

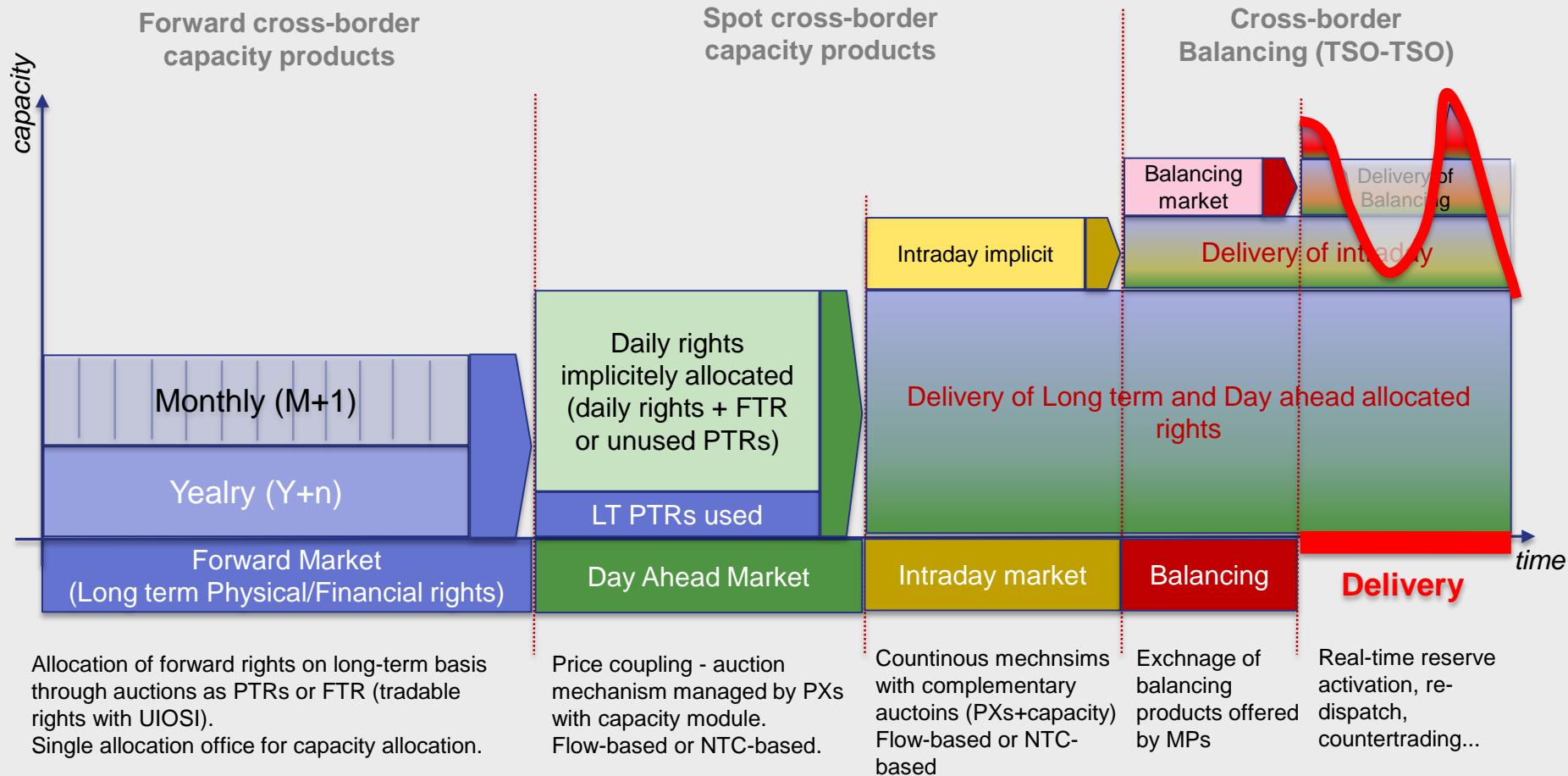


Market places & 'Lifecycle of a trade'

Arben Kllokoqi
Electricity Expert
Energy Community Secretariat

Few years after ...

European electricity target model

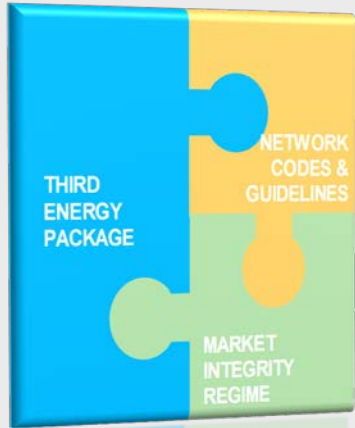


In focus

- 1 - Regulatory framework (from EU to Energy Community)*
- 2 - When did it [trading] start?*
- 3 - Electricity as commodity*
- 4 - What is trading?*
- 5 - Market places & ways of trading*
- 6 - Main trading functions*
- 7 - Lifecycle of a trade*
- 8 - Long vs short*
- 9 - Trading between markets [cross-border trading]*

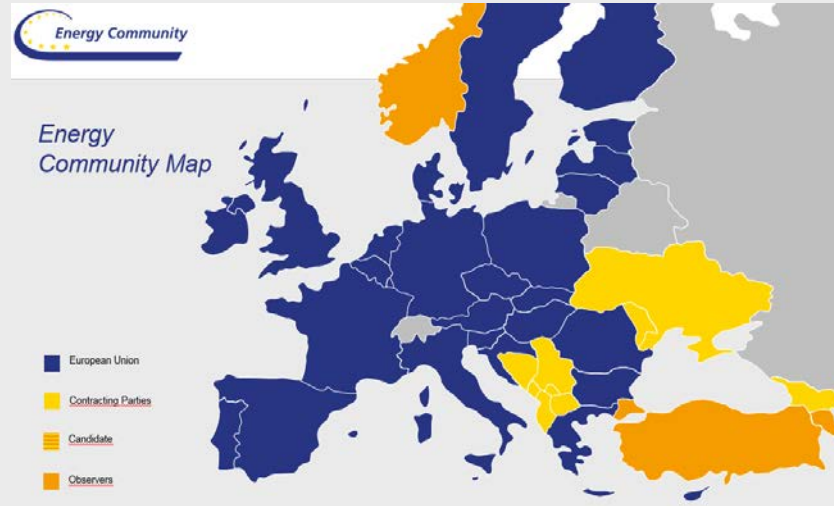
From EU to Energy Community

EU



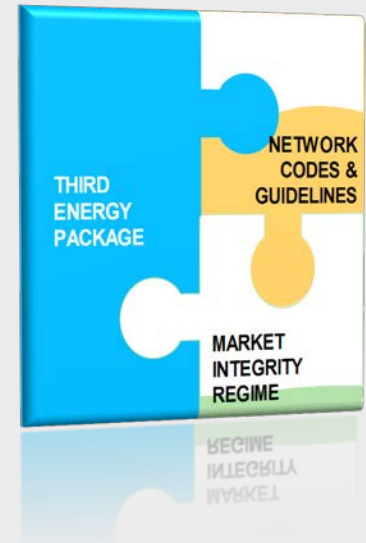
Other with significant impact:

- Climate Policies
- RES support
- Capacity support mechanisms
- Infrastructure regulation
- etc.



Energy Community Treaty
Berlin Process (WB6)

EnC



Brief history

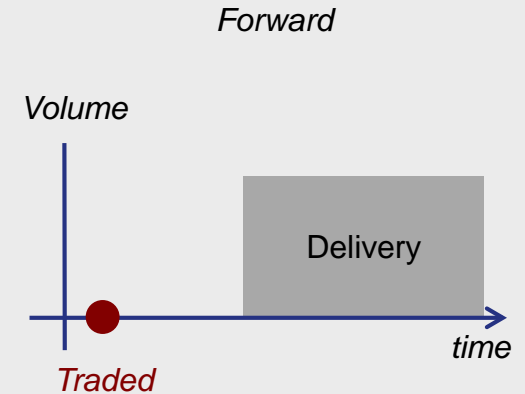
- *Energy trading markets*
 - Since the growth of oil spot markets in the late 1970s
- *In Europe*
 - Liberalisation of the energy markets played crucial role
 - Started in UK with unbundling and privatization
 - Spread throughout as a top-down approach, i.e. through legislative packages
- *Coal trading has also developed*
- *Trading of carbon emissions*
 - The creation of the EU ETS

Being a tradable good

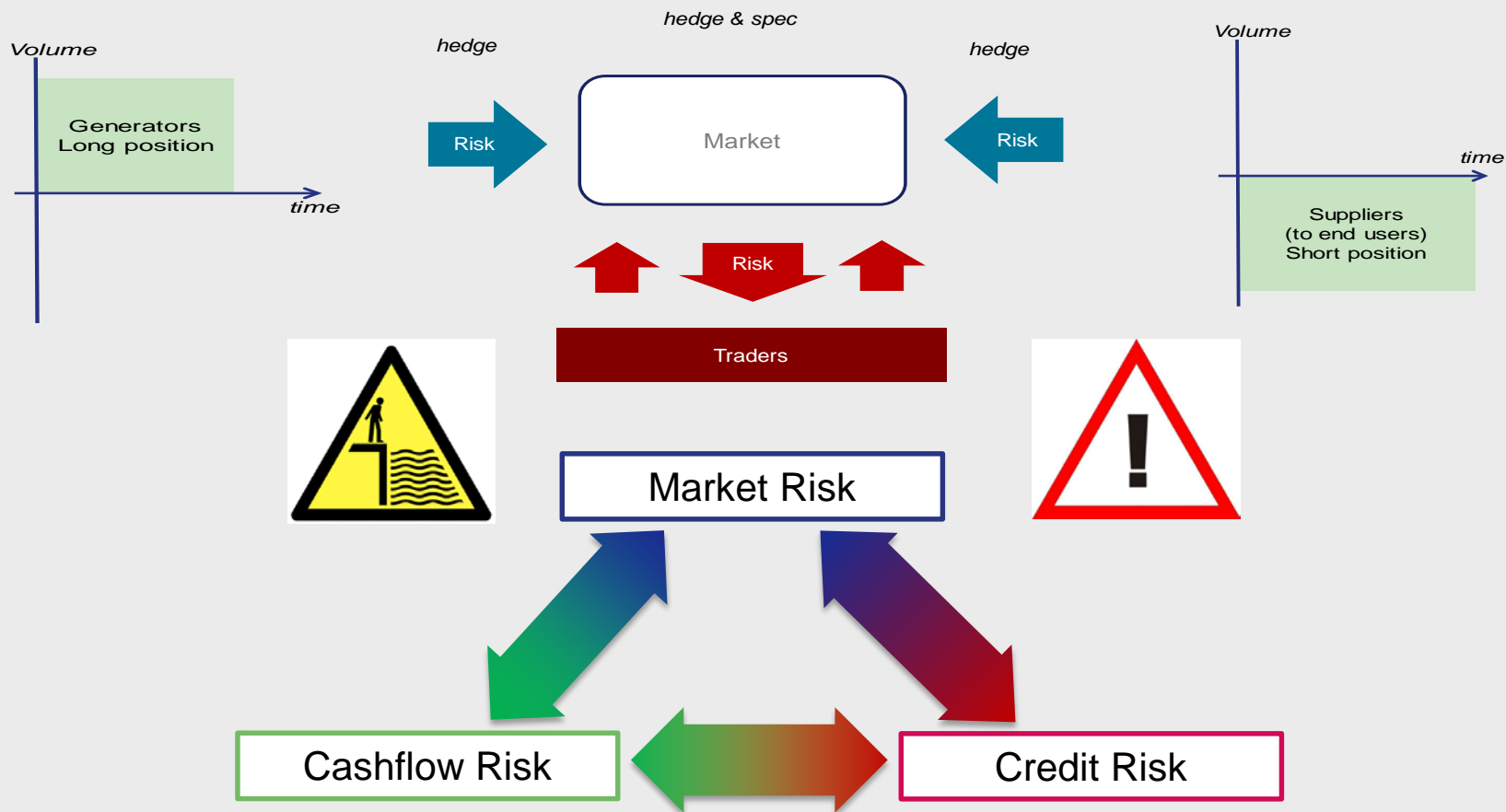
- *To be traded widely on market places*
 - Same, uniform and standardized = a commodity
 - Energy commodities: crude oil, natural gas, coal, electricity, etc.
- *Electricity as a commodity - It can't get more uniform and more standardized*
 - Cannot be stored*
 - Price correlated with other energy commodities
 - Peculiar transportation – network losses
- *Oil is the biggest energy commodity market*

Tradable contracts

- *Product specification is linked to:*
 - Place of delivery
 - Time/period of delivery (tenor)
 - Optionality
- *Primary source of energy implies the product – technology*
 - Nuclear / coal / gas = base
 - Gas / oil / hydro = flexibility (peak /hourly)
 - Wind /PV / must-run river = intermittent



Market & trading: it is all about risks!



Why trading?

Behind each trade there is a motive directly linked with commercial incentive but influenced by the risk appetite

- **Hedging:** *Trading activity to reduce the risk of adverse price movements in an asset, i.e. reduce market exposure*
- **Speculating:** *Trading activity with the expectation of price movements that will create a financial gain, i.e. taking position expecting with the expectation that the price will move in certain direction*
- **Arbitrage:** *Simultaneous purchase and sale to profit from a difference in the price, for example locational arbitrage*

Market places & ways of trading

Bilateral trading

(bilateral credit arrangements)

Bilaterally

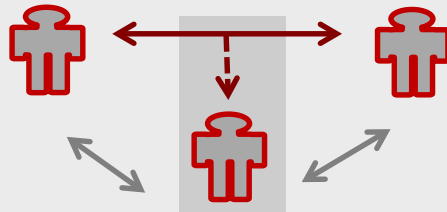
Structural/bespoke contracts



OTC

Brokers via screen or phone

Standard contracts



Exchange

(centrally cleared contracts)

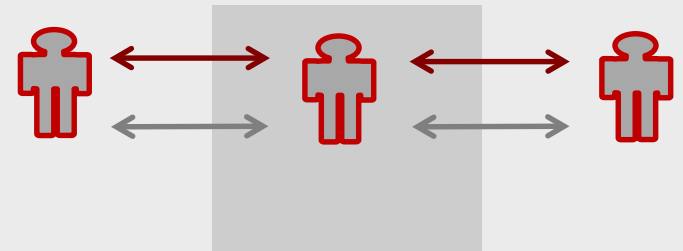
Continuous trading

Standard contracts

Auctions

Hourly day-ahead products

Intraday too, in some cases



Key trading terminology

- Contract specification is shown on the screen
- Quantity and prices
 - **Bid** is the price at which certain market participants are willing to buy
 - **Ask** is the price at which certain market participants are willing to sell
- Putting Bid/Ask on the screen – *initiator*
- Clicking on Bid/Ask – *aggressor*
- The result of trade execution is:
 - Taking short (sold) or long (purchased) position, or
 - Offsetting a previously taken position

Germany Baseload*										
	Venue	Code	Qty		Bid	Ask	Qty	Code	Venue	Last
	EEX	EEX	17	H	44.35	44.62	L	5 ²	EEX	44.60
	OTC	²	17	H	44.33	44.65		10 ICA8	OTC	44.70
+ - Mar-18	OTC	SPEC	5		36.40	36.55	L	5 EEX	EEX	36.40
	EEX	²	5		36.37	36.58	L	5 ²	OTC	36.30
	OTC	SPEC	10		36.30	36.65	L	10 SPEC	OTC	36.40
+ - Apr-18	OTC	GRFN	10	H	33.50	35.10	L	25 EEX	EEX	34.85
	EEX	²	5	H	33.47	35.13	L	5 ²	OTC	34.85
	EEX	EEX	10	H	33.15					35.00
	OTC	²	5	H	33.12					34.80



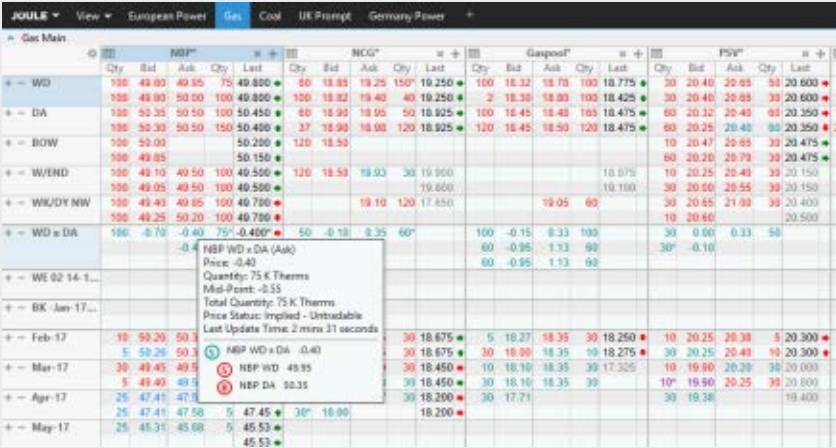
PXs in Europe

- *Most (if not all) are members of Europex <http://www.europex.org/members/>*
- *Almost every country in EU has a PX for DA auctions and futures (derivatives)*
- *Counterparty is Clearing House/PX*
- *Transparent for general public (price, volume and products)*
- *From next week products up to few years ahead*
 - For example Cal 18 traded at HUPX
- *For delivery into specific market/TSO (underlying market if financial)*
 - Delivered at Hungarian TSO (MAVIR) or settled against HU DAM/HUPX
- *Margining and settlement with the Clearing House*
 - Cleared through ECC (HUPX clearing house)

OTC in Europe

- *Trayport (Global Vision – GV) is an amalgamation of brokers platforms*
<https://www.trayport.com/uk/home>
 - Not transparent for general public – can be bought as read only
- *Standard bilateral contracts (Master agreement)*
 - EFET/GTMA contracts (physical)
 - ISDA contract (financial)
 - Margining exchanged bilaterally
 - Set-up with the broker
 - Execution on screen/phone
- *Trayport is used by PXs too*
- *LEBA – association of brokers*
 - Reports on volume traded

<https://www.leba.org.uk/pages/index.cfm>



Contract	Qty	Bid	Ask	Qty	Last	Qty	Bid	Ask	Qty	Last	Qty	Bid	Ask	Qty	Last	Qty	Bid	Ask	Qty	Last
WD	100	49.80	49.95	75	49.800	80	18.85	19.25	150*	19.250	100	18.32	18.70	100	18.775	30	20.40	20.85	50	20.600
DA	100	49.80	50.00	100	49.800	100	18.32	19.40	40	19.250	2	18.38	18.80	100	18.475	30	20.40	20.85	30	20.600
BDW	100	50.25	50.50	150	50.400	37	18.90	19.00	120	18.925	120	18.45	18.50	120	18.475	60	20.25	20.40	80	20.350
W/END	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
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W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
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W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
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W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
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W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
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W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	20.40	30	20.150
W/DA	100	49.85		50	50.150	120	18.50	18.90	30	19.900					18.875	10	20.25	2		

OTC price reports



European Daily Electricity Markets



Energy Prices | News | Analysis

Section 1

News
 Commission still assessing impact of SEE winter crisis
 UK developer plans subsidy-free solar plant
 Polish coal supplier likely to increase its prices for 2018

Section 2

Markets

3 Back pages

- OTC price data is obtained by subscription to a market report published by a price reporting agency

- Platts
- ICIS Heren
- Argus Media

- Daily reports with prices and market news

HEREN UK INDICES €/MWh

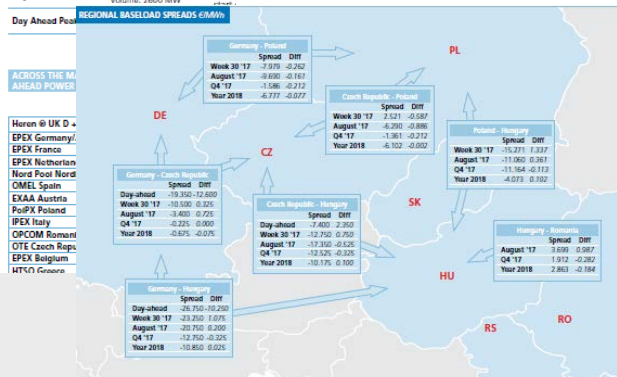
July	€40.228/MWh
Day Ahead	€37.141/MWh Volume: 2205 MW
Day Ahead Peaks	€41.333/MWh Volume: 150 MW

HEREN GERMAN INDICES €/MWh

July	€32.563/MWh
Day Ahead	€35.776/MWh Volume: 5300 MW
Day Ahead Peaks	€37.262/MWh Volume: 3025 MW

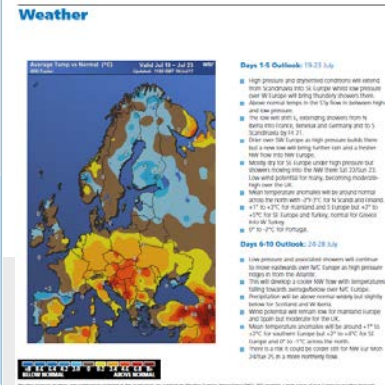
HEREN FRENCH INDICES €/MWh

July	€34.388/MWh
Day Ahead	€38.159/MWh Volume: 2600 MW
Day Ahead Peaks	



GERMAN MARKET 18 JULY 2017 €/MWh

Period	Bid	Offer	Diff	Change %	Data Used	Bid	Peaks Offer	Diff	Data Used
Day-ahead	35.55	35.75	-2.600	-6.80	T	37.15	37.35	-2.250	T
Wednesday	35.55	35.75	-0.550	-1.52	T	37.15	37.35	-1.250	T
Thursday	38.00	39.00	1.000	2.67	B	41.50	42.20	1.850	B
Friday	37.00	37.50	n/a	n/a	B	39.95*	40.95*	n/a	F
Weekend	30.00	30.50	0.625	2.11	B	n/a	n/a	n/a	n/a
Week 30 '17	32.50	33.00	-0.425	-1.28	B	37.75	38.75	0.125	B
Week 31 '17	30.75	31.15	-0.800	-2.52	B	36.25	36.75	-0.500	T
August '17	32.10	32.15	-0.250	-0.77	B	37.00	37.60	-0.275	B
September '17	34.00	34.30	-0.225	-0.66	B	40.00	40.50	-0.100	B
October '17	35.00	35.20	-0.275	-0.78	B	42.00	43.00	-0.125	B
November '17	36.90*	37.90*	-0.100	-0.27	I	46.50*	47.50*	-0.150	I
Q4 '17	35.75	35.85	-0.125	-0.35	B	44.70	45.10	-0.125	B
Q1 '18	35.60	35.90	-0.075	-0.21	B	44.80	45.00	0.100	B
Q2 '18	28.50	28.65	-0.175	-0.61	B	34.35*	35.35*	0.100	I
Q3 '18	29.05	29.30	0.250	0.86	B	34.45*	35.45*	0.100	I
Q4 '18	33.05*	33.35*	0.200	0.61	B	42.40*	43.40*	0.100	I
Q1 '19	32.35*	33.35*	-0.100	-0.30	I	42.35*	43.35*	-0.150	I
Year 2018	31.65	31.70	0.050	0.16	B	39.20	39.60	0.100	B
Year 2019	29.30	29.40	0.075	0.26	B	37.00	37.20	-0.125	B
Year 2020	29.30	29.40	0.050	0.17	B	37.20*	37.70*	0.100	T
Year 2021	30.35*	30.45*	0.400	1.33	B	38.30*	39.30*	0.050	I



Trading from inside the trading firms

Front office

Analysts

Traders

Originators

Operations

Middle office

Credit

Market

Product control (P&L)

Settlement

Reporting

Back office

Treasury

Finance /Accounting

Tax department

Legal / Regulatory / Compliance



Trade lifecycle – getting ready

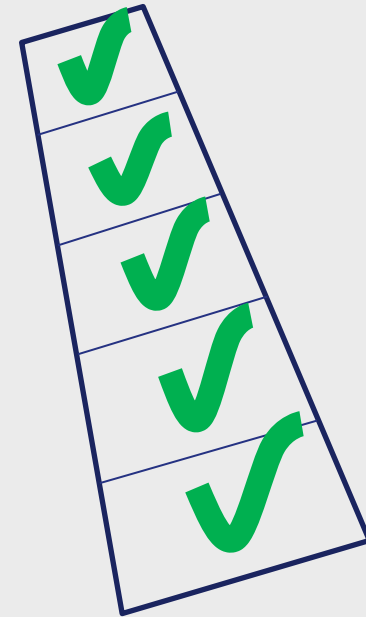
Entering new market

(internal)

1. Business case
2. Market assessment
3. Legal and Regulatory assessment

(external)

4. License with the Regulator- if needed
5. Balance Responsible Party with the TSO to be able to use transmission network
6. PX/Clearing House registration
7. Bilateral arrangements

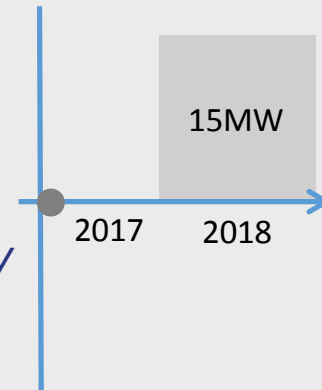


Trade lifecycle – trade in embryo

- *Each desk / trader is given a risk mandate – exposure allowed to take ... say for a year ahead products*
- *Analysts look at supply and demand conditions, network capabilities, constrains, weather forecasts, hydrological forecast (also based on previous years)*
 - Also any information on new investments, or other information that might affect fundamentals for the coming year
- *Credit team sets up credit arrangements (margining; bilateral or centrally)*
- *Trader makes price assessment – forward curves (expectation where the price is expected to trade, expected/target P&L)*

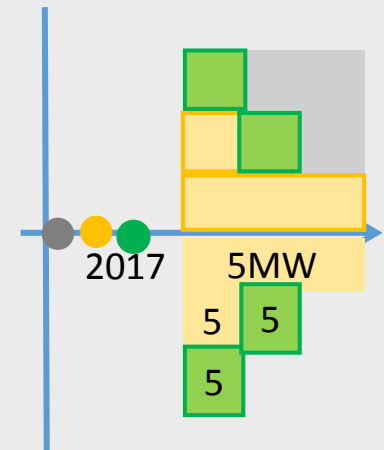
Trade lifecycle – trade execution

- *Considering potential limitations and assessments made, the trader choses the product and venue (including volume, price & direction)*
 - Check the screen to buy 15 MW of Cal18 Base, delivery @ MAVIR :
 - If a price is offered on screen (by an initiator) – the traders clicks and executes the purchase (he is the aggressor), or
 - He puts a bid at a the price x and waits for an aggressor
- *Once the trade is executed it is booked in the system (deal capture)*
- *Settlement/confirmation team confirms the trade with the broker and the counterparty (via electronic platform, email or fax ...)*
- *Executed trade is reported (REMIT/EMIR)*
- *P&L team calculates the P&L at the end of the day*
- *Market risk may update the risk mandate on daily basis if high price volatility*
 - Potential margin updates



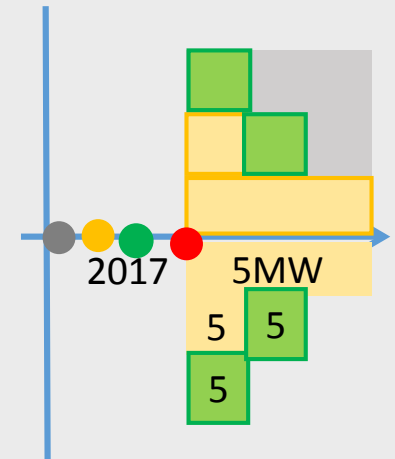
Trade lifecycle – portfolio management

- *Trader has a long position of 15MW of Cal18 Base, delivery @ MAVIR*
- *Based on price assessments, fundamental analyses and any limitations, it may:*
 - Sell part or all 15MW as Cal18 Base product
 - Wait until close to delivery and sell Month-ahead, Quarter-ahead, Day-ahead or Intraday ...
- *It chooses to sell 5MW as Cal18 Base, delivery @ MAVIR and 5MW as Q1 2018*
- *Later it sells another 5MW as Q1 2018 Base and 5MW Q2 2018*



Trade lifecycle – delivery

- Q1 2018 is flat but needs to be delivered
- Delivery involves nomination with the TSOs – this case with MAVIR
 - Take delivery of 15MW from CPs X and Y
 - Deliver to CPs A and B
 - Nomination is done usually on D-1 before 2pm (x-border nomination is different) – by the Operation team
- *The remaining opening position is traded quarter/month/week ahead and/or day-ahead and intraday*

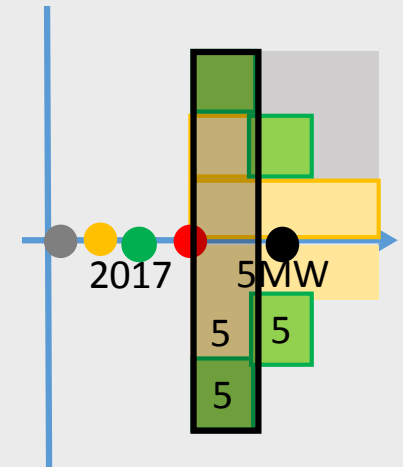


Trade lifecycle – delivery from TSOs' perspective

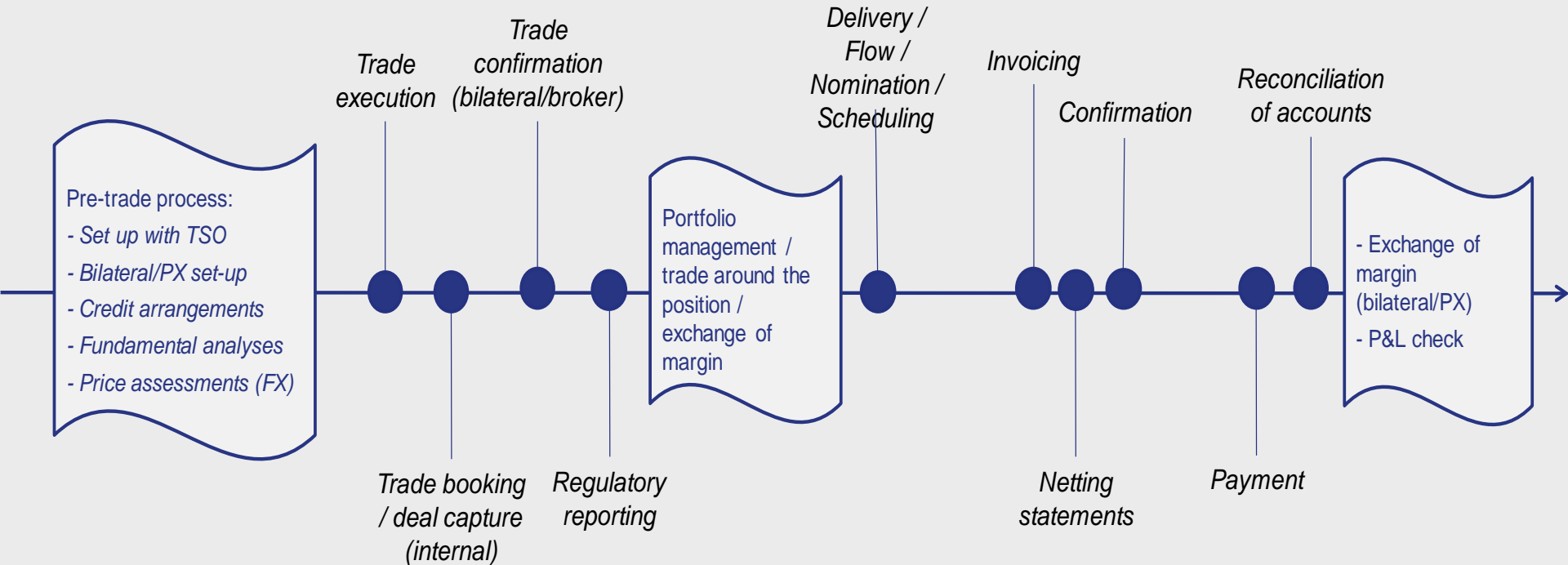
- *Both counterparties to the trade send the nomination to the TSO*
 - Usually is the net position of many trades between themselves
 - Nominations should match, otherwise the TSO will not accept or apply the lesser rule
- *Position of each market participant should be flat*
 - Open position may be allowed for example from long-term nominations to day-ahead or even intraday (depends from TSOs rules)
 - Imbalances can be a result of non-flat nomination (as a trader no gen. or cons. assets)
- *As a generator, the nomination with the counterparties should match, however the nominated position is then checked against actual production*
 - The difference is the imbalance

Trade lifecycle – financial settlement

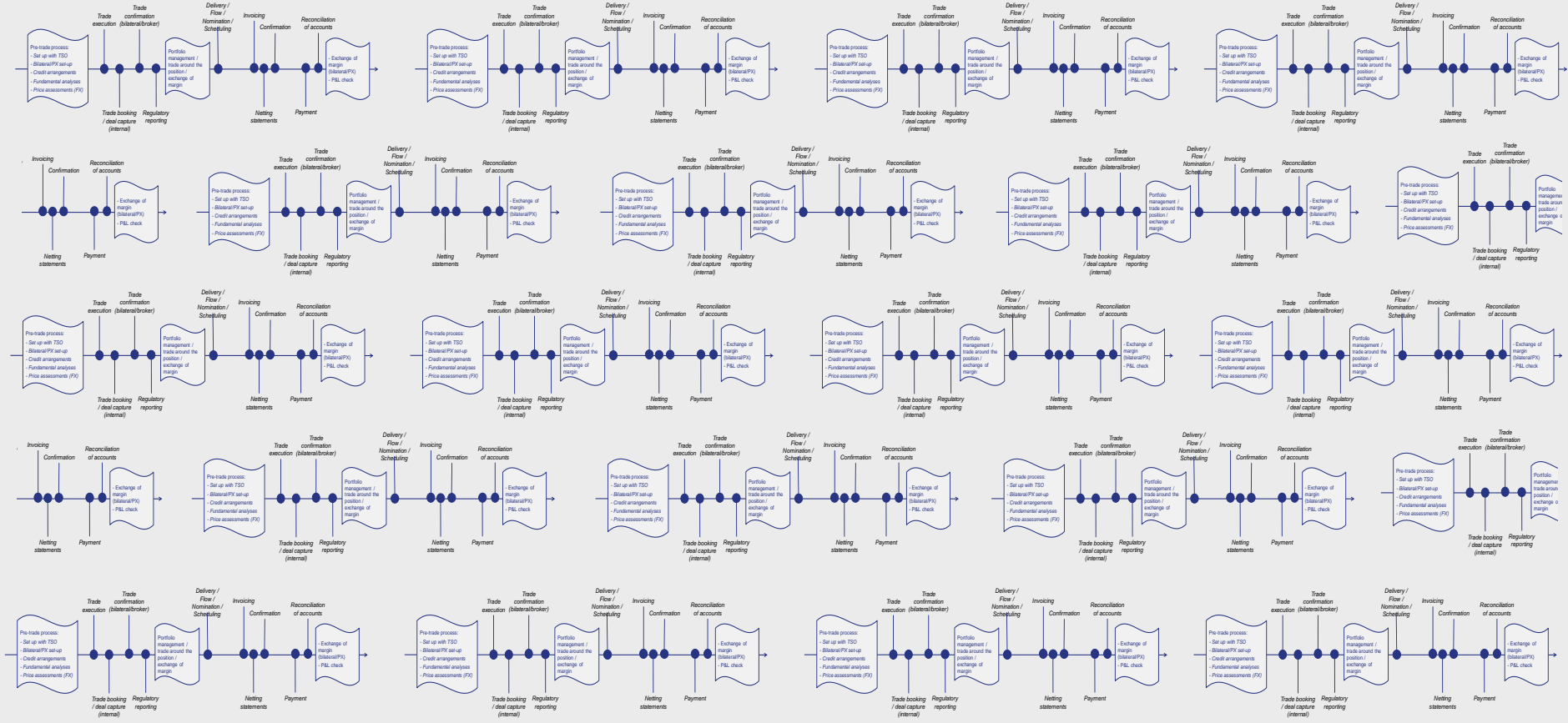
- *Few days after the delivery month, the invoices are issued by counterparties (or PXs)*
- *Trading firms apply netting of payments so netting statements are exchanged and final payment/direction is confirmed by middle office*
- *Treasury team ensures the payment is made (cash transfer)*
- *Accounting confirm the records – daily reconciliation of accounts*
- *After the payment credit exposure changes – credit updates the exposure*



Recap of the trade lifecycle

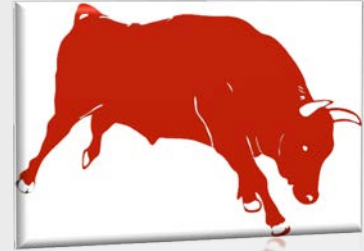


Multiply this by X times

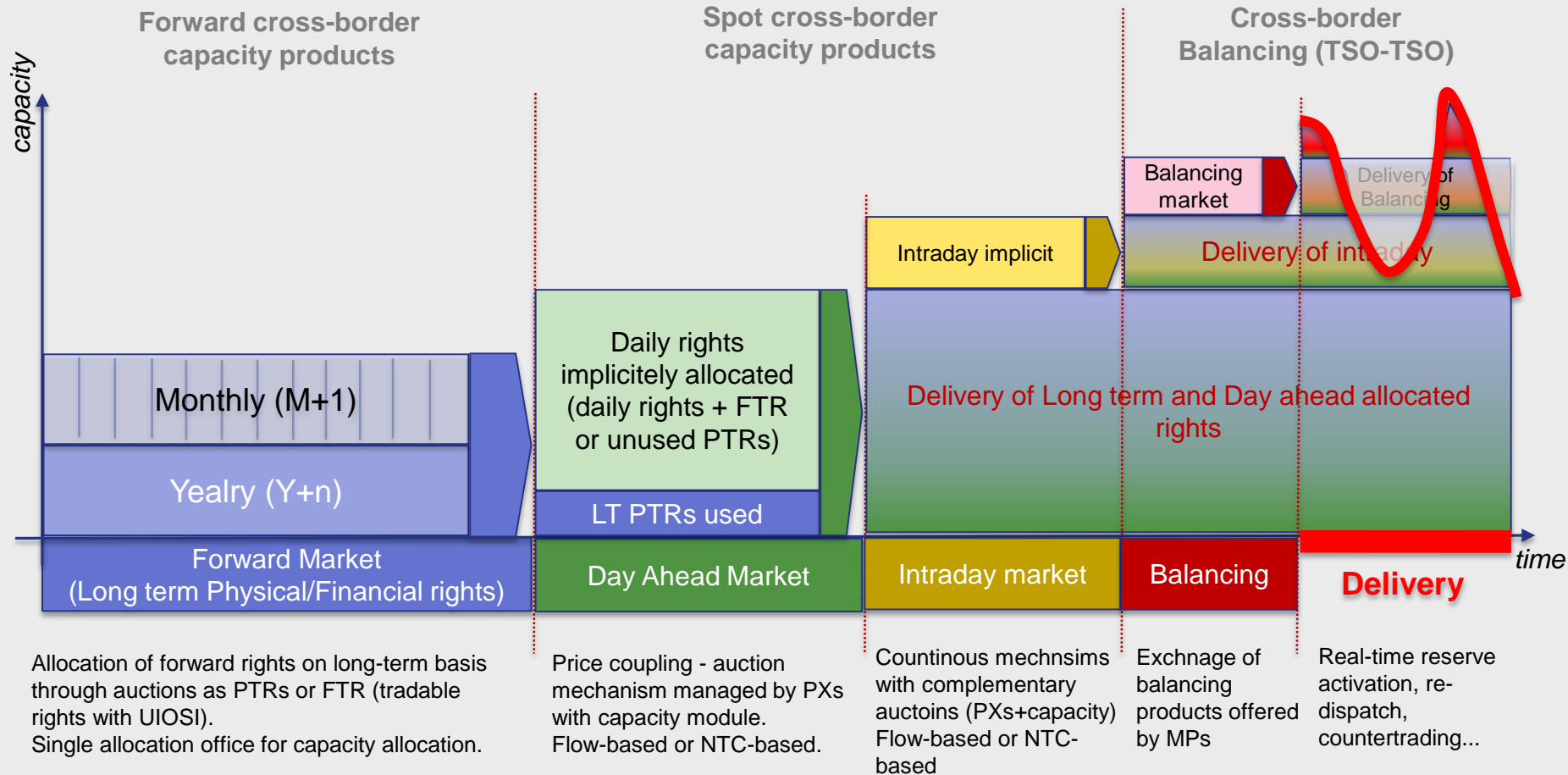


Result is ...

- *Building up position:*
 - Long, bought electricity for future delivery so you need to sell it before the delivery comes
 - You are effectively a ‘generator’
 - You expected that price will go up in shorter term market
 - You were bullish
 - Short, sold electricity for future delivery so you need to buy it before the delivery comes
 - You are effectively a ‘supplier’ to end users
 - You expected that price will go down in shorter term market
 - You were bearish
- *Have an offset position*



From one zone to another; cross-border trading



Thank You!

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