийни услуги

Застрахователни продукти:

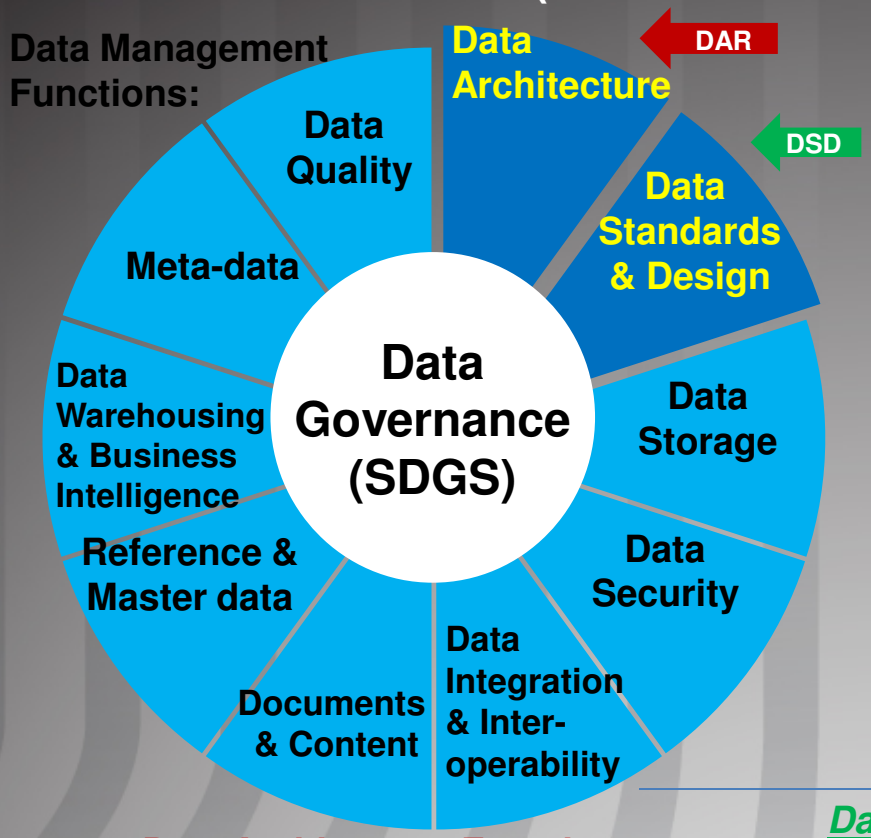
За доставки
За прогнози

Тръжни платформи

За доставки на енергия
За доставки на услуги
За доставки енергийни продукти
За доставки на финансови продукти
…….

Енергийни услуги

ENTSO-E Data Governance and Data Management: DMH (Data Model Harmonization) Project



DAR-01: Develop **SAM** (Subject Area Map), which considers existing CIM standards, existing application data models, and the data needs of the major on-going projects (EMFIP, NMD 1 / 2, PEMMDB 2, TYNDP, Data Portal)

DAR-02: Development **of Conceptual / Logical Data Models**, supporting the highest-priority subject areas; Work 'opportunity based' with major projects

DSD-02: Work with **NMD** and **EMFIP** Project Teams, in support of review of work products (Business Requirements Specification, Definitions, Conceptual / Logical Data models)

DSD-01: Investigate, take inventory, and evaluate the existing **data assets** within the Association, determine potential impacts on the Data Portal

Data Architecture Function:

Data requirements definition and blueprint design. Development of Association Data Architecture and Data Interoperability Architecture.

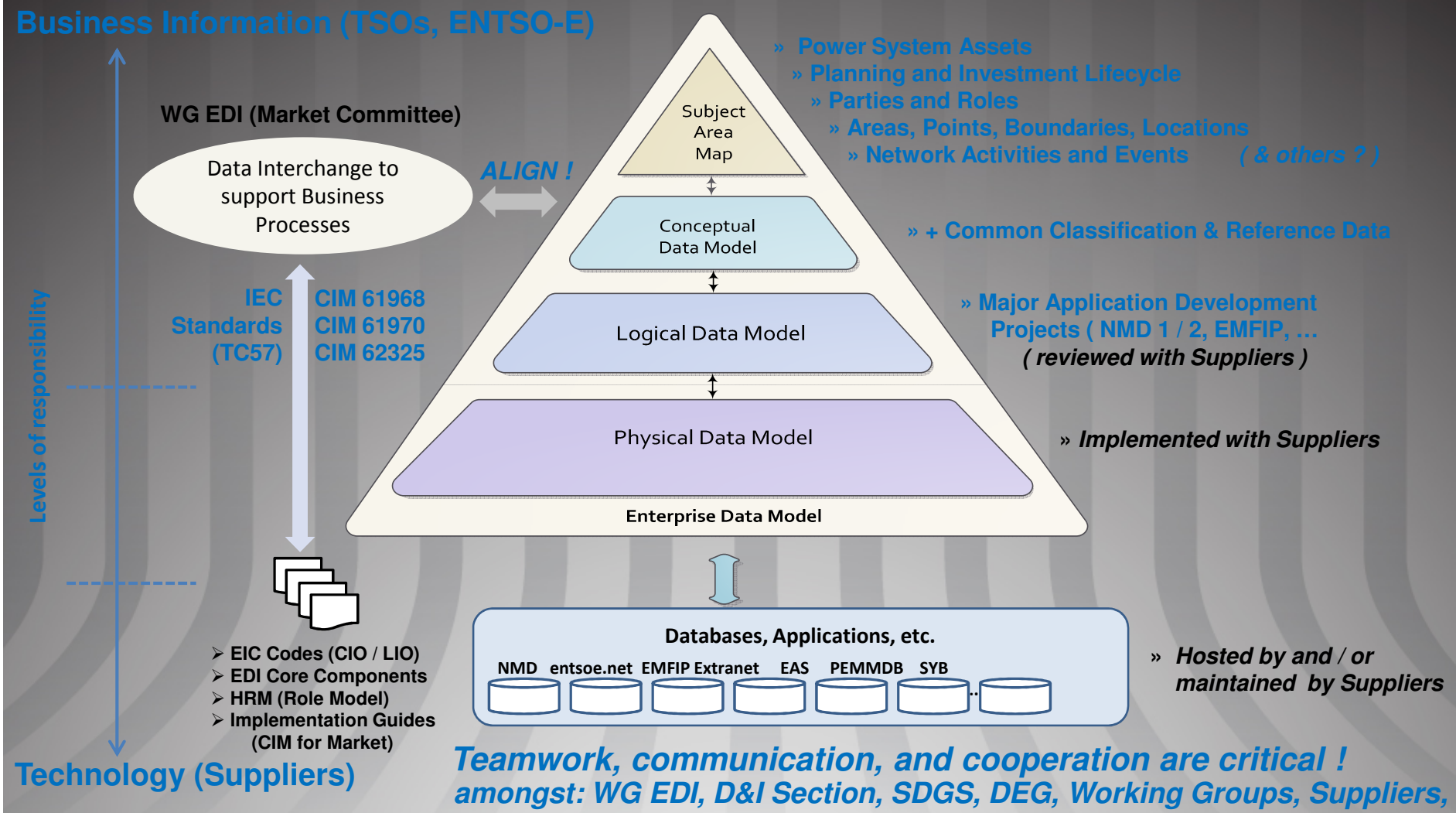
Data Standards & Design Function:

Data Modeling, Analysis and Solution Design, as well as data implementation across the Systems Development Lifecycle. Definition of Common business vocabulary (Glossary), data standards and support for developments related to all important ENTSO-E projects and products, such as Network Modeling, Transparency, ….

"Wheel" above is from DM-BOK: Data Management – Body of Knowledge (DAMA: Data Management Association)

ENTSO-E Data Architecture

(work in progress: *top-down & bottom-up*)



Teamwork, communication, and cooperation are critical !
amongst: WG EDI, D&I Section, SDGS, DEG, Working Groups, Suppliers, …

Subject Areas *(Initial Proposal)*

Planning and Investment Lifecycle

- Scenarios
- Cases
- Situations
- Investments
- Projects
- Market Models
- Network Models
- Assembled Model
- Solution + ….

Power System Assets

Production Units
- Generation Units
- Consumption Units
- Transmission Assets
  - In country
  - Cross – border
- Transformers
- Substations + ….

Parties and Roles

ENTSO-E:
- Assembly
- Board
- Secretariat

Organizational Bodies:
- Committees
- Working Groups
- Regional Groups
- Steering Groups
- Expert Groups + ….

- Organization Type
- Party - Role
- Role Assignment
- TSO
- Legal Entity
- Regulatory Body
  - National - EU
- Power Exchanges
- Associations + ….

- Calendar: Date Periods / Time Periods (MTU / BTU)
- Generation Technology Types / Fuel Types (+ combos)
- Measurement Units - UTC (Time Zones)
- Outage Types - Reserve Types
- Auction Types - Contract Types
- Tariff Types - Price Types (+ others ….)

Common Classification / Reference Data *

Areas, Points, Boundaries, Locations

Areas: Pan-European / Regional / Country / Control Block / Bidding Zone / Market Balance Area …

Points: Measurement / Metering / Accounting / Boundary …

Relationships: Area to Area, Point to Point, Point to Area

Network Activities and Events

GENERATION:
- Installed Capacity
- Forecast / Actual
- Pumped Storage (reserves)

LOAD: Forecast / Actual / Margin

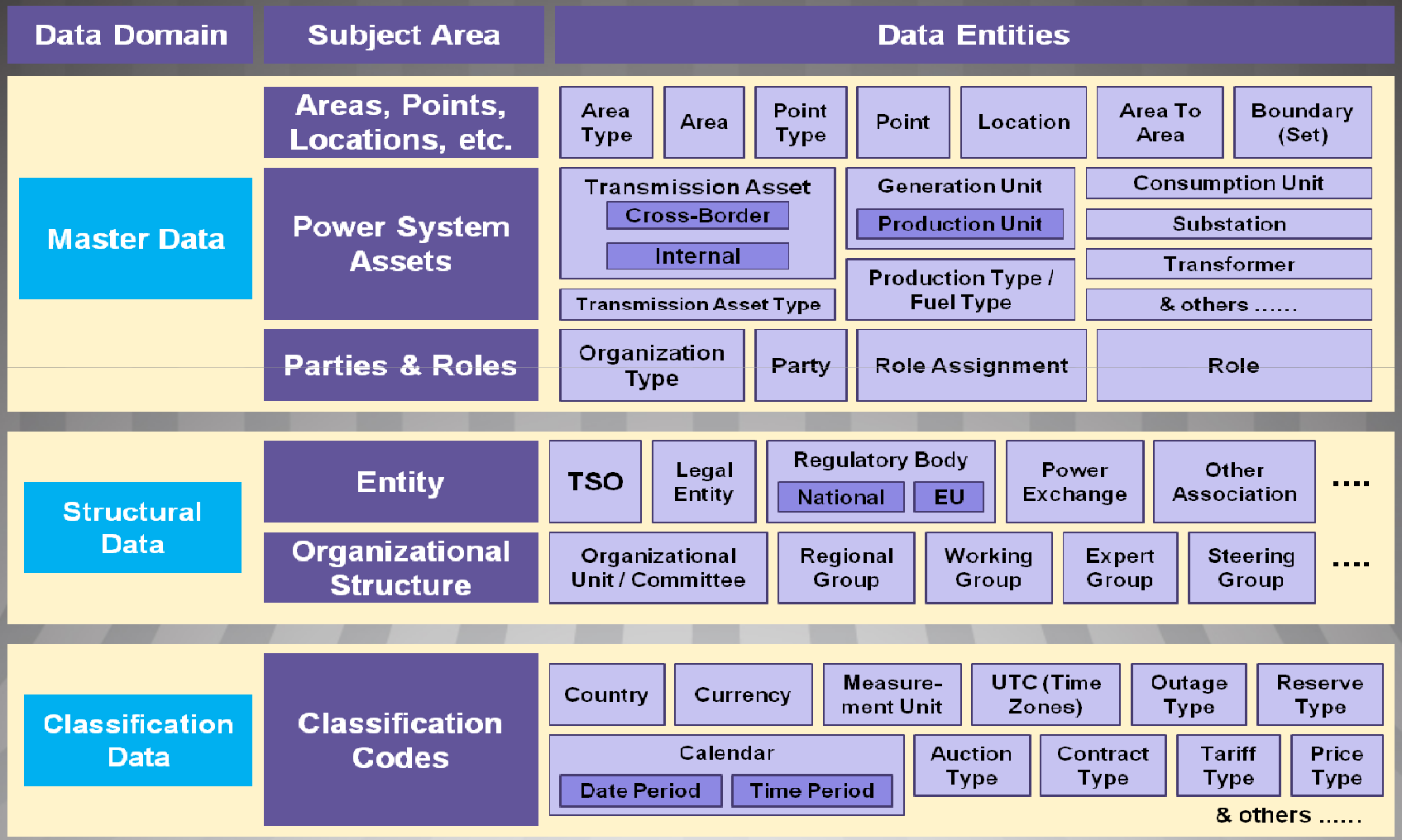
OUTAGE:

Planned / Unplanned:
- Production Units
- Generation Units
- Consumption Units
- Transmission Assets
- Offshore Grid Infrastructure

TRANSMISSION:
- Transfer Capacity
  - Forecasted / Offered
- Explicit Auctions
- Implicit Auctions
- Physical Flows
- Prices (+ others ….)

BALANCING:
- Balancing Reserves / Prices
- Prices, Activated Balancing Energy
- Aggregated Imbalance Volumes / Prices
- Expenses / Incomes
- Cross-Border Balancing: Volumes / Prices / Activated energy (+ others ….)

Master Data, Structural Data, Classification Data



ENTSO-E Central Information Transparency Platform

EECS Rules Fact Sheet 5 TYPES OF ENERGY INPUTS AND TECHNOLOGIES: Technology

TECHNOLOGY		
Level 1	Level 2	Level 3
Description	Description	Description
Solar	Unspecified	Unspecified
	Photovoltaic	Unspecified
		Classic silicon
		Thin film
	Concentration	Unspecified
Wind	Unspecified	Unspecified
		Onshore
		Offshore
Hydro-electric head installations	Unspecified	Unspecified
	Run-of-river head installation	Unspecified
	Storage head installation	Unspecified
	Pure pumped storage head installation	Unspecified
	Mixed pumped storage head	Unspecified
Marine	Unspecified	Unspecified
	Tidal	Unspecified
		Onshore
		Offshore
	Wave	Unspecified
		Onshore
		Offshore
	Currents	Unspecified
	Pressure	Unspecified

TECHNOLOGY		
Level 1	Level 2	Level 3
Thermal	Unspecified	Unspecified
	Combined cycle gas turbine with heat recovery	Unspecified
		Non CHP
		CHP
	Steam turbine with back-pressure turbine (open cycle)	Unspecified
		Non CHP
		CHP
	Steam turbine with condensation turbine (closed cycle)	Unspecified
		Non CHP
		CHP
	Gas turbine with heat recovery	Unspecified
		Non CHP
		CHP
	Internal combustion engine	Unspecified
		Non CHP
		CHP
	Micro-turbine	Unspecified
		Non CHP
		CHP
	Stirling engine	Unspecified
		Non CHP
		CHP
	Fuel cell	Unspecified
		Non CHP
		CHP
	Steam engine	Unspecified
		Non CHP
		CHP
	Organic rankine cycle	Unspecified
		Non CHP
		CHP
Nuclear	Unspecified	Unspecified
	Heavy-water reactor	Unspecified
	Light water reactor	Unspecified
	Breeder	Unspecified
	Graphite reactor	Unspecified
Other	Unspecified	Unspecified

ENTSO-E Central Information Transparency Platform

EECS Rules Fact Sheet 5 TYPES OF ENERGY INPUTS AND TECHNOLOGIES:

Fuel Type

FUEL (or heat source)		
Level 1	Level 2	Level 3
Description	Description	Description
Unspecified	Unspecified	Unspecified
Renewable	Unspecified	Unspecified
	Solid	Municipal waste
		Industrial and commercial waste
		Wood
		Animal fats
		Biomass from agriculture
	Liquid	Unspecified
		Municipal biodegradable waste
		Black liquor
		Pure plant oil
		Waste plant oil
		Refined vegetable oil
	Gaseous	Unspecified
		Landfill gas
		Sewage gas
		Agricultural gas
		Gas from organic waste digestion
		Process gas
	Heat	Solar
		Geothermal
		Aerothermal
		Hydrothermal
		Process heat
	Mechanical source or other	Unspecified
		Wind
		Hydro & marine
	Unspecified	Unspecified

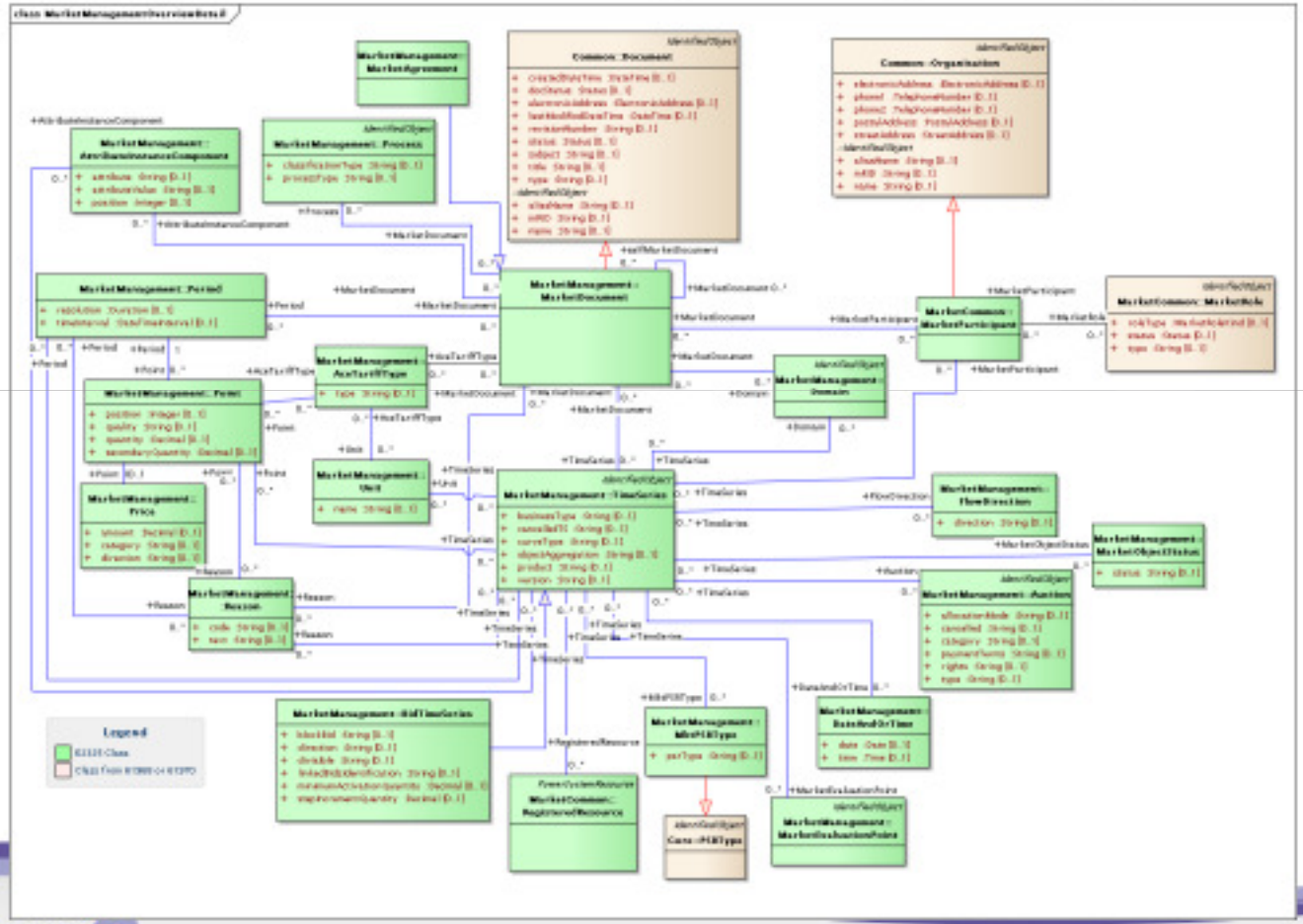
FUEL (or heat source)		
Level 1	Level 2	Level 3
Fossil	Solid	Unspecified
		Hard coal
		Brown coal
		Peat
		Municipal waste
		Industrial and commercial waste 0
	Liquid	Unspecified
		Crude oil
		Natural gas liquids (NGL)
		Petroleum products
	Gaseous	Unspecified
		Natural gas
		Coal-derived gas
		Petroleum products
		Municipal gas plant
		Process gas
	Heat	Unspecified
		Process heat
Nuclear	Solid	Radioactive fuel

ENTSO-E Central Information Transparency Platform

Unspecified			
Renewable	Unspecified		
	Solar	Unspecified	
		Photovoltaic	Unspecified
			Classic silicon
			Thin film
		Concentration	
	Wind	Unspecified	
		Onshore	
		Offshore	
	Hydro-electric head installations	Unspecified	
		Run-of-river head installation	
		Storage head installation	
		Pure pumped storage head installation	
		Mixed pumped storage head	
	Marine	Unspecified	
		Tidal	Unspecified
			Onshore
			Offshore
		Wave	Unspecified
			Onshore
			Offshore
		Currents	
		Pressure	
	Geothermal		
	Aerothermal		
	Hydrothermal		
	Biomass		

			Fuel type 1	Fuel type 2
Biomass				
Thermal	Unspecified		Fuel Type	
	Combined cycle gas turbine with heat recovery	Unspecified	Solid	Unspecified
				Hard coal
		Non CHP		Brown coal/Lignite
		CHP		Peat
	Steam turbine with back-pressure turbine (open cycle)	Unspecified		Municipal waste
				Industrial and commercial waste
		Non CHP		
		CHP	Liquid	Unspecified
	Steam turbine with condensation turbine (closed cycle)	Unspecified		Crude oil
				Natural gas liquids (NGL)
		Non CHP		Petroleum products
		CHP	Gaseous	Unspecified
	Gas turbine with heat recovery	Unspecified		Natural gas
		Non CHP		Coal-derived gas
		CHP		Petroleum products
	Internal combustion engine	Unspecified		Municipal gas plant
		Non CHP		Process gas
		CHP	Heat	Unspecified
	Micro-turbine	Unspecified		Process heat
		Non CHP	Solid	Municipal waste
		CHP		Industrial and commercial waste
	Stirling engine	Unspecified		
		Non CHP		Wood
		CHP		Animal fats
	Fuel cell	Unspecified		Biomass from agriculture
		Non CHP	Liquid	Unspecified
		CHP		Municipal biodegradable waste
	Steam engine	Unspecified		
		Non CHP		Black liquor
		CHP		Pure plant oil
	Organic rankine cycle	Unspecified		Waste plant oil
		Non CHP		Refined vegetable oil
		CHP	Gaseous	Unspecified
Process heat				Landfill gas
Unspecified				Sewage gas
Heavy-water reactor				Agricultural gas
Light water reactor				Gas from organic waste digestion
Breeder				
Graphite reactor				

Information model
(IEC 62325-301 Market management package)



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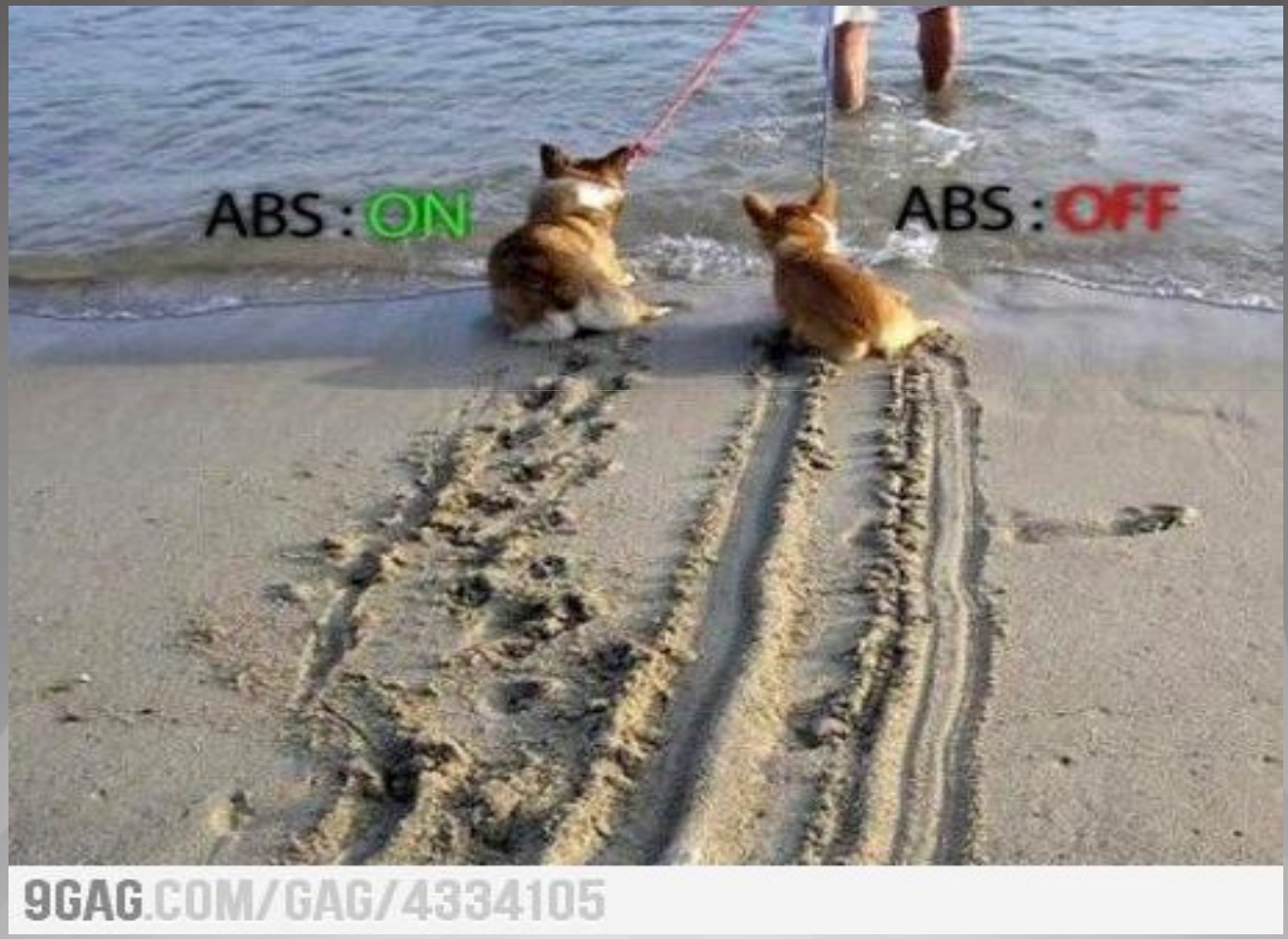
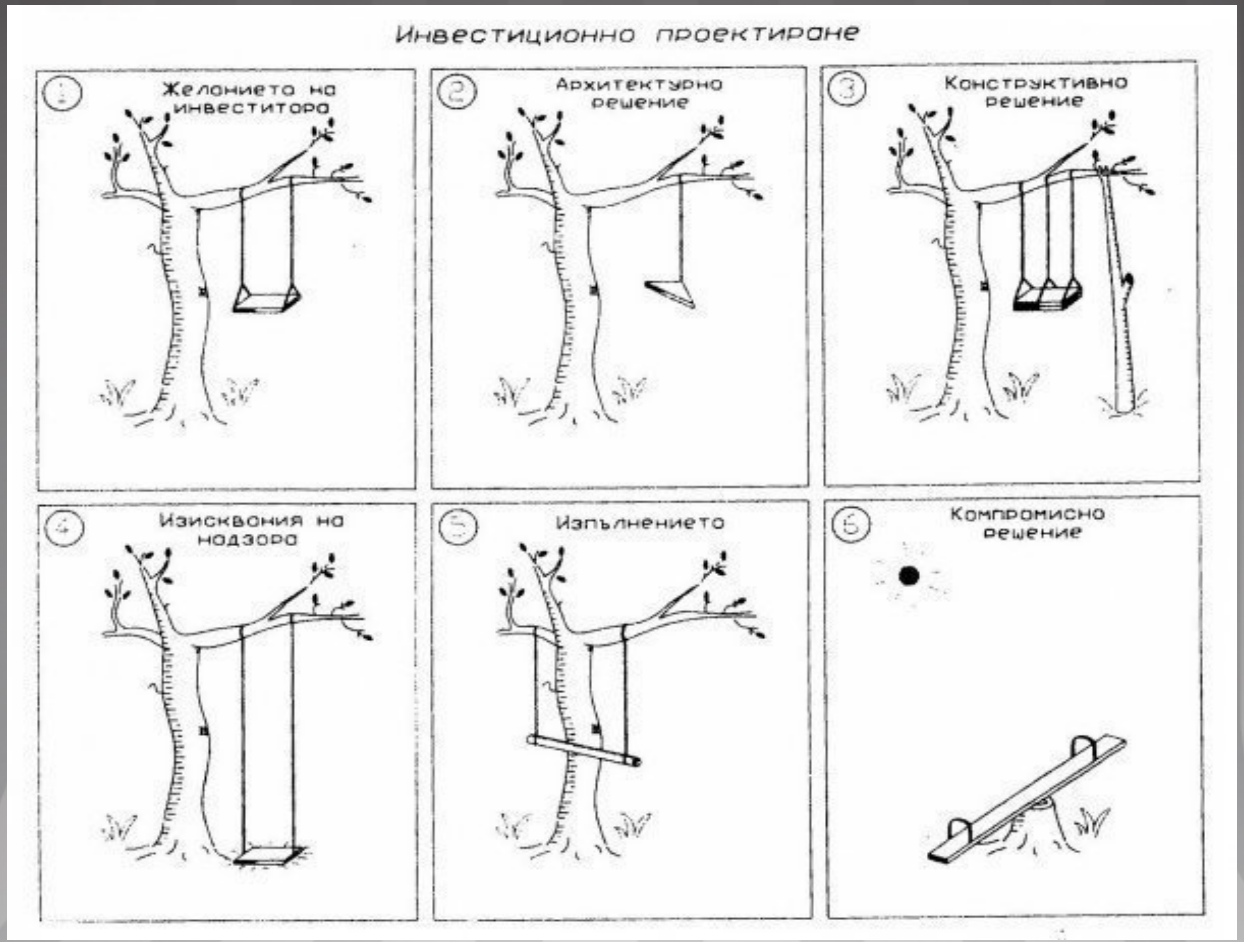


Диалог, дискусия, добра воля



ВСИЧКИ трябва да участват активно при създаването и развитието на пазара на електроенергия!

Предизвикателства на българския електроенергиен пазар

- Нестабилна регулаторна среда
- Краткосрочни договори
- Слаба ликвидност
- Липса на информация за цени и обеми
- Непазарно поведение

Малко време за въпроси и коментари

Благодаря за вниманието и търпението!

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“Не можем да решим проблемите, като използваме същия начин на мислене, който сме използвали, когато сме ги създавали.”

Алберт Айнщайн