



Hrvatska elektroprivreda d.d.

Tržište i trgovanje električnom energijom i iskustva iz HEP-Trgovine d.o.o.

Marin Cerjan, HEP-Trgovina d.o.o.

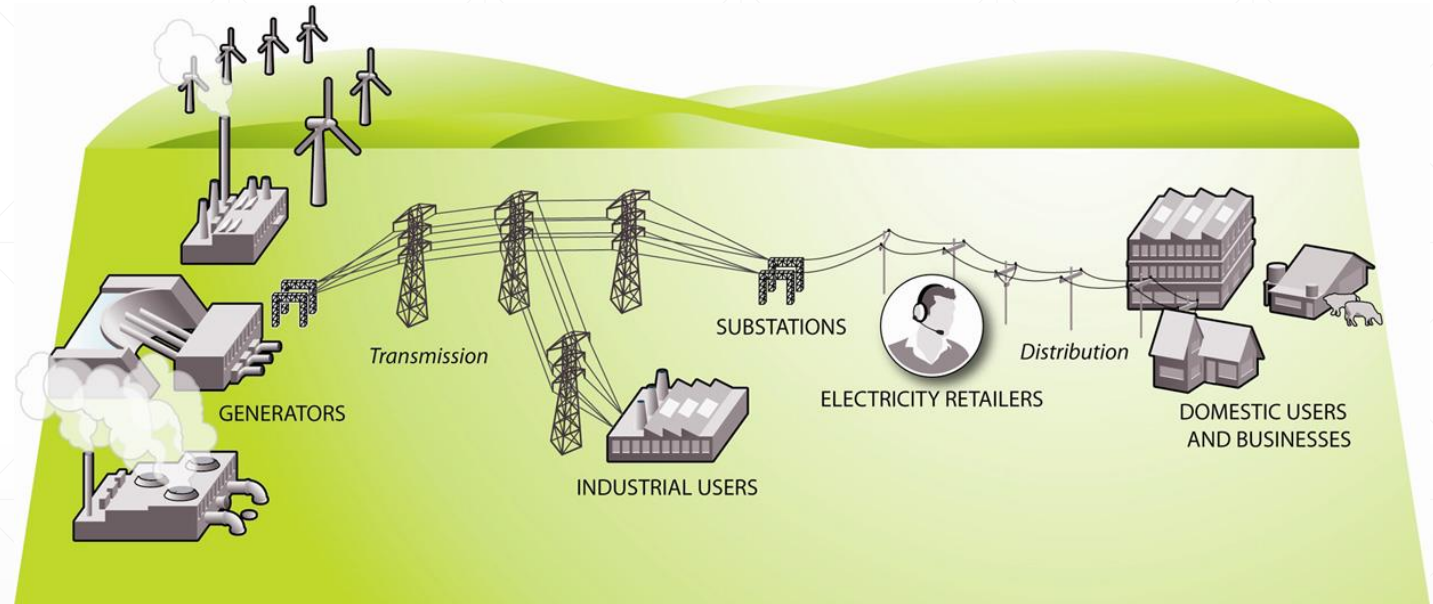
06.11.2014

Sadržaj

- **Uvod**
- **Elektroenergetska situacija u regiji**
- **Tržište električne energije**
- **HEP Trgovina d.o.o.**
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- **Trgovanje električnom energijom**

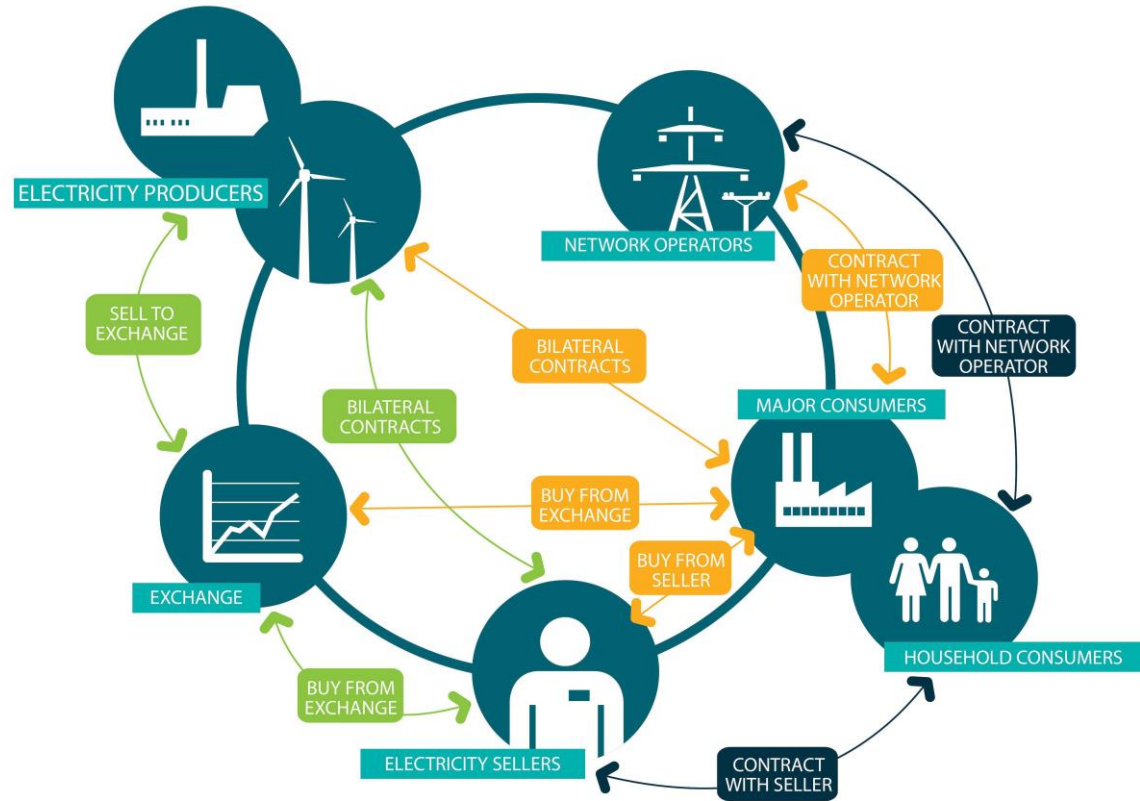
Uvod

- Restrukturiranje
- Privatizacija
- Deregulacija
- Liberalizacija tržišta električne energije



Uvod

- Proizvodnja
- Planiranje
- Veleprodaja
 - Distribucija
 - Prijenos
 - Opskrba
 - Ostali trgovci



Uvod

- **Proizvodnja**
 - **Termoelektrane**
 - ugljen, nuklearna – bazni režim rada
 - Plinske – bazni / mogućnost sudjelovanja u regulaciji
 - **Hidroelektrane**
 - Protočne – proizvodnja ovisna o dotocima
 - Akumulacijske – mogućnost pohrane energije u akumulacijskim bazenima
- **OIE**
 - Prednost pri despečingu – povlašteni proizvođači

Uvod

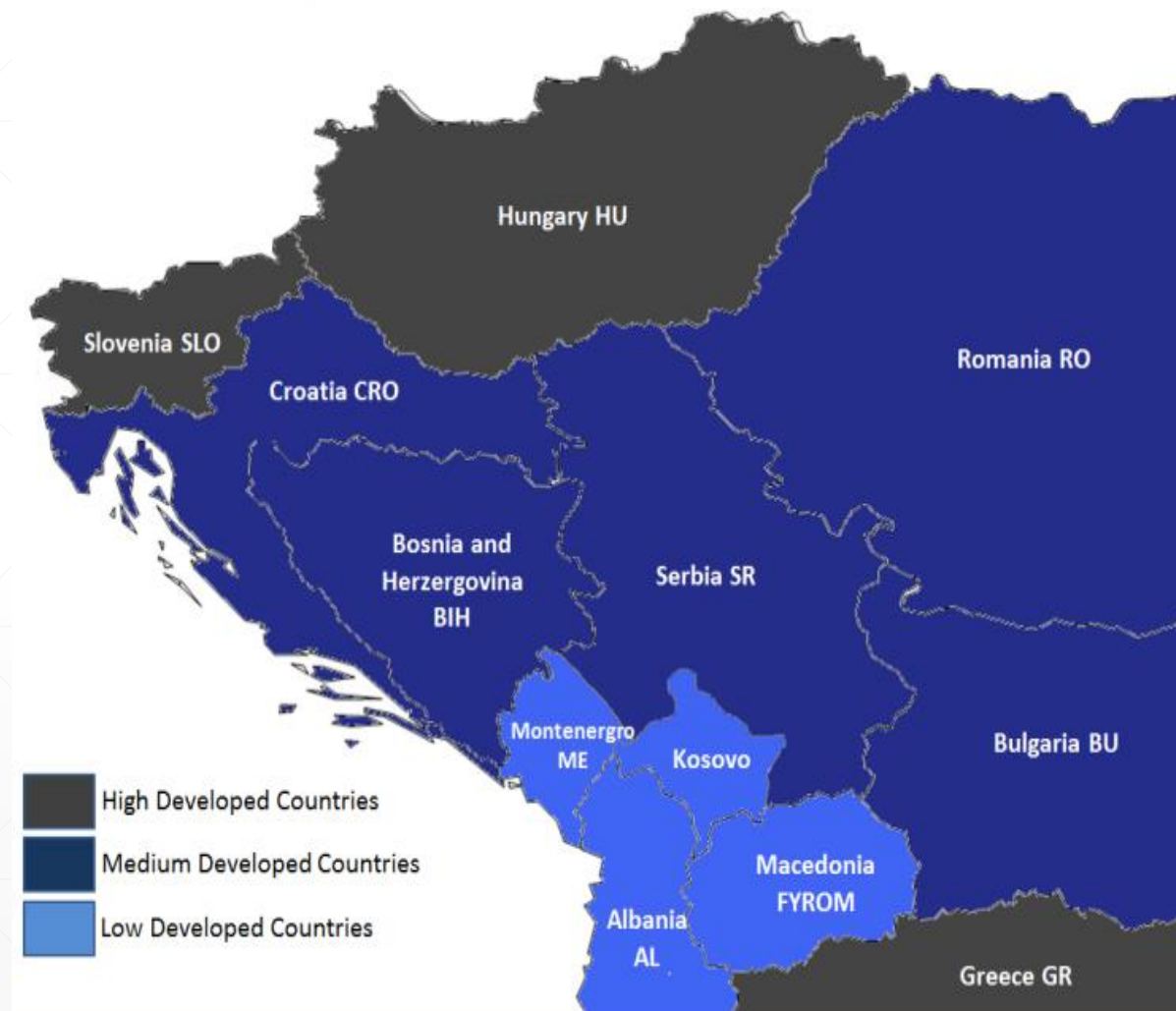
- Planiranje
 - Dugoročno – energetska strategija
 - Srednjoročno – tjedan do 5 godina
 - Kratkoročno – sat unaprijed do tjedan
- Planiranje proizvodnje prema promjenjivim troškovima proizvodnje iz pojedinih izvora
- Trgovanje električnom energijom
 - Rezultat planirani viškovi / manjkova u određenim periodima

Uvod

- Trgovanje električnom energijom
 - Rezultat planiranih viškova / manjkova u određenim periodima
 - Proizvodi za trgovanje
 - Base Load (bazna energija) – isporuka 00-24
 - Peak Load (vršna energija) – isporuka 8-20
 - Ostali (različito definirani za svako tržište) – off peak, high tariff, middle night, late morning, business, high noon ...
 - Periodi isporuka
 - Godina, kvartal, mjesec, tjedan, dan, sat unaprijed

Elektroenergetska situacija u regiji

- 12 država
- BDP 3.800-24.500 USD
- dio nastao raspadom Jugoslavije
- nedostatak velikih investicija u EES zadnjih 20 godina
- politički i ekonomski rizici za velike investicije

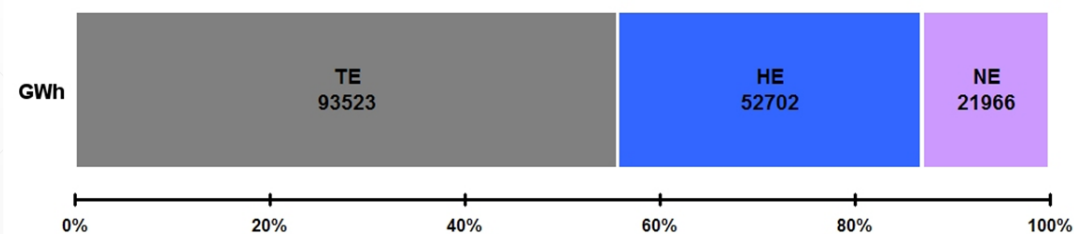
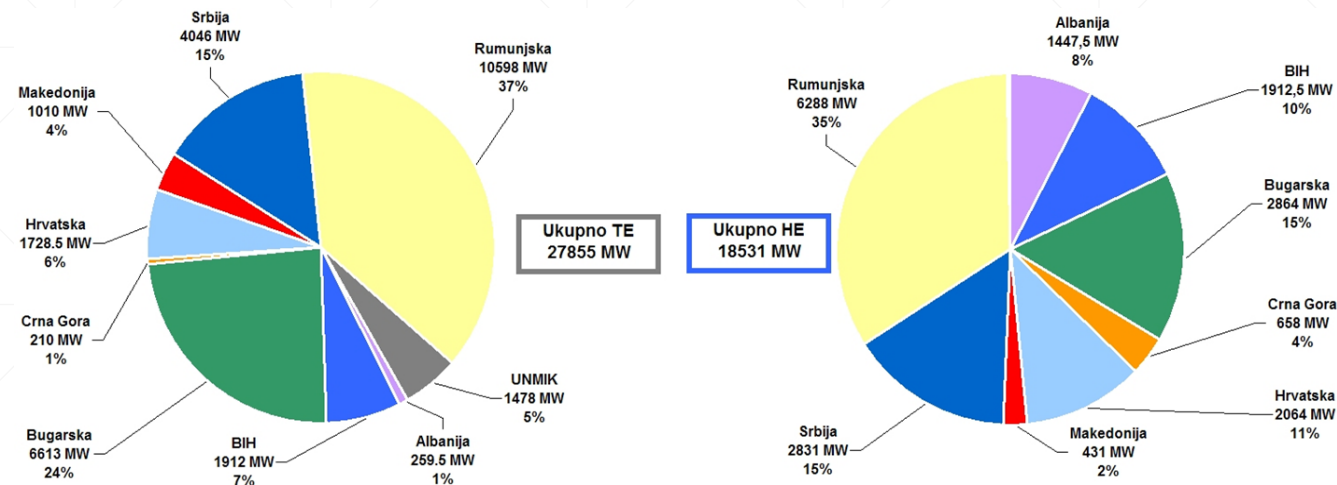


Elektroenergetska situacija u regiji

Struktura instalirane snage:

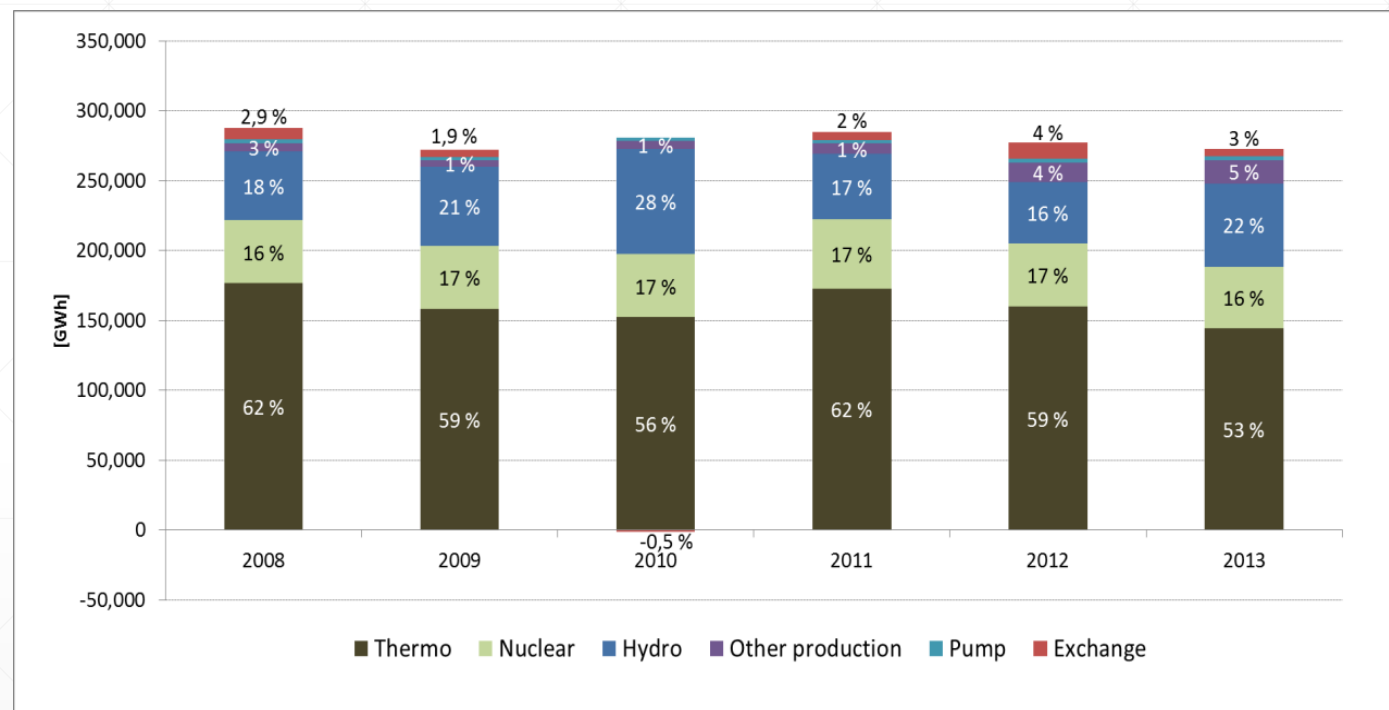
- 30 % hidroelektrane
- 55 % termoelektrane
- 8 % nukelarne
- 7% OIE

Country	HPP (%)	NPP (%)	TPP (%)	RES (%)	Sum (MW)
Romania	33%	7%	49%	11%	17,750
Greece	22%	0%	66%	12%	16,499
Bulgaria	23%	16%	52%	9%	12,167
Hungary	1%	23%	71%	5%	8,775
Serbia	35%	0%	65%	0%	8,179
Croatia	48%	8%	39%	5%	4,267
BiH	52%	0%	48%	0%	3,700
Slovenia	46%	9%	43%	2%	3,656
Albania	91%	0%	6%	3%	1,570
Macedonia	41%	0%	57%	2%	1,409
Montenegro	75%	0%	24%	1%	882
SEE	30%	8%	55%	7%	78,855



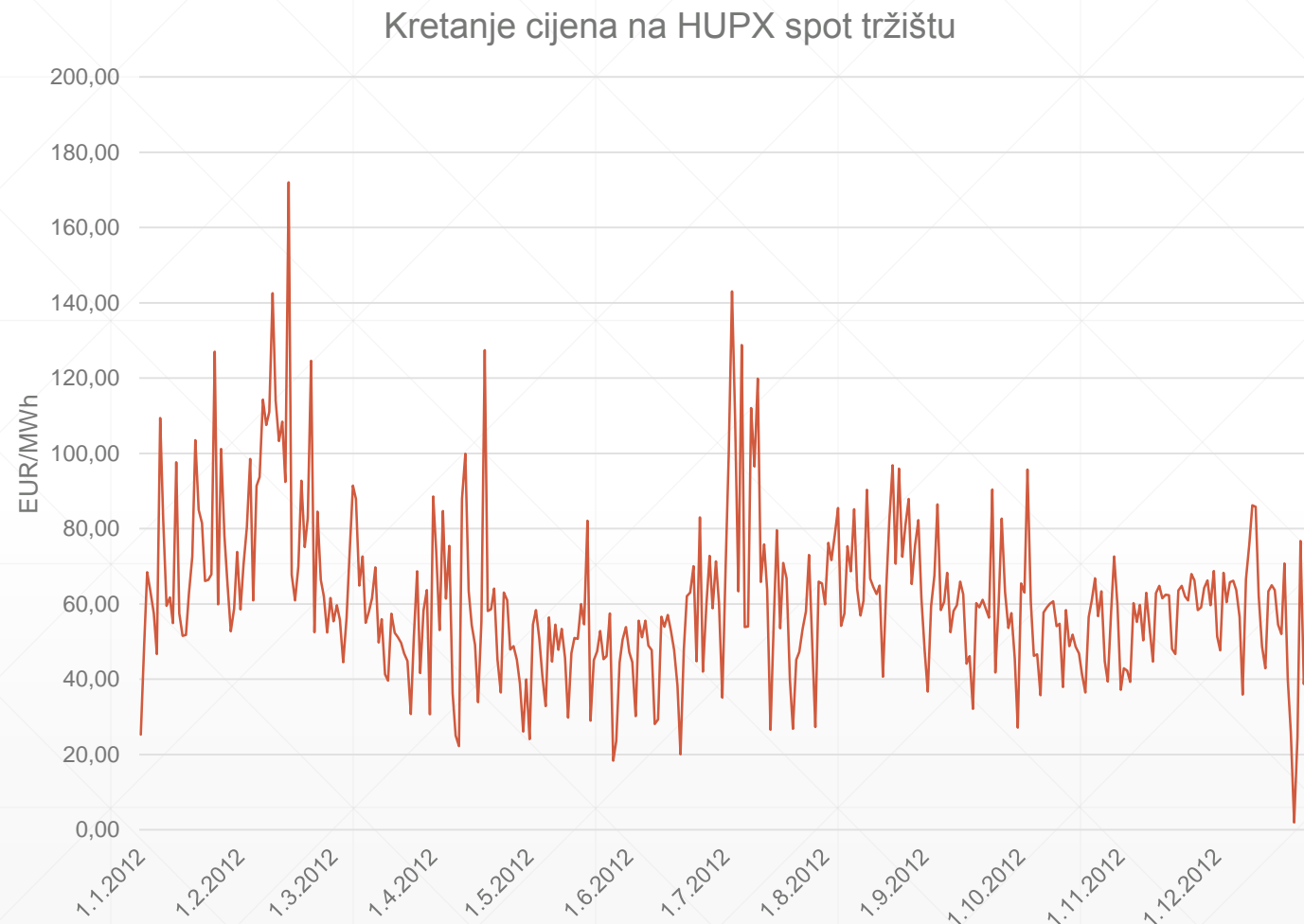
Elektroenergetska situacija u regiji

- Velik utjecaj vremenskih prilika na proizvodnju ee
 - Proizvodnja HE 44 – 77 TWh
- Termoelektrane stari objekti na ugljen, loživo ulje i plin (neisplativi)
- Porast udjela OIE



Elektroenergetska situacija u regiji

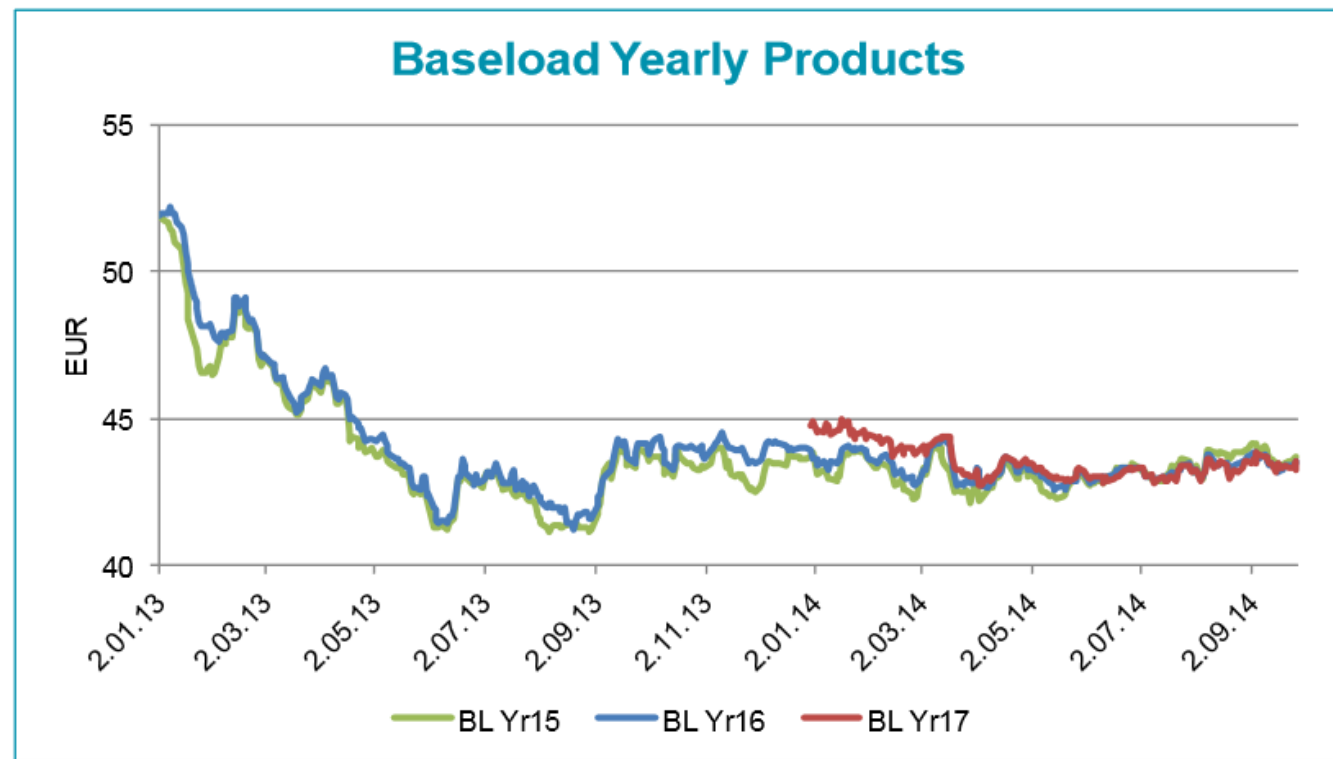
- Primjer cijena na spot tržištu 2012
- Hidrološki loša godina
- Ekstremno niske temperature tijekom veljače
- Ekstremno visoke temperature tijekom srpnja



Elektroenergetska situacija u regiji

- Primjer cijena dugoročnih ugovora za 2015, 2016, 2017, tijekom 2013-2014
 - Niska potrošnja
 - 2 uzastopne dobre hidrološke godina
 - Porast instaliranih OIE
 - Pad cijene ugljena

HUPXPhF



HEP-Trgovina d.o.o.

- izrada godišnje elektroenergetske bilance
- optimiranje ukupno raspoložive električne energije
 - elektrane HEP Proizvodnje d.o.o.
 - TE Plomin d.o.o. i NE Krško
- kupoprodaja električne energije
- zakup prekograničnih prijenosnih kapaciteta
- poslovanje inozemnih društava
- ekonomski poslovi vezani uz obračun kupoprodaje električne energije
- upravljanje rizicima

vladajuće društvo



ovisna društva u 100% vlasništvu HEP-a d.d.



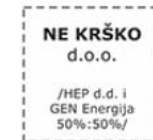
društva u mješovitom vlasništvu



neovisni operator prijenosnog sustava



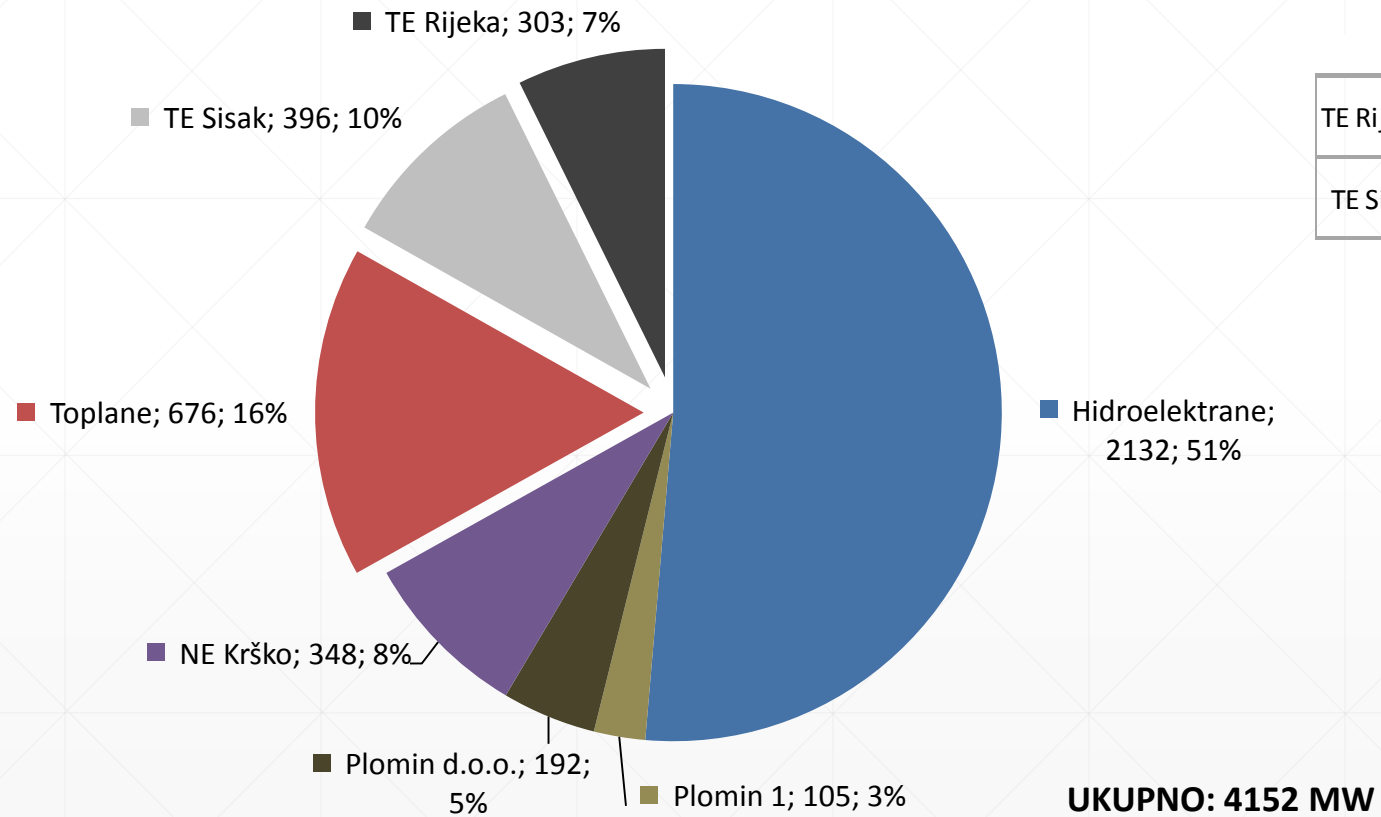
povezano društvo izvan HEP grupe



* društvo razdvojeno prema ITO modelu

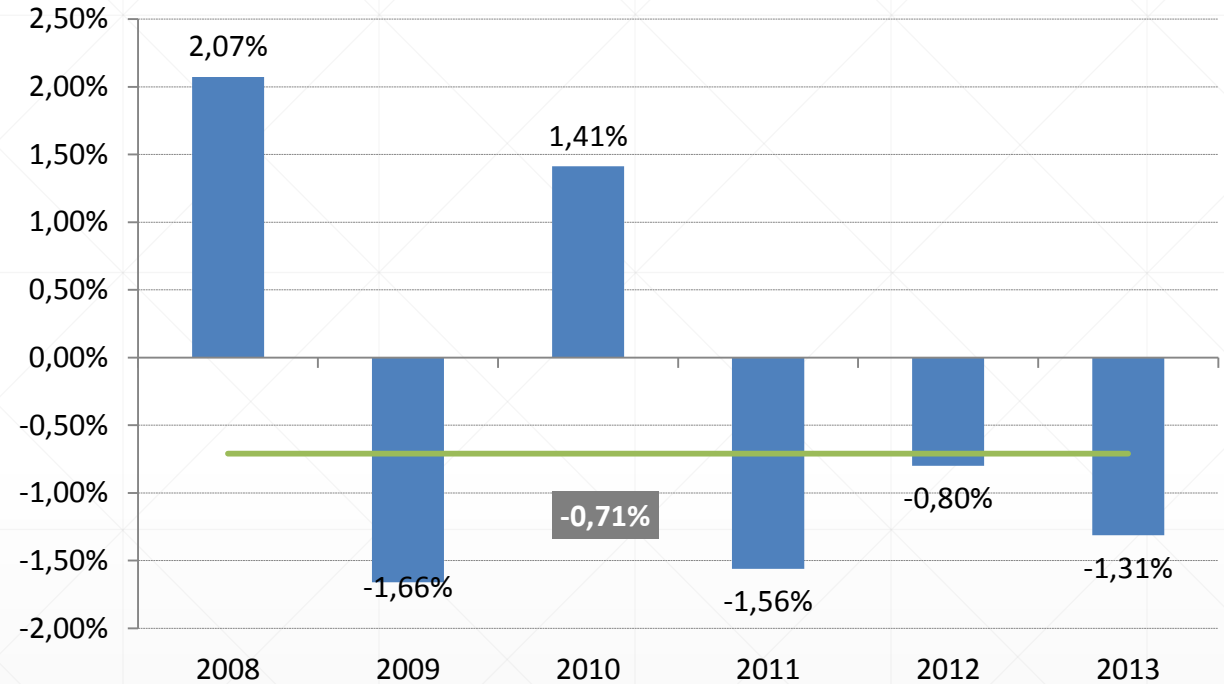
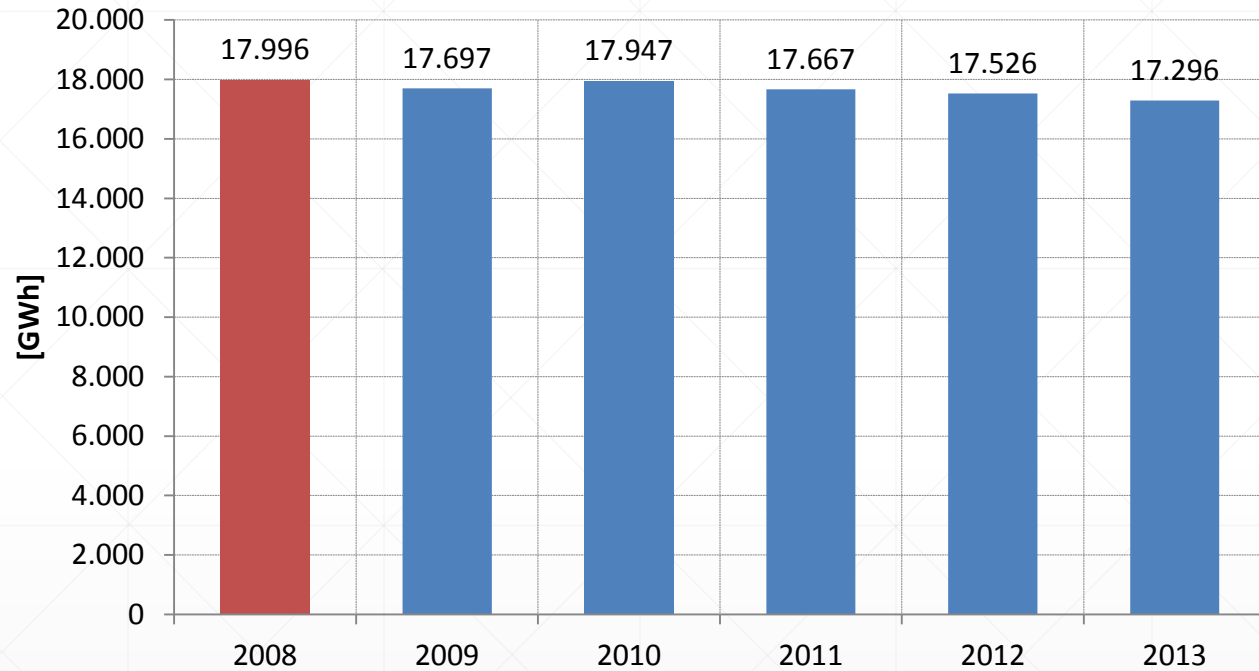
Elektroenergetski sustav RH

Instalirana snaga HEP-ovih elektrana [MW; %]



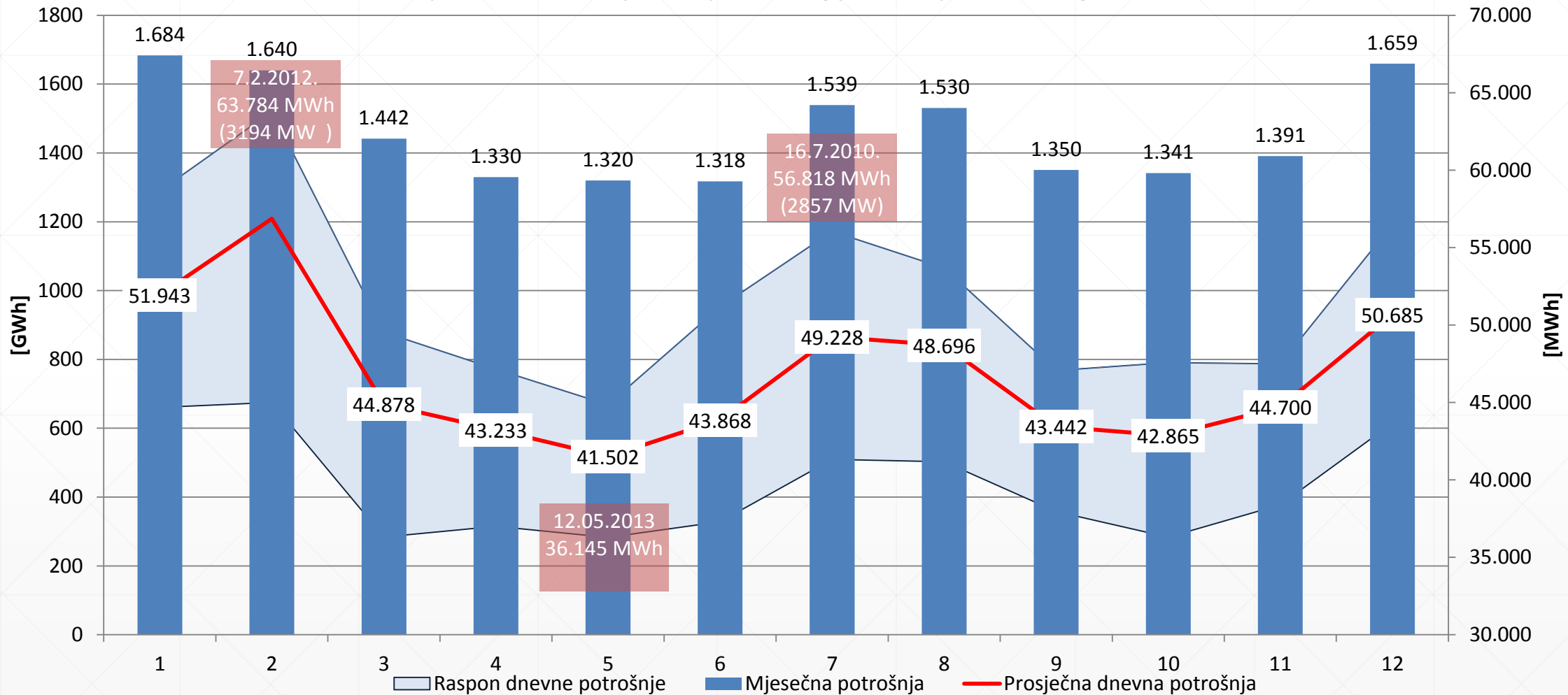
		2008	2009	2010	2011	2012	2013*
TE Rijeka	GWh	1008	1022	50	141	159	15
	sati rada	3.327	3.373	165	465	525	50
TE Sisak	GWh	745	544	0	100	89	24
	sati rada	1.881	1.374	0	253	225	61

Elektroenergetski sustav RH



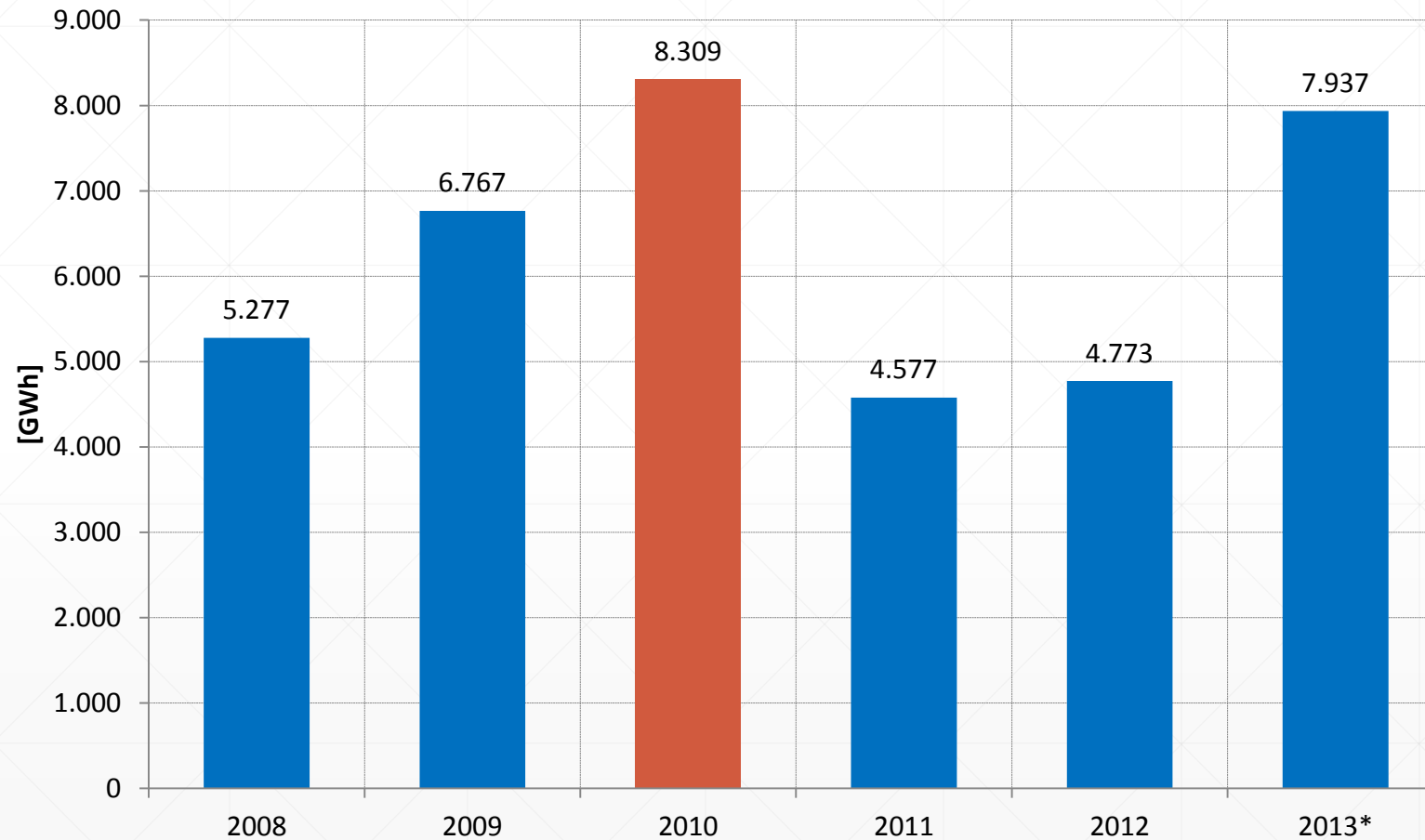
Elektroenergetski sustav RH

Mjesečne i dnevne potrošnje el. energije u RH tijekom 2012.godine



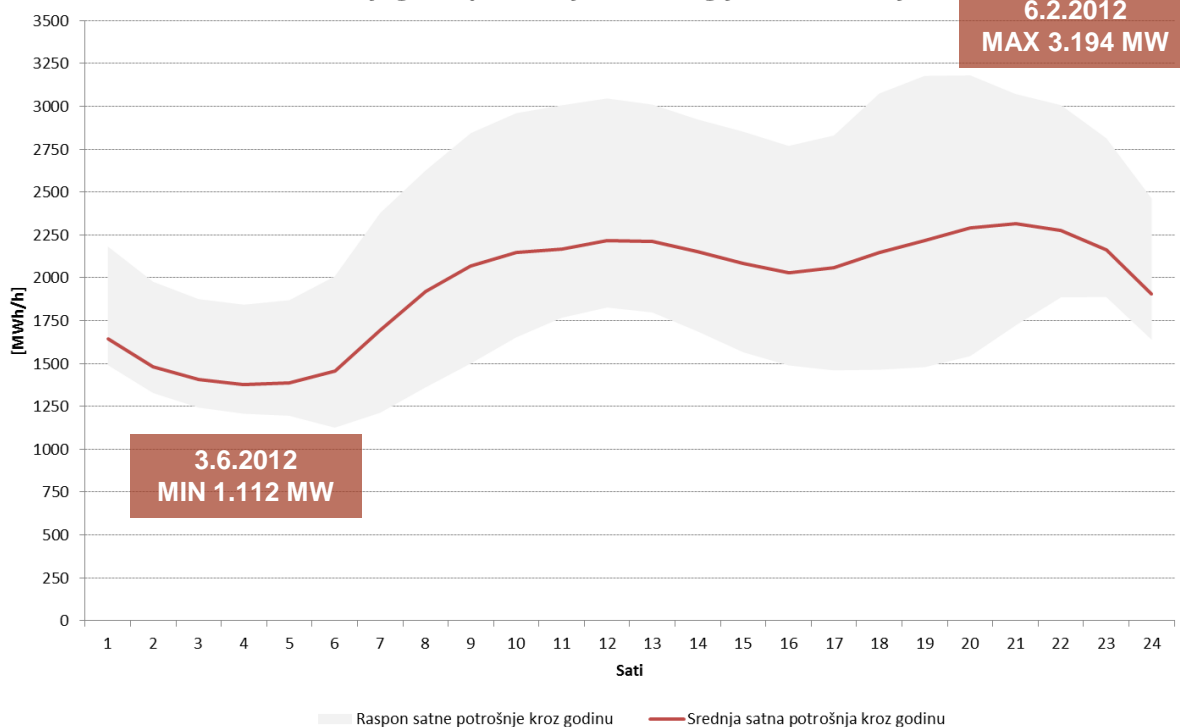
Elektroenergetski sustav RH

Ukupna proizvodnja hidroelektrana

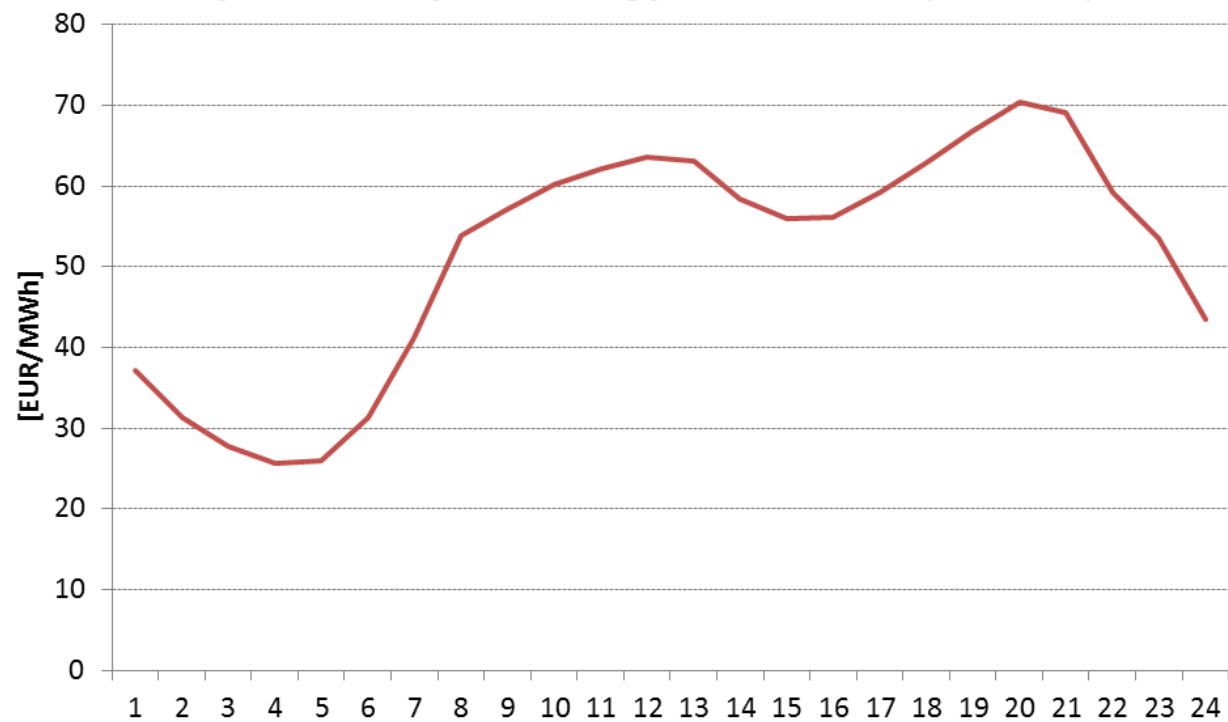


Elektroenergetski sustav RH

Satni dijagram potrošnje el. energije u Hrvatskoj

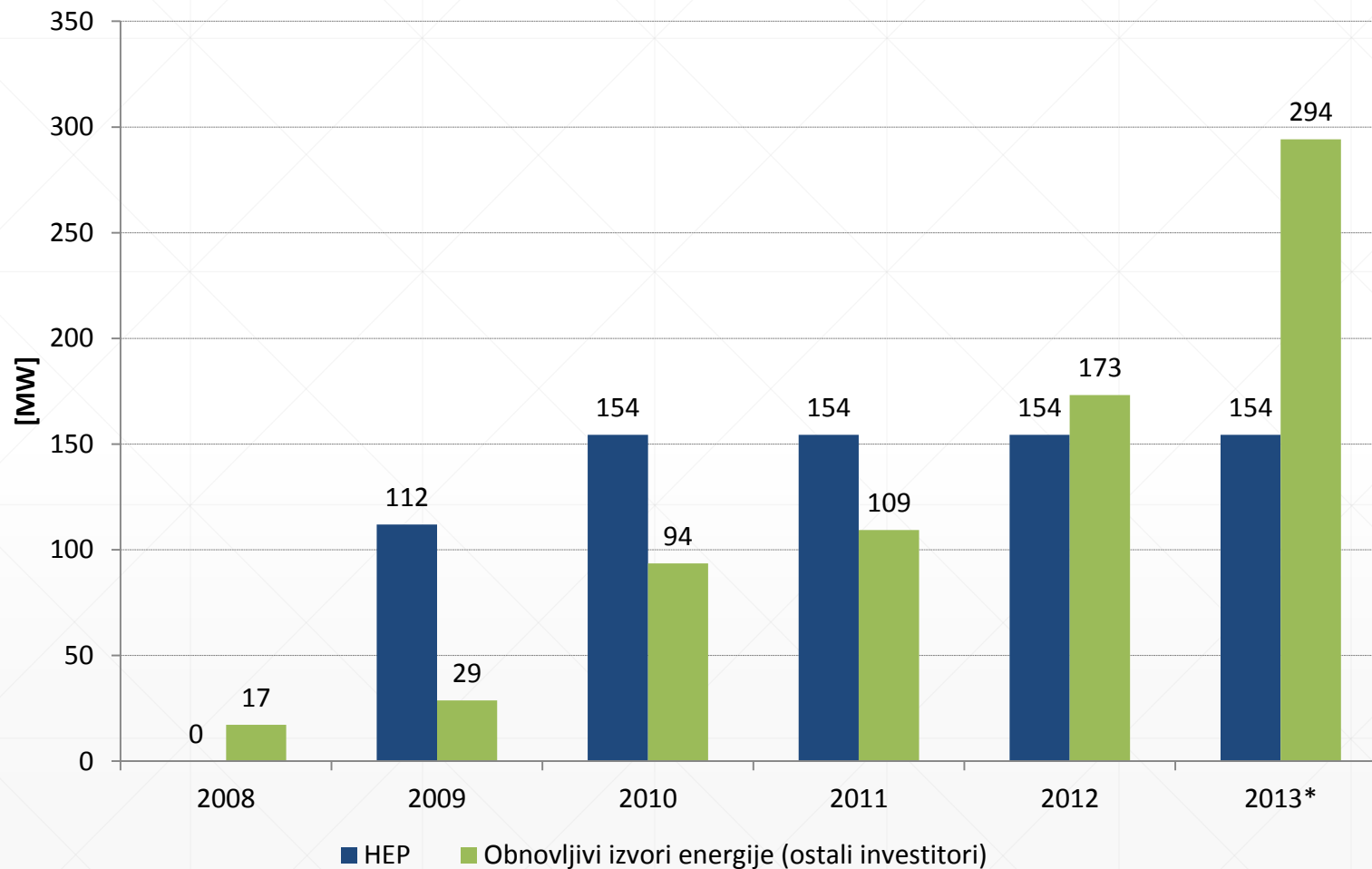


Prosječna satna cijena el. energije na burzi HUPX (Mađarska)



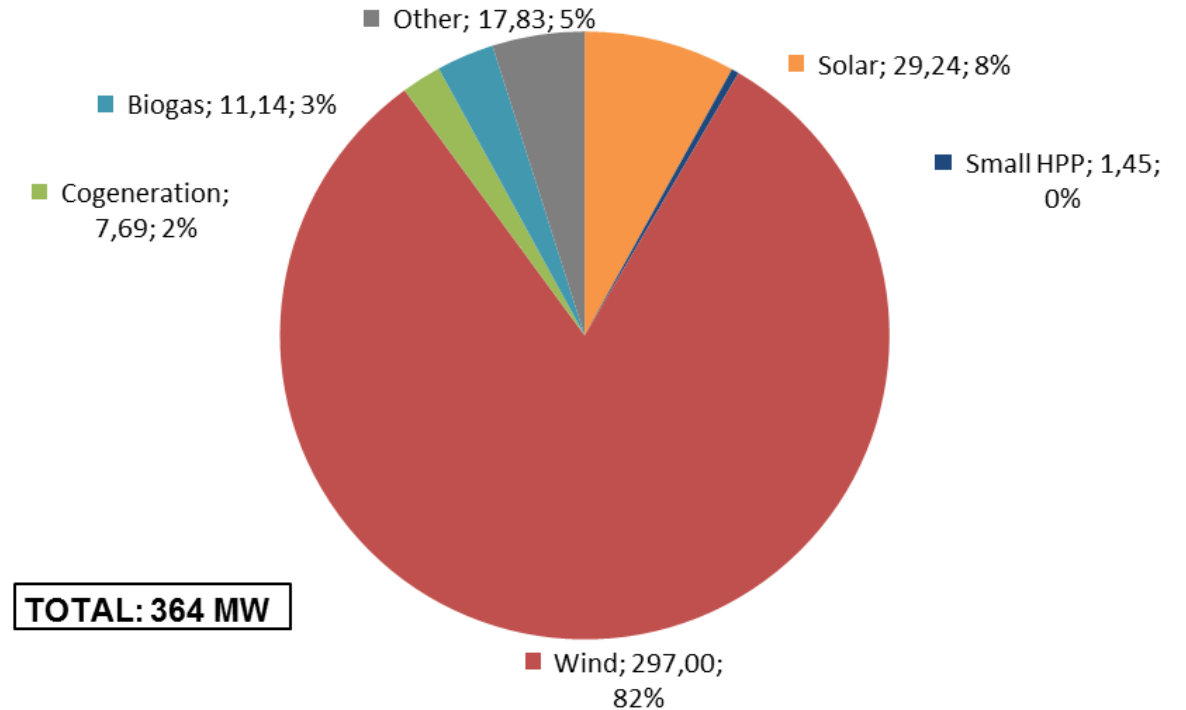
Elektroenergetski sustav RH

Instalirana snaga novoizgrađenih proizvodnih postrojenja od 2008.



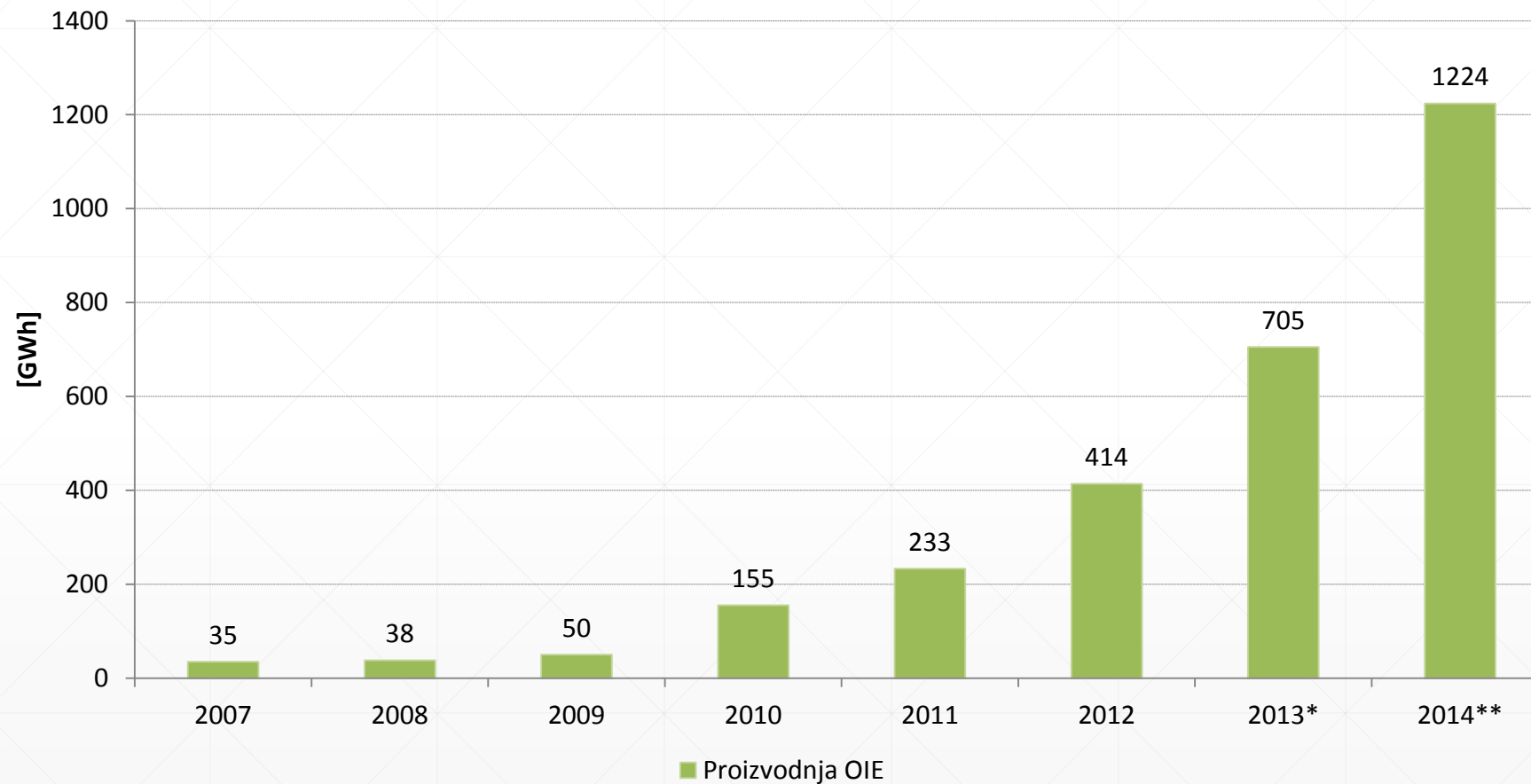
Elektroenergetski sustav RH

- Trend rasta instaliranih OIE
- Najveći udio vjetroelektrana 82 %
- Većina unutar feed-in tarife
- Garantirani otkup sve proizvedene energije po garantiranoj cijeni



Elektroenergetski sustav RH

Proizvodnja OIE



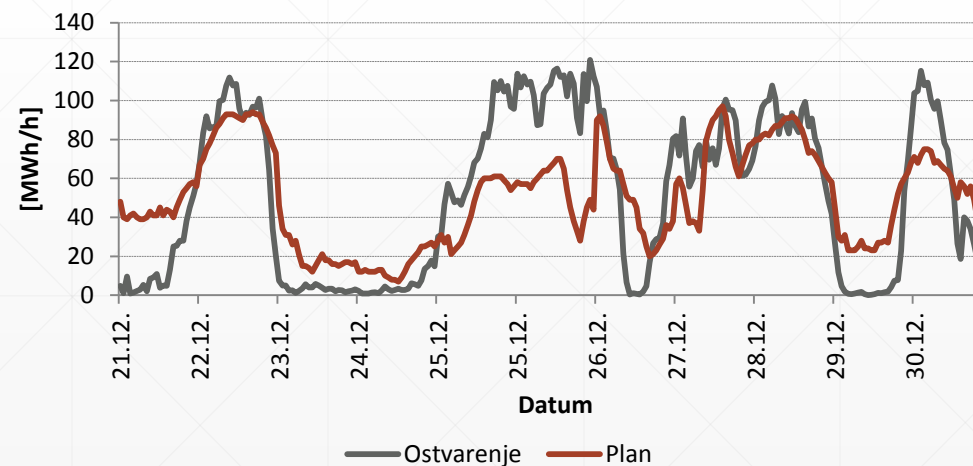
Elektroenergetski sustav RH

- Visoka odstupanja u satnoj proizvodnji (satna odstupanja oko 80% od srednje vrijednosti)
- Hidroelektrane
 - upravljivi izvor proizvodnje
 - sudjeluju u regulaciji
- Vjetroelektrane (VE)
 - Neupravljivi
 - visoka pogreška u planiranju
 - Utjecaj na tržište
 - Utjecaj na povećanje volatilnosti cijena

Satna odstupanja od srednje vrijednosti

Termoelektrane	21%
Potrošnja	35%
Hidroelektrane	63%
Vjetroelektrane	85%

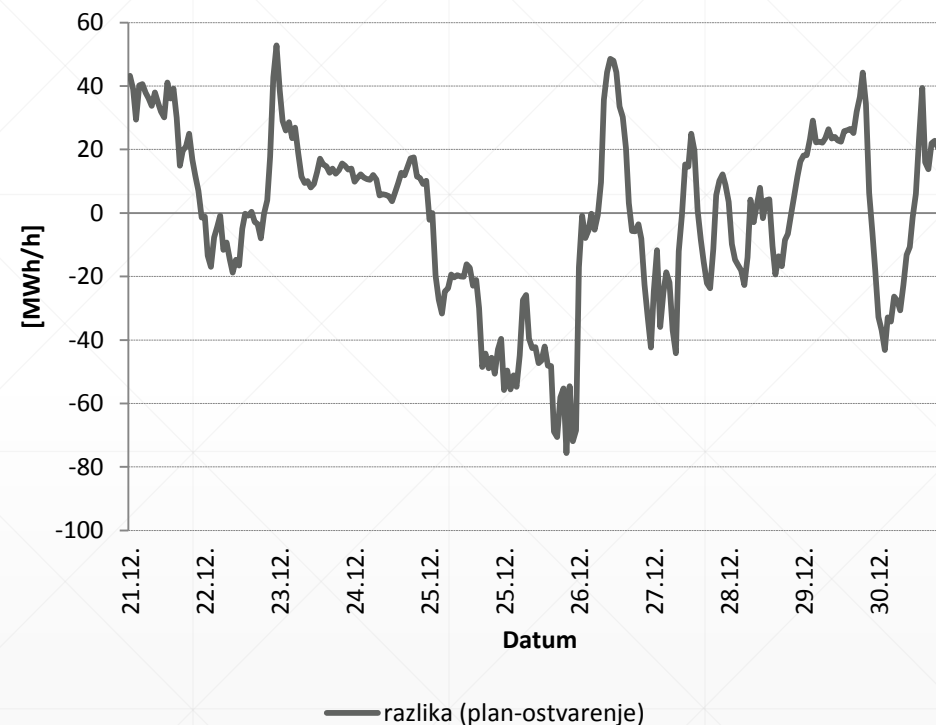
Plan/ostvarenje VE u Hrvatskoj 21.12-30.12.2012.



Elektroenergetski sustav RH

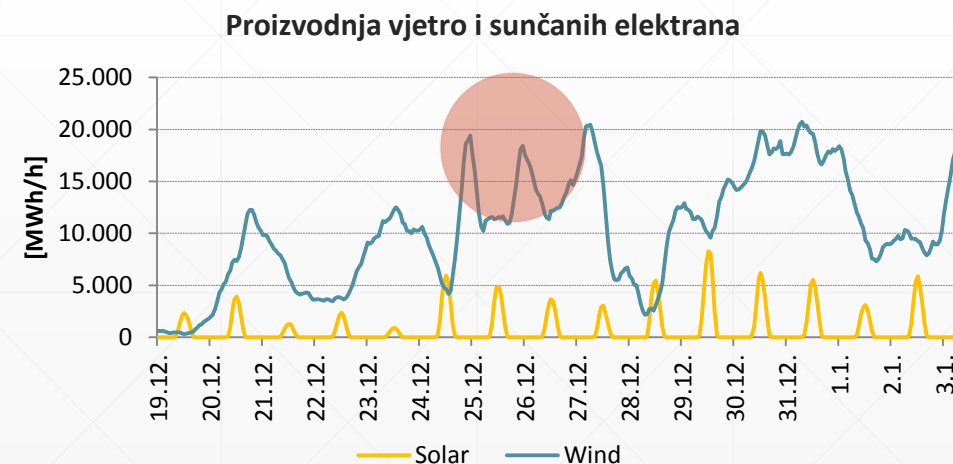
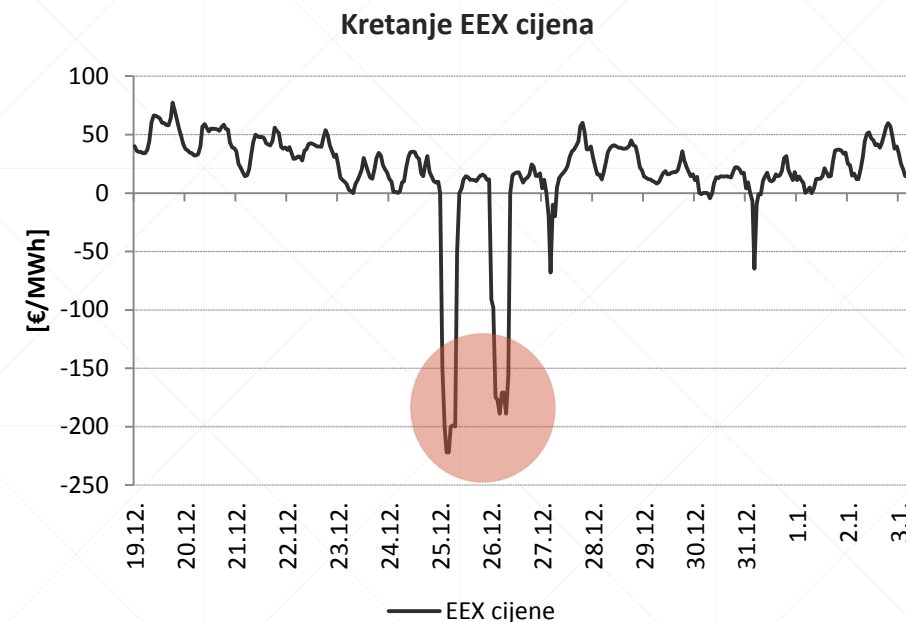
- Negativne posljedice povećanja udjela vjetroelektrana u sustavu:
 - povlašteni proizvođači ne snose posljedice lošeg planiranja proizvodnje OIE
 - povećanja potreba za regulacijom
 - povećanjem udjela OIE povećava se energija iz OIE koji opskrbljivači moraju otkupljivati
 - povećanje troškova zbog netržišne otkupne cijene

Razlika (plan-ostvarenje) VE u Hrvatskoj
21.-30.12.2012.



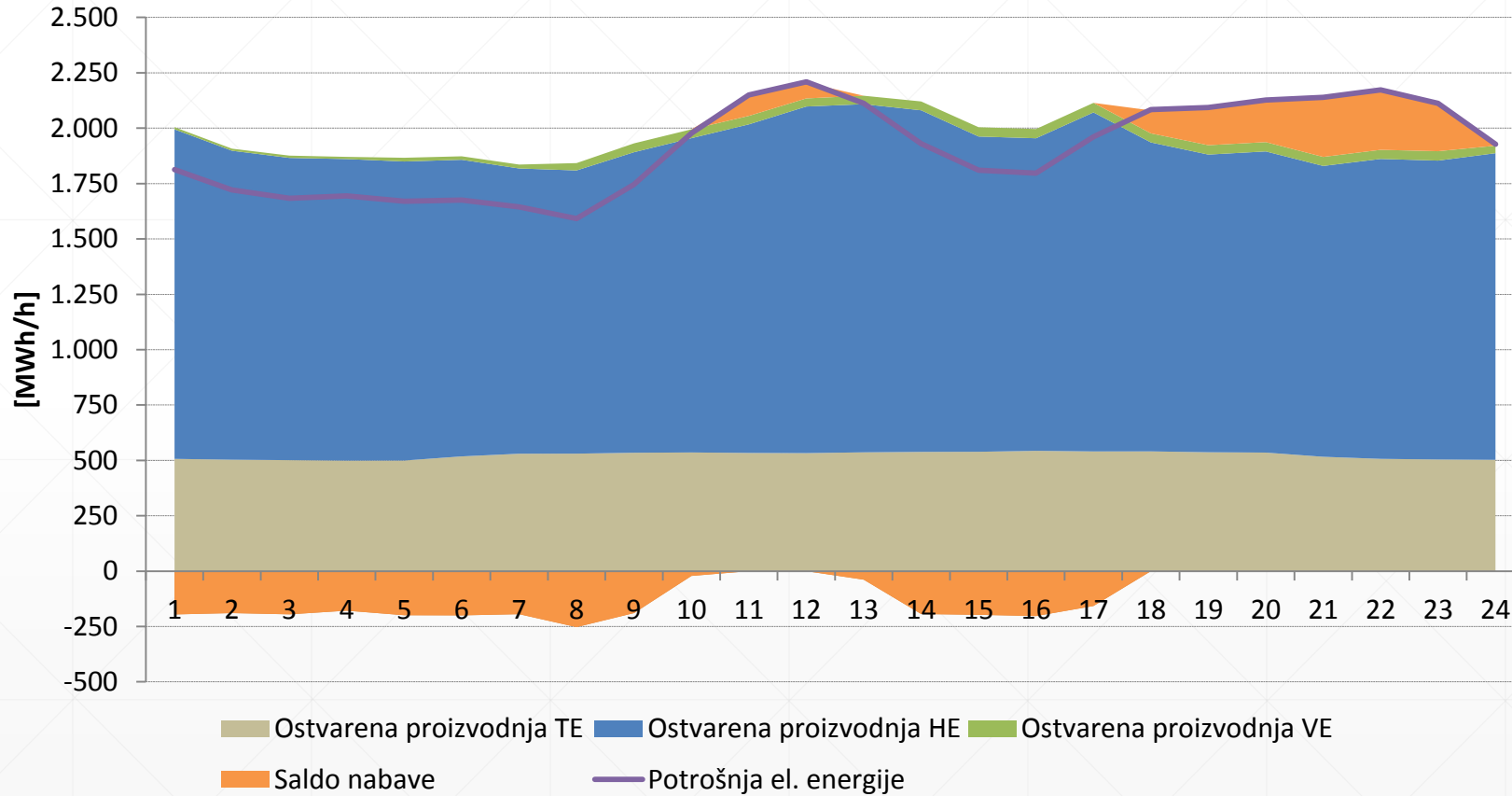
Elektroenergetski sustav RH

- Primjer Njemačka:
 - Instalirana snaga VE 31.332 MW
 - Godišnja proizvodnja VE ~ 48.000 GWh (8% potrošnje)
 - Za vrijeme blagdana (niska potrošnja) zbog utjecaja visoke proizvodnje VE, cijene na tržištu mogu biti negativne (slika) – neupravljivost proizvodnjom VE
 - Za proizvođače je jeftinije platiti da netko preuzme njihov višak energije tijekom kratkoročnog poremećaja na tržištu nego isključivati velike termoelektrane (nuklearne, ugljen)



Elektroenergetski sustav RH

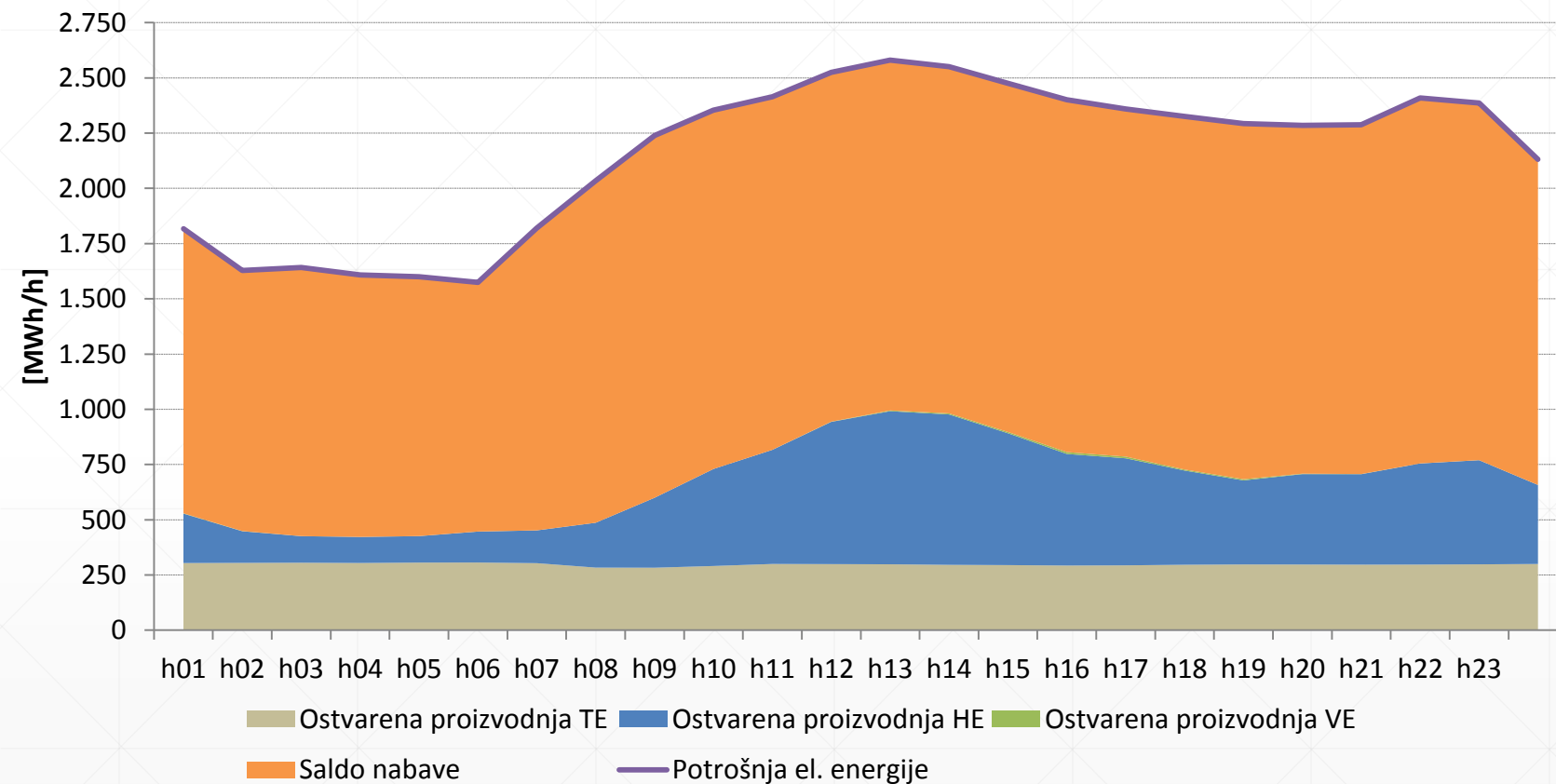
25.12.2010.



Udio raspoložive el. energije u dnevnoj potrošnji	
Ostvarena proizvodnja HE (1571 MW u 13h)	66%
Ostvarena proizvodnja TE	25%
Ostvarena proizvodnja VE	1%
Saldo nabave	-2%

Elektroenergetski sustav RH

21.06.2012.

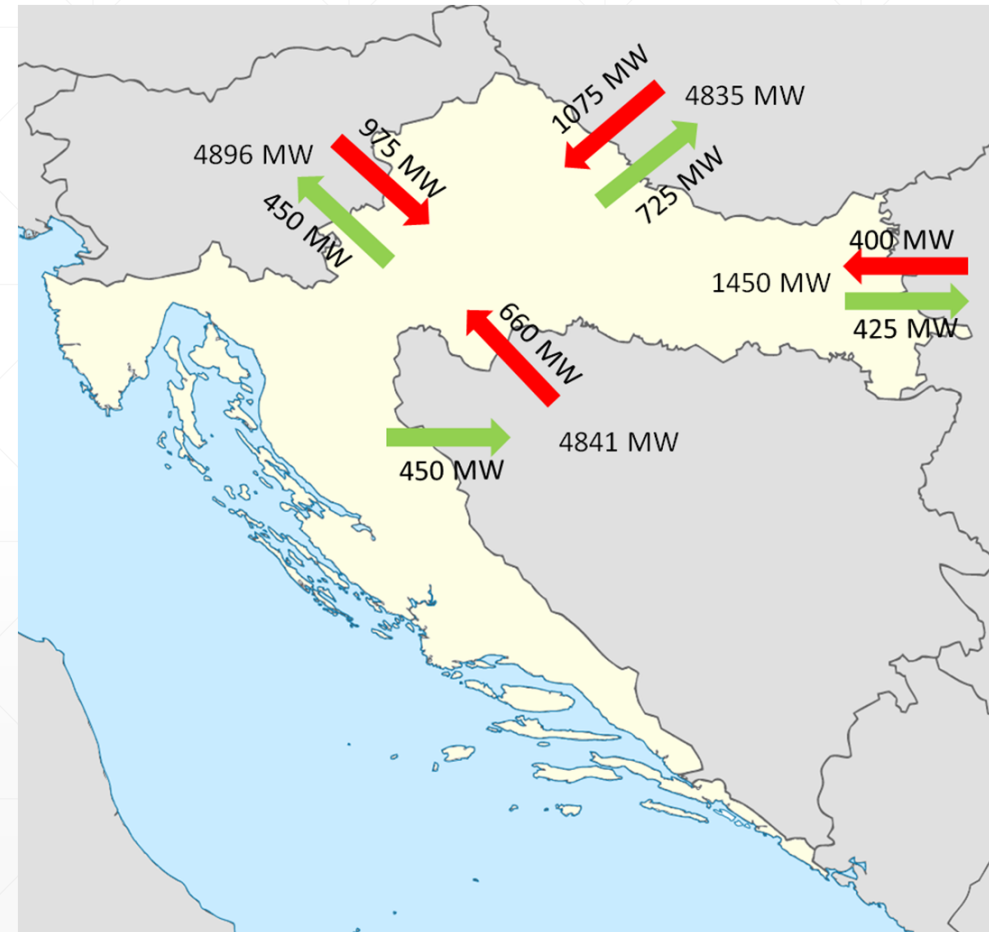


Udio raspoložive el. energije u dnevnoj potrošnji	
Ostvarena proizvodnja HE	18%
Ostvarena proizvodnja TE	14%
Ostvarena proizvodnja VE	0%
Saldo nabave (1654 MW u 22h)	69%

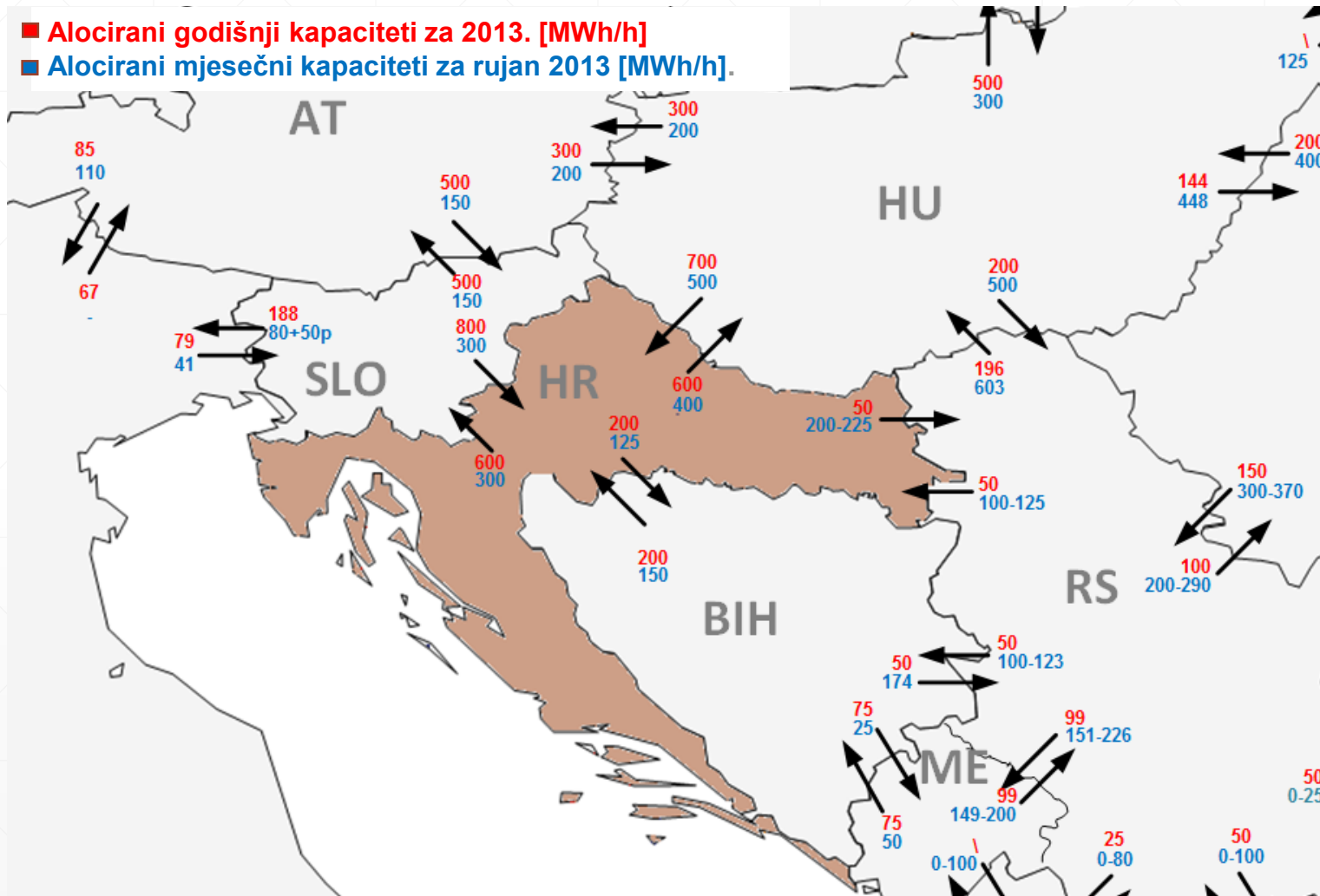
Elektroenergetski sustav RH

	Prijenosna moć [MW]	NTC* [MW]
Hrvatska-Mađarska	4835	725
Mađarska-Hrvatska		1075
Hrvatska-Slovenija	4896	900
Slovenija-Hrvatska		975
Hrvatska-BiH	4841	450
BiH-Hrvatska		660
Hrvatska-Srbija	1450	425
Srbija-Hrvatska		400
Ukupno	16022	2500
		3110

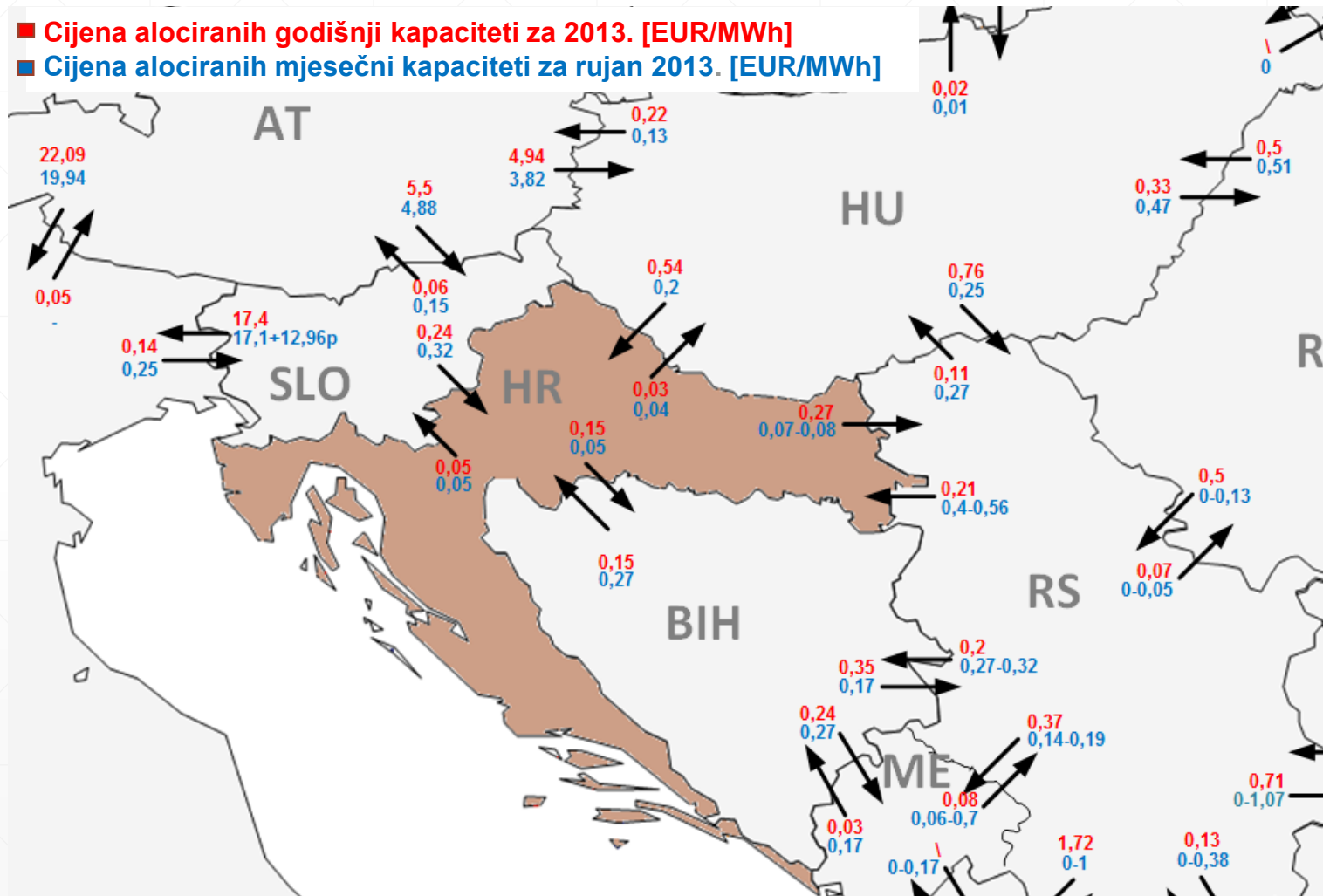
*Net Transfer Capacity – kapaciteti raspoloživi na aukcijama (uvoz 14%-28%; izvoz 9%-29% od prijenosne moći)



Elektroenergetski sustav RH



Elektroenergetski sustav RH

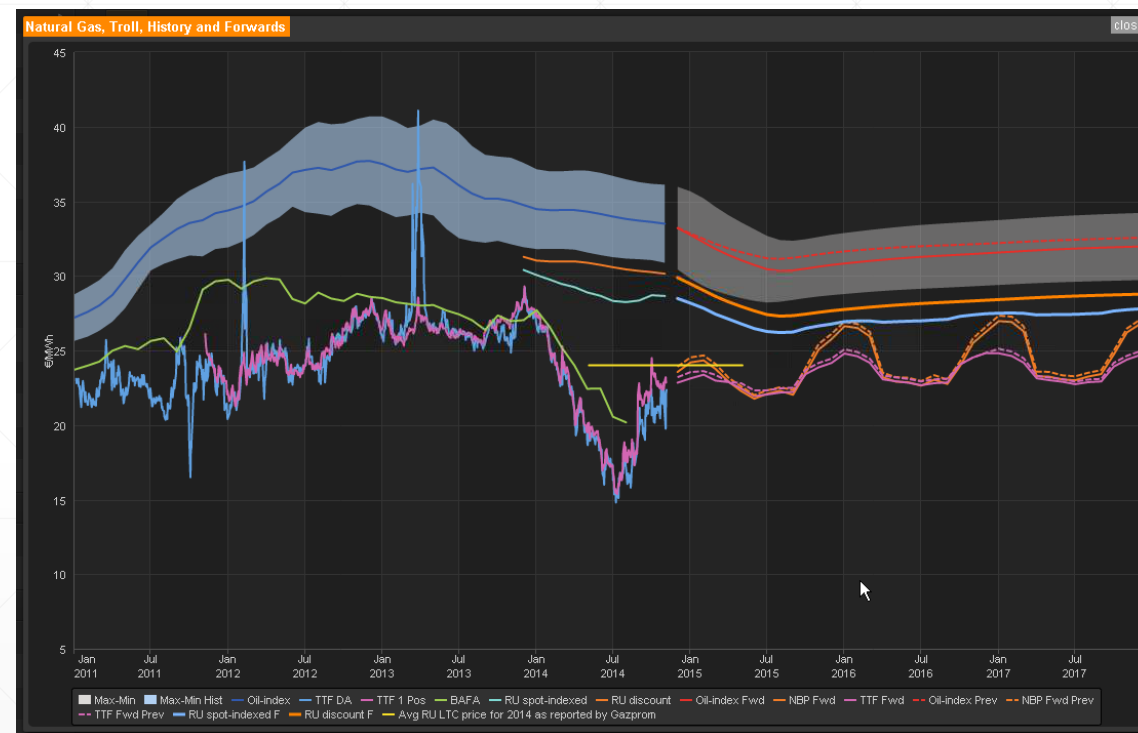


Trgovanje električnom energijom

Kretanje cijena ugljena na tržištu



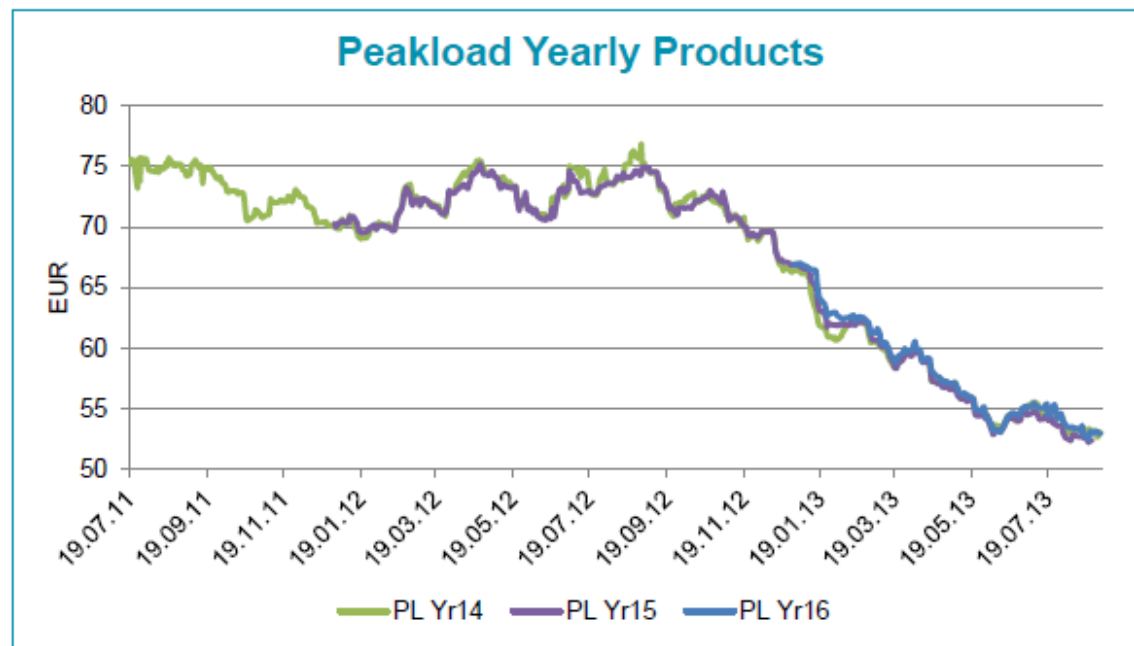
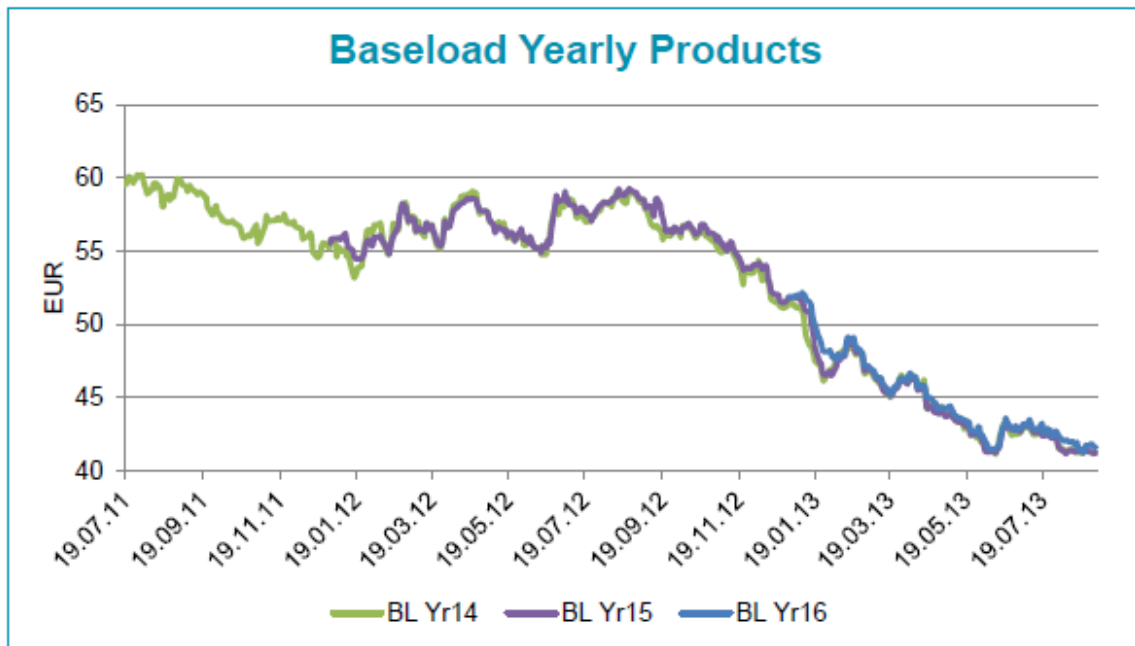
Kretanje cijena plina (TTF) na tržištu



Izvor: Point Carbon

Trgovanje električnom energijom

Kretanje cijena električne energije na tržištu



Izvor: HUPX

Trgovanje električnom energijom

GERMAN SPARK SPREADS FOR 52.11% GAS PLANT EFFICIENCY 2 OCTOBER 2013								€/MWh
Period	Spark spread	Diff	Clean spark spread	Diff	Peak spark spread	Diff	Clean peak spark spread	Diff
Day-ahead	-31.74	-23.80	-33.59	-23.83	-36.02	-31.30	-37.87	-31.33
November '13	-9.39	-0.17	-11.24	-0.21	5.31	0.08	3.46	0.04
December '13	-13.61	-0.03	-15.46	-0.06	0.94	0.22	-0.91	0.19
January '14	-9.70	0.17	-11.59	0.15	4.40	0.75	2.51	0.73
Q1 '14	-10.91	0.20	-12.80	0.18	2.19	0.20	0.30	0.18
Q2 '14	-15.07	0.18	-16.96	0.16	-6.09	0.26	-7.98	0.24
Q3 '14	-12.62	0.10	-14.51	0.08	-2.72	0.10	-4.61	0.08
Q4 '14	-9.53	0.15	-11.42	0.13	3.47	0.18	1.58	0.16
Year 2014	-12.08	0.15	-13.97	0.13	-0.78	0.20	-2.67	0.18
Year 2015	-10.93	0.07	-12.89	0.06	-0.53	0.32	-2.49	0.31
Year 2016	-9.83	0.02	-11.89	0.01	0.22	-0.03	-1.84	-0.04

GERMAN DARK SPREADS FOR 35%, 38% AND 40% COAL PLANT EFFICIENCY 2 OCTOBER 2013											€/MWh	
Period	Dark spread 35%		Dark spread 38%		Dark spread 40%		Clean dark spread 35%		Clean dark spread 38%		Clean dark spread 40%	
	Dark spread	Diff	Dark spread	Diff	Dark spread	Diff	Clean dark spread	Diff	Clean dark spread	Diff	Clean dark spread	Diff
November '13	18.24	-0.34	20.15	-0.10	21.26	-0.10	13.13	-0.43	15.44	-0.41	16.79	-0.40
December '13	14.76	-0.10	16.67	-0.10	17.79	-0.10	9.66	-0.19	11.97	-0.17	13.32	-0.16
January '14	18.92	0.08	20.82	0.08	21.93	0.08	13.72	0.04	16.03	0.04	17.38	0.05
Q1 '14	17.58	0.10	19.48	0.10	20.59	0.10	12.38	0.05	14.69	0.07	16.03	0.06
Q2 '14	9.55	0.24	11.50	0.24	12.64	0.24	4.35	0.19	6.70	0.19	8.08	0.19
Q3 '14	10.76	0.16	12.76	0.16	13.93	0.16	5.55	0.11	7.97	0.12	9.38	0.12
Q4 '14	15.22	0.28	17.27	0.28	18.47	0.28	10.01	0.23	12.48	0.22	13.92	0.22
Year 2014	13.19	0.15	15.17	0.15	16.32	0.15	7.98	0.09	10.37	0.10	11.77	0.11
Year 2015	11.01	0.04	13.15	0.04	14.40	0.04	5.61	-0.01	8.18	0.00	9.67	0.00
Year 2016	9.80	0.05	12.04	0.05	13.35	0.05	4.11	0.01	6.80	0.01	8.37	0.02

Elektroenergetski sustav RH

- Dnevno planiranje rada EES-a
 - Prognoziranje potrošnje el. energije
 - Plan rada elektrane
 - Hidroelektrane – ovisnost o dotocima
 - Termoelektrane – promjenjivi troškovi pogona
 - OIE – vremenske prilike
- Prognoziranje cijena
- Viškovi / manjkovi – tržište
- Osiguravanje prekograničnih prijenosnih kapaciteta

Vozni red

06.11.2014 13:38:00

Elektrana	sum	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	h24
HE Peruća	80	0	0	0	0	0	0	0	0	0	20	20	20	20	0	0	0	0	0	0	0	0	0	0	0
HE Ortovac	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HE Dale	210	11	11	11	11	11	11	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
HE Zakučac	2275	0	0	0	0	0	0	99	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128
HE Krajevac	120	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
RHE Velebit	3270	0	0	0	0	0	0	180	180	180	180	180	180	180	180	180	180	180	180	180	220	200	200	200	200
HE Dubrovnik	1600	80	80	70	70	60	70	70	60	60	70	70	70	70	70	70	60	60	70	60	60	60	60	60	60
HE Mijacka	264	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
HE Golubić	72	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
HE Jurga	120	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
HE Varsdat	2280	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
HE Čakovac	910	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
HE Duhova	1584	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
HE Gojak	1200	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
HE Vinodol	210	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
HE Lešće	504	0	0	0	0	0	0	0	0	0	21	21	21	21	21	21	21	21	21	21	42	42	42	42	42
HE Sklope	250	20	20	20	20	20	20	20	20	20	20	20	20	20	10	0	0	0	0	0	0	0	0	0	0
HE Senj	4620	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
HE Rijeka	198	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	18	18	18	18	18
TE Plomin 1	2520	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105
TE Plomin 2	1820	0	0	0	0	0	0	0	0	0	40	80	80	100	120	140	140	140	140	140	140	140	140	140	140
TE Rijeka	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TE-TO Zagreb C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TE-TO COGT L	960	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
TE-TO COGT K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EL-TO Zagreb A, B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EL-TO Zagreb H, J	1170	45	45	45	45	45	45	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
PTE Osijek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Prognoza potrošnje

Naziv	sum	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	h24
Potrošnja	36754	1219	1092	1036	1014	1045	1179	1408	1580	1667	1657	1625	1640	1631	1600	1566	1563	1672	1922	1958	1920	1854	1829	1650	1418
Pumpanje	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Simulacija

Naziv	sum	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	h24
SP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HUPX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Saldo

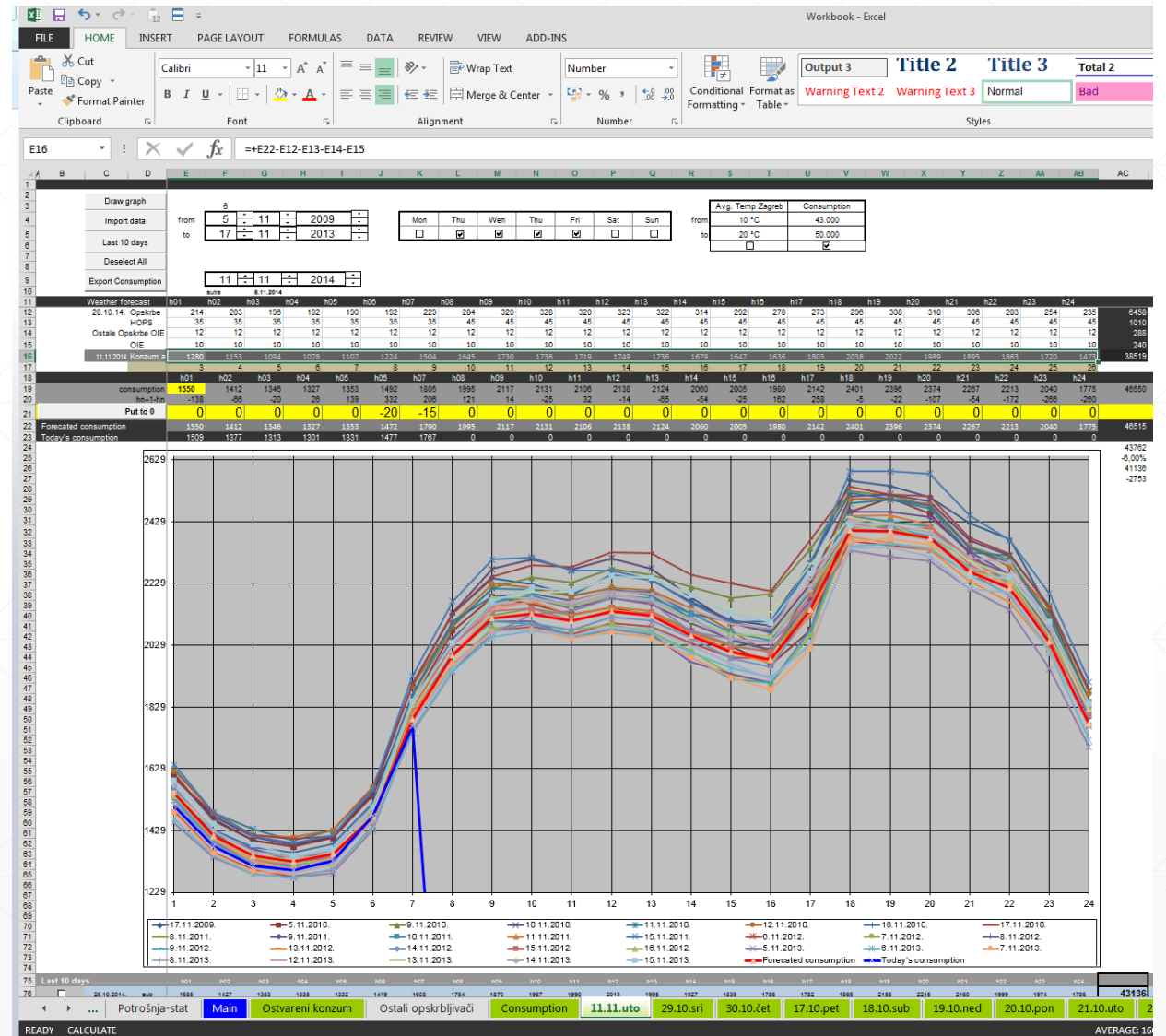
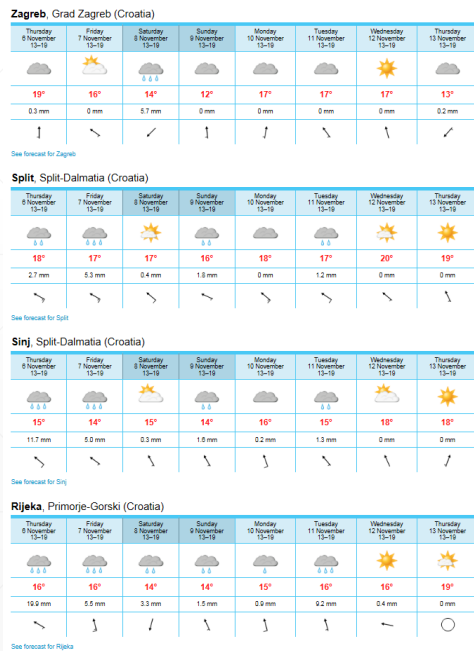
Tip	sum	h1	h2	h3	h4	h5	h6	h7	h8	h9	h10	h11	h12	h13	h14	h15	h16	h17	h18	h19	h20	h21	h22	h23	h24
Razmjena	5117	197	87	21	2	36	164	113	295	329	269	201	215	196	177	120	120	223	422	418	423	332	312	341	124
Radnja	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HEP Trgovina d.o.o., 2013. - Upril, prijedlozi, komentari

Elektroenergetski sustav RH

Prognoziranje potrošnje el. energije

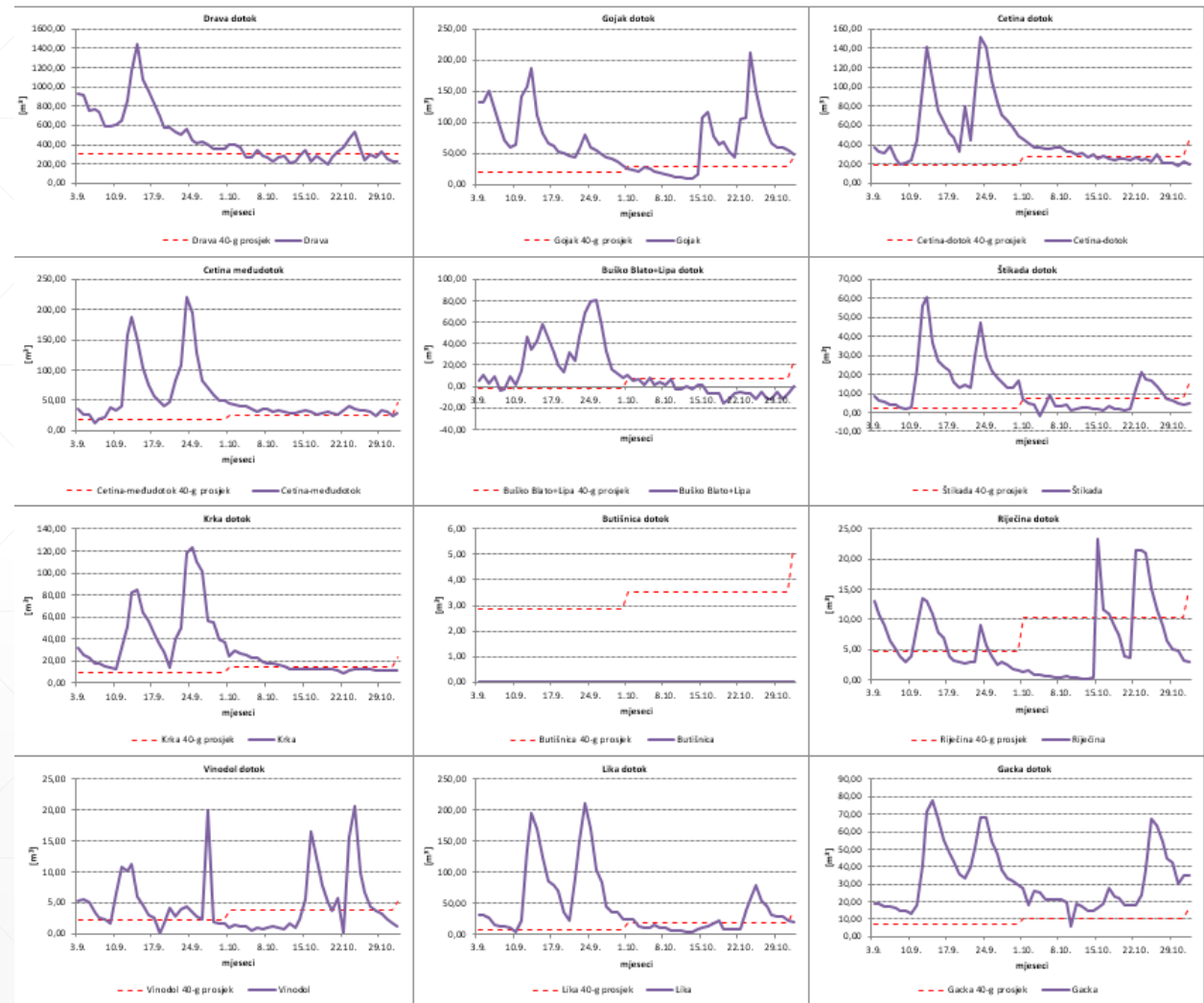
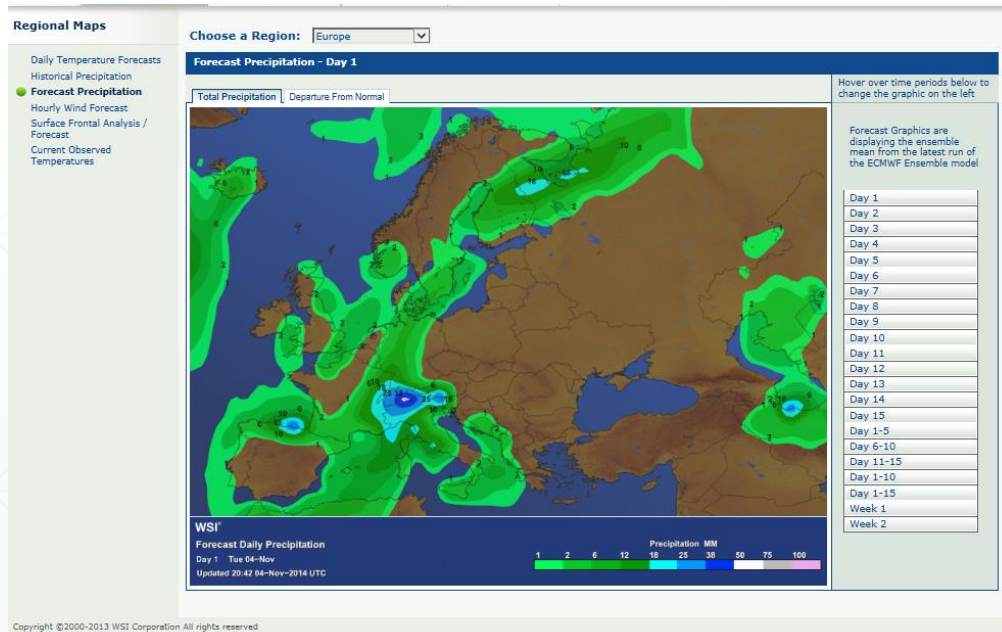
- Povijesna baza podataka
- Vremenske prognoze
- Iskustveni faktor pri prognoziranju



Elektroenergetski sustav RH

Plan rada elektrane

- Hidroelektrane – ovisnost o dotocima
- Termoelektrane – promijenjivi troškovi pogona
- OIE – vremenske prilike



Trgovanje električnom energijom

- Brokerske platforme
- OTC (over the counter) bilateralno trgovanje
- Cijena određena dogovorom dviju strana
- Kontinuirano trgovanje

CVB://TFS/Menu/CFESEPower.vwb - GlobalVision

Day	No	10	47,50	48,00	10	No	47,50	No	10	50,00
Wed 05/11/2014										
Thu 06/11/2014	No	5	47,25	48,50	10	No	44,75			59,00
Fri 07/11/2014	No	10	44,50	45,10	5	No				
Sat 08/11/2014										
Sun 09/11/2014										
Mon 10/11/2014										
WkEnd 8/11-9/	No	5	34,35	37,40	10	No	37,00			
WkEnd 15/11-16/	No	10	32,00	38,00	10	No				
Wk46 10/11/14	No	10	42,20	42,75	10	No	42,20			
Wk47 17/11/14	No	5	42,15	42,95	5	No				
Wk48 24/11/14	No	10	42,00	43,00	10	No				
Wk 46-14 (WD)	No	5	42,60	43,00	5	No	42,60			

CVB://europe.marexspectron.com/ - GlobalVision

Marex Spectron

MTF/Non MTF User: HEP, Andreja Lončarek Rašič

MTF/Non MTF	Execution	Code	Qty	Bid	Offer	Qty	Code	Execution	Last Tr	Code	Qty
Non-MTF	Non-MTF		25	40,75	41,00	25		Non-MTF			25
Non-MTF	Non-MTF		25	32,60	33,00	25		Non-MTF	33,00		25
Non-MTF	Non-MTF		25	32,60	33,00	25		Non-MTF			25
Non-MTF	Non-MTF		25	27,60	29,60	25		Non-MTF			
Non-MTF	Non-MTF		25	26,00	31,00	25		Non-MTF			
Non-MTF	Non-MTF		25	24,25				Non-MTF			
Non-MTF	Non-MTF		25	24,00				Non-MTF			
Non-MTF	Non-MTF		25	29,00				Non-MTF			
Non-MTF	Non-MTF				44,00	26		Non-MTF			
Non-MTF	Non-MTF				42,00	26		Non-MTF			
Non-MTF	Non-MTF		25	26,80	27,00	26		Non-MTF	26,90		25
Non-MTF	Non-MTF		25	26,75	27,10	26		Non-MTF			
Non-MTF	Non-MTF		25	27,55	28,00	26		Non-MTF	27,75		25
Non-MTF	Non-MTF		25	27,50	28,50	26		Non-MTF			

CVB://TFS/Menu/EuroPower.vwb - GlobalVision

TFS

NP Week Ger 6-8 Ger 20-24
 NP Month Codes Show EFX
 NP Quarters Last Show EFP
 NP Years

Exec	Code	Qty	Bid	Ask	Qty	Code	Exec	Last	Exe
								44,30	G
								41,00	P
								27,00	P
								37,90	G
								36,90	P
								35,60	P
								36,75	P
								33,70	G
								33,70	G
								36,20	P
								39,05	P

Trgovanje električnom energijom

- Burze električne energije (HUPX-Mađarska, BSP – Slovenija)
- Stavljanje ponuda za kupnju i prodaju
- Cijena određena ponudom i potražnjom
- Rezultati jednom dnevno

Market Results - Factory View [Ipxex Trading System]

Delivery Day: 06/11/2014 Area Set: HU Area: HU-MVR Participant: HEP Portfolio: HEP-TH02 View: Overall

Hour	MCP (EUR/MWh)	MCV (MWh)	Total Schedule			Hourly Schedule			Block Schedule					
			Net	Purchase	Sale	Net	Purchase	Sale	Net	Purchase	Sale			
00 - 01	38.20	1341.5	-59.0	0.0	59.0	-59.0	0.0	59.0	0.0	0.0	0.0	0.0	0.0	0.0
01 - 02	32.99	1540.1	-60.0	0.0	60.0	-60.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0
02 - 03	30.03	1555.1	-60.0	0.0	60.0	-60.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0
03 - 04	29.61	1470.7	-103.0	0.0	103.0	-103.0	0.0	103.0	0.0	0.0	0.0	0.0	0.0	0.0
04 - 05	32.90	1573.2	-97.0	0.0	97.0	-97.0	0.0	97.0	0.0	0.0	0.0	0.0	0.0	0.0
05 - 06	44.08	1369.0	-54.0	0.0	54.0	-54.0	0.0	54.0	0.0	0.0	0.0	0.0	0.0	0.0
06 - 07	48.18	1423.8	-105.0	0.0	105.0	-105.0	0.0	105.0	0.0	0.0	0.0	0.0	0.0	0.0
07 - 08	64.02	1501.9	-118.0	0.0	118.0	-118.0	0.0	118.0	0.0	0.0	0.0	0.0	0.0	0.0
08 - 09	75.53	1450.4	-90.0	0.0	90.0	-90.0	0.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0
09 - 10	70.86	1469.7	-125.0	0.0	125.0	-125.0	0.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0
10 - 11	65.08	1536.5	-125.0	0.0	125.0	-125.0	0.0	125.0	0.0	0.0	0.0	0.0	0.0	0.0
11 - 12	65.10	1497.6	-149.0	0.0	149.0	-149.0	0.0	149.0	0.0	0.0	0.0	0.0	0.0	0.0
12 - 13	75.53	1445.5	-120.0	0.0	120.0	-120.0	0.0	120.0	0.0	0.0	0.0	0.0	0.0	0.0
13 - 14	65.04	1391.5	-114.0	0.0	114.0	-114.0	0.0	114.0	0.0	0.0	0.0	0.0	0.0	0.0
14 - 15	64.07	1543.8	-128.0	0.0	128.0	-128.0	0.0	128.0	0.0	0.0	0.0	0.0	0.0	0.0
15 - 16	64.04	1382.2	-120.0	0.0	120.0	-120.0	0.0	120.0	0.0	0.0	0.0	0.0	0.0	0.0
16 - 17	110.06	1360.1	-110.0	0.0	110.0	-110.0	0.0	110.0	0.0	0.0	0.0	0.0	0.0	0.0
17 - 18	150.03	1409.7	-55.0	0.0	55.0	-55.0	0.0	55.0	0.0	0.0	0.0	0.0	0.0	0.0
18 - 19	120.03	1530.6	-56.0	0.0	56.0	-56.0	0.0	56.0	0.0	0.0	0.0	0.0	0.0	0.0
19 - 20	130.05	1352.7	-70.0	0.0	70.0	-70.0	0.0	70.0	0.0	0.0	0.0	0.0	0.0	0.0
20 - 21	75.53	1433.1	-47.0	0.0	47.0	-47.0	0.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0
21 - 22	64.02	1390.4	-74.0	0.0	74.0	-74.0	0.0	74.0	0.0	0.0	0.0	0.0	0.0	0.0



Regionalna Energetska Borza
Regional Energy Exchange
south

Contact:
Tel: +386 1 620 76 89
Fax: +386 1 620 76 77

Market: SLO

Preliminary Information ■ Open Market ■ Market results ■

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Electricity Market Information Market XML Transaction

Market: 06/11/2014 SLO

Offers List You are here: Market > Offers List
In this section you can view the bid/offer list, etc.

Research Criteria

Market: ALL Market Operator: ALL Purpose: ALL State: ALL Hour: ALL

Reference Number: Start Date: 06/11/2014 End Date: 06/11/2014

Buttons: Reset Fields Search Export XML

Searching Result

ID	Zone	Flow Date	Mrkt	State	Purpose	Hour	Offered Quantity	Offered Price (€/MWh)	Accepted Quantity	Awarded Price (€/MWh)	Submission Date	Operator Code
52639853	BSP_SLO	06/11/2014	SLO	Valid	Sell	1	180,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639854	BSP_SLO	06/11/2014	SLO	Valid	Sell	2	260,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639855	BSP_SLO	06/11/2014	SLO	Valid	Sell	3	270,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639856	BSP_SLO	06/11/2014	SLO	Valid	Sell	4	270,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639857	BSP_SLO	06/11/2014	SLO	Valid	Sell	5	250,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639858	BSP_SLO	06/11/2014	SLO	Valid	Sell	6	180,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639859	BSP_SLO	06/11/2014	SLO	Valid	Sell	7	100,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639860	BSP_SLO	06/11/2014	SLO	Valid	Sell	8	20,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639861	BSP_SLO	06/11/2014	SLO	Valid	Sell	11	80,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639862	BSP_SLO	06/11/2014	SLO	Valid	Sell	12	100,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639863	BSP_SLO	06/11/2014	SLO	Valid	Sell	13	130,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639864	BSP_SLO	06/11/2014	SLO	Valid	Sell	14	170,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639865	BSP_SLO	06/11/2014	SLO	Valid	Sell	15	180,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639866	BSP_SLO	06/11/2014	SLO	Valid	Sell	16	180,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639867	BSP_SLO	06/11/2014	SLO	Valid	Sell	17	80,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639868	BSP_SLO	06/11/2014	SLO	Valid	Sell	21	100,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639869	BSP_SLO	06/11/2014	SLO	Valid	Sell	22	100,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639870	BSP_SLO	06/11/2014	SLO	Valid	Sell	23	200,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9
52639871	BSP_SLO	06/11/2014	SLO	Valid	Sell	24	400,000	1,00			05/11/2014 09:07:15	31X-HEP-DD-9

Trgovanje električnom energijom

- Zakup prekograničnih kapaciteta
- Stavljanje ponuda za kupnju i prodaju
- Cijena određena ponudom i potražnjom
- Rezultati jednom dnevno

Refresh | Help | Print | 08:46:37

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Secondary market

Auction List - Auction Detail
Auction Detail

Auction: D0310-061114

Auction Details | Techn. profile | Products

Alert: D0310-061114

Capacity Auction Type: Bilateral coordinated

Planned Open Date: 05.11.2014 08:45
Planned Close Date: 05.11.2014 09:15
Period Type: daily
Auction Day: 06.11.2014

Description:
Publication Date: 05.11.2014 08:37
State: GATE_OPENED
Effective Open Time: 2014-11-05 09:45:00
Effective Close Time:

Auction Documents (0 Documents available)

Techn. Parameter | Aggregated Resale Information | New | Delete | Cancel | Bid

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Auction List - Auction Detail - Bid
Bid - D0310-061114

Browse | Upload | [50kWh_DE_AT] | [50kWh_DE_AT] | Add 24 Hours | 1 | Add Row(s) | Paste from Excel [X]

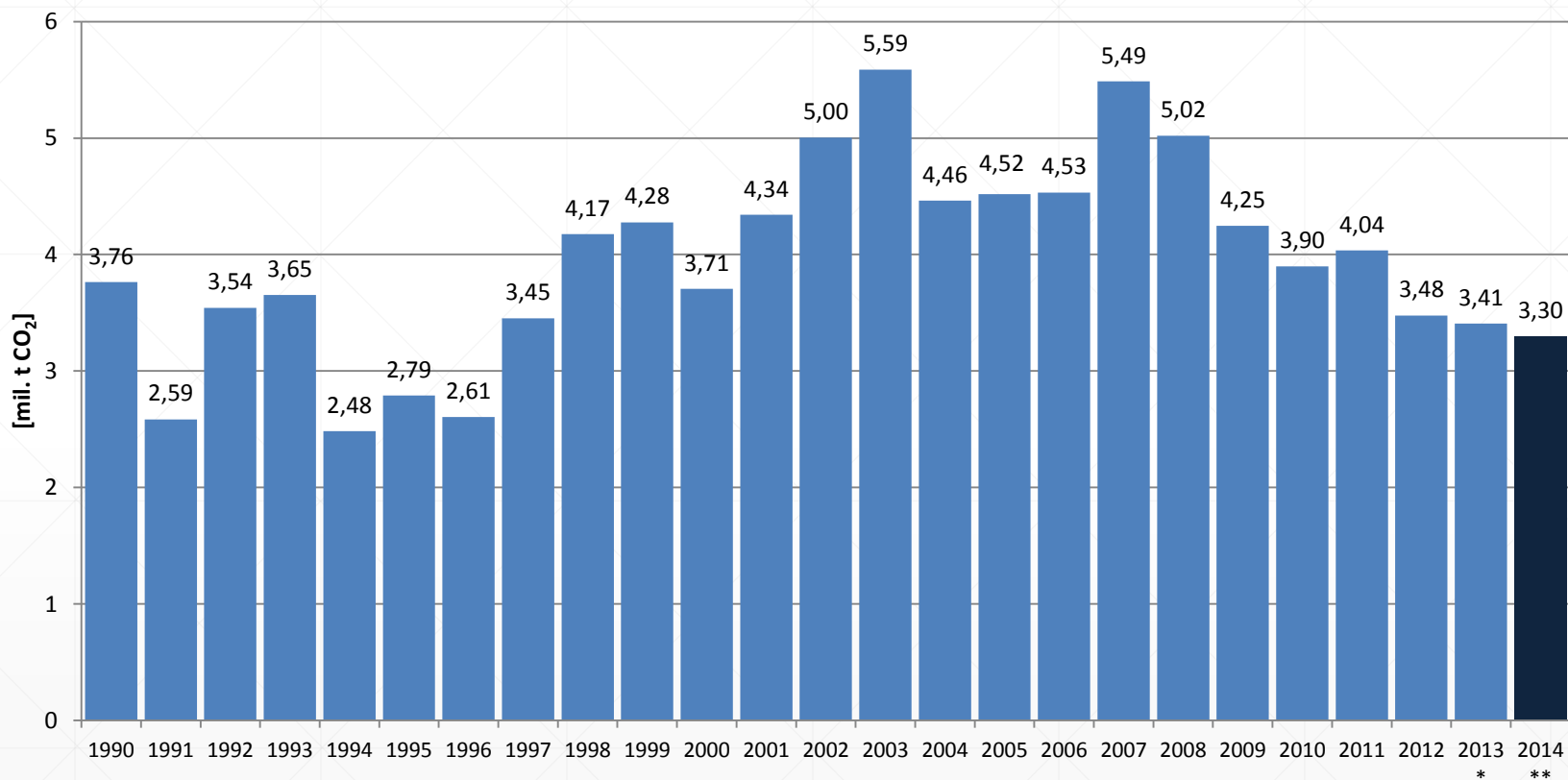
Credit Limit 2,000,000.00 EUR | Bid value 32,500.00 EUR | Utilised Credit Limit (CCL) 1,541,990.55 EUR | Details

Product	Source	HEPCS - HR	Sink	ELES - SI	Filter	Amount [MW]	Bid Price [€/MWh]	Timestamp
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M01		180	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M02		260	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M03		270	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M04		270	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M05		250	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M06		180	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M07		100	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M08		20	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M11		80	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M12		100	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M13		130	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M14		170	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M15		180	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M16		180	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M17		80	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M21		100	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M22		100	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M23		200	10.00	06.11.2014 09:00:03
HEPCS - HR	HEPCS - HR	HEPCS - HR	ELES - SI	M24		400	10.00	06.11.2014 09:00:03

Saved Bids: Bidcount: 19 | Sum of Requested MW: 3,250 | Maximum Possible Cost [EUR]: 32,500.00
Save | Delete | CSV Download

Trgovanje emisijskim jedinicama

Emitirane emisijske jedinice po godinama za HEP



EMISIJSKE JEDINICE [t]			
Godina	Ukupno	TE Plomin 1 i 2	TE Plomin 1 i 2
2005.	4.519.165	2.060.031	45,58%
2006.	4.532.294	1.911.792	42,18%
2007.	5.485.672	2.118.127	38,61%
2008.	5.018.991	2.189.305	43,62%
2009.	4.247.471	1.497.816	35,26%
2010.	3.887.696	2.153.832	55,40%
2011.	4.035.000	2.245.433	55,65%
2012.	3.477.000	2.007.071	57,72%
2013.*	3.406.815	2.129.772	62,52%
2014.**	3.300.093	2.062.085	62,49%

Trgovanje emisijskim jedinicama

- Aukcije EUA na burzi EEX
- Propisan kalendar aukcija i zemalja koje prodaju svoje emisijske jedinice
- Jednom dnevno prema propisanom kalendaru
- Cijena određena ponudom i potražnjom

The screenshot displays the EEX website interface. At the top, there are navigation links for 'Auctions', 'Imprint', and 'About'. The user is logged in as 'Petar Spric' and has options to 'Change Password' and 'Sign Out'. The main content area is titled 'List of Auctions' and shows a table of auction data. The table has columns for 'No.', 'Auction ID', 'Name', 'Phase', 'Allowances', 'Opening Time', and 'Closure Time'. The data shows 25 items, with the first 10 being 'Published' and the remaining 15 being 'Finished'. A sidebar on the left contains navigation links for 'All Auctions', 'Live Auctions', 'Finished Auctions', 'My Live Auctions', and 'My Finished Auctions'. A 'Messages' panel on the right shows a list of recent auction events with timestamps and statuses like 'accepted!', 'closed!', 'published!', and 'opened!'. At the bottom of the table, there is a pagination control showing 'Page 1 / 19, items 1...25 out of 451'.

No.	Auction ID	Name	Phase	Allowances	Opening Time	Closure Time
1	498	Auction 3rd Period DE	Published	2,352,000	21.11.2014 09:00	21.11.2014 11:00
2	497	Auction 3rd Period EU	Published	1,873,000	20.11.2014 09:00	20.11.2014 11:00
3	496	Auction 3rd Period EU	Published	1,873,000	18.11.2014 09:00	18.11.2014 11:00
4	495	Auction 3rd Period EU	Published	1,873,000	17.11.2014 09:00	17.11.2014 11:00
5	492	Auction 3rd Period DE	Published	2,352,000	14.11.2014 09:00	14.11.2014 11:00
6	491	Auction 3rd Period EU	Published	1,873,000	13.11.2014 09:00	13.11.2014 11:00
7	490	Auction 3rd Period EU	Published	1,873,000	11.11.2014 09:00	11.11.2014 11:00
8	489	Auction 3rd Period EU	Published	1,873,000	10.11.2014 09:00	10.11.2014 11:00
9	488	Auction 3rd Period DE	Published	2,352,000	07.11.2014 09:00	07.11.2014 11:00
10	487	Auction 3rd Period EU	Published	1,873,000	06.11.2014 09:00	06.11.2014 11:00
11	486	Auction 3rd Period EU	Finished	1,873,000	04.11.2014 09:00	04.11.2014 11:00
12	485	Auction 3rd Period EU	Finished	1,873,000	03.11.2014 09:00	03.11.2014 11:00
13	484	Auction 3rd Period DE	Finished	2,352,000	31.10.2014 09:00	31.10.2014 11:00
14	483	Auction 3rd Period EU	Finished	1,873,000	30.10.2014 09:00	30.10.2014 11:00
15	482	EUAA Auction EU	Finished	1,643,000	29.10.2014 09:00	29.10.2014 11:00
16	481	Auction 3rd Period EU	Finished	1,873,000	28.10.2014 09:00	28.10.2014 11:00
17	480	Auction 3rd Period EU	Finished	1,873,000	27.10.2014 09:00	27.10.2014 11:00
18	479	Auction 3rd Period DE	Finished	2,352,000	24.10.2014 09:00	24.10.2014 11:00
19	478	Auction 3rd Period EU	Finished	1,873,000	23.10.2014 09:00	23.10.2014 11:00
20	477	Auction 3rd Period EU	Finished	1,873,000	21.10.2014 09:00	21.10.2014 11:00
21	476	Auction 3rd Period EU	Finished	1,873,000	20.10.2014 09:00	20.10.2014 11:00
22	474	Auction 3rd Period DE	Finished	2,352,000	17.10.2014 09:00	17.10.2014 11:00
23	473	Auction 3rd Period EU	Finished	1,873,000	16.10.2014 09:00	16.10.2014 11:00
24	472	Auction 3rd Period EU	Finished	1,873,000	14.10.2014 09:00	14.10.2014 11:00
25	471	Auction 3rd Period EU	Finished	1,873,000	13.10.2014 09:00	13.10.2014 11:00

Trgovanje emisijskim jedinicama

- Brokerske platforme
- Moguće kupnja preko „screena”
- bilateralno trgovanje
- Broker spaja dvije strane kupnja-prodaja

Vertis live order book

Product	Bid Size ¹	Bid ²	Ask ²	Ask Size ¹	Last Close	Close Date	Last Trade ²
▶ EUA Spot...	35	6.56	6.64	22	6.33	31 Oct 2014	12:50:06 GMT
▶ CER Spot...	998	0.05	0.11	2	0.10	31 Oct 2014	03 Nov 2014
▶ EUA Dec14...	49	6.59	6.65	6	6.35	31 Oct 2014	13:27:46 GMT
▶ EUA Dec15...	59	6.70	6.77	7	6.46	31 Oct 2014	13:15:13 GMT
▶ EUA Dec16...	61	6.84	6.92	28			12:13:33 GMT
▶ CER Dec14...	1	0.06	0.11	100	0.10	31 Oct 2014	13:20:02 GMT
▶ ERU Dec14...	0	0.00	0.00	0	0.07	31 Oct 2014	03 Nov 2014

For more information please read our pdf brochures on the available product types.
Contact your Vertis trader Dávid Baranyay by calling +36 1 489 1903.

Fill out the [transaction form](#) to send us an order via fax.

¹ in lots, 1 lot is 1000 units
² Real-time

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Market

Description	Currency	Bid	Ask	% Change
CER Spot	EUR			
ERU Spot	EUR			
EUA Spot Phase 3	EUR	6.61	6.65	1.87%
EUA Dec 14	EUR	6.59	6.65	0.94%
CER Green Spot	EUR	0.06	0.11	-0.54%

Orders

Order ID	Type	Received	Security	Direction	Quantity	Price	Status	Updated	Trade Time	User
No records to view										

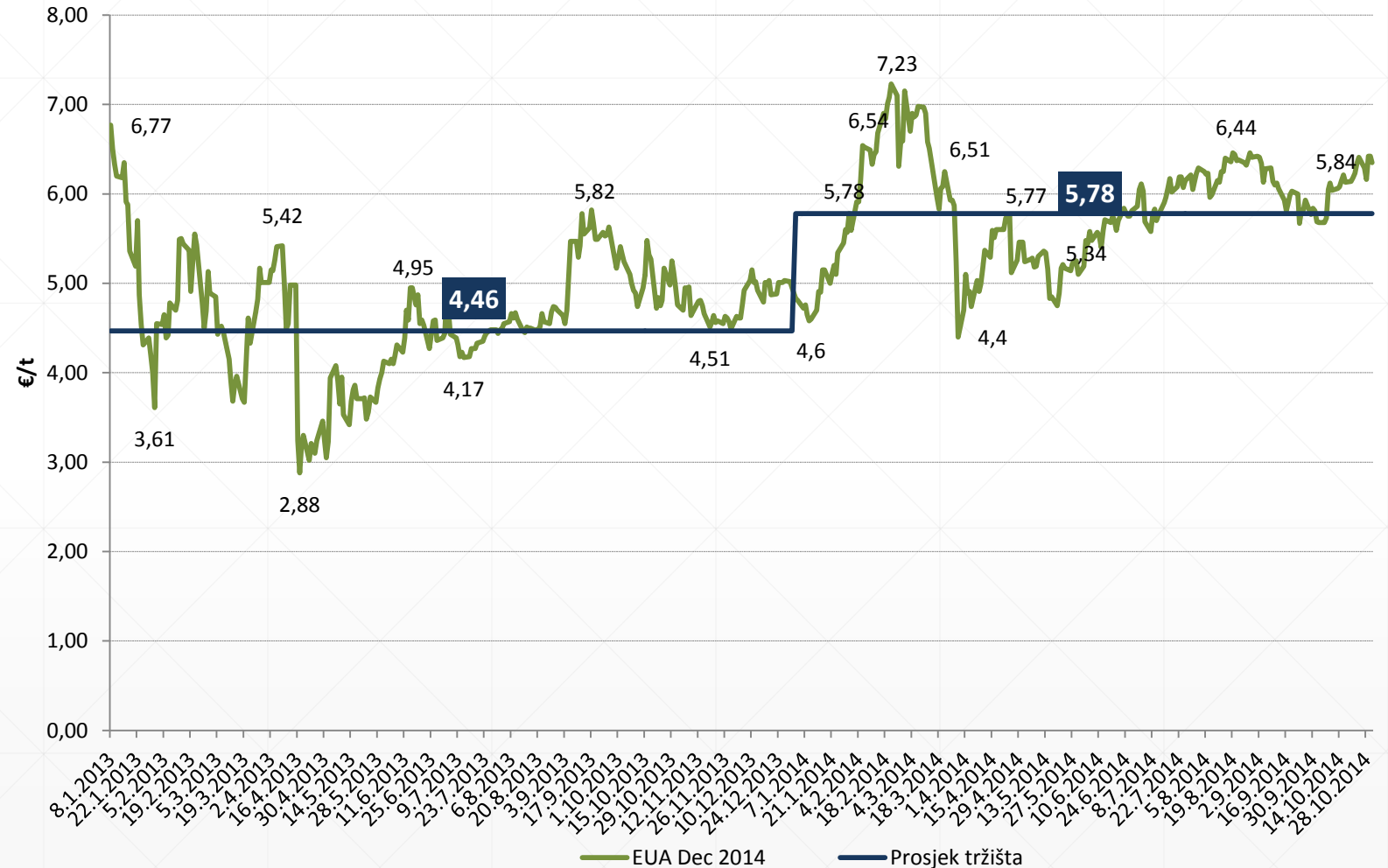
Trade History

Trade Ref	Deal Ref	CF Entity	Security	Direction	Quantity	Price	Status	date	Trade time
39723	14 EUA 39717 2703	CF Carbon Fund II	Funding charge	Sell			no-confirmed	2014-03-27 13:06:19	
39722	14 EUA 39717 2703	CF Carbon Fund II	Funding charge	Sell			no-confirmed	2014-03-27 13:06:19	
39719	14 EUA 39717 2703	CF Carbon Fund II	EUA Spot Phase 3	Buy	100,000	5.21	no-confirmed	2014-03-27 13:06:19	
39447	14 Spot 39447 2103	CF Carbon Fund II	Spot ERU	Buy	100,000	0.10	no-confirmed	2014-03-21 17:09:59	

Trgovanje emisijskim jedinicama

▪ Karakteristika cijena EUA

- Visoka volatilnost
- Ne pokazuju izravnu korelaciju sa kretanjem energetnata
- Velik utjecaj političkih odluka na kretanje cijena



Hvala na pažnji!

Marin Cerjan

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