

The Clean Energy Package and Impacts on Energy Trading

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EEX is the home of Power Futures Trading in Europe

EEX connects **264** trading participants from **28** countries:

8 Austria	1 Luxembourg
1 Belgium	10 Netherlands
1 Bulgaria	6 Norway
1 Croatia	10 Poland
20 Czech Republic	1 Portugal
7 Denmark	3 Romania
2 Finland	4 Slovakia
13 France	4 Slovenia
57 Germany	14 Spain
2 Greece	3 Sweden
3 Hungary	20 Switzerland
1 Ireland	33 United Kingdom
34 Italy	

5 non-European participants
Canada, Cayman Islands, USA



- Exchange traded EEX Power Futures
- EEX Trade Registration Services for Power Futures
- New Market Area

Contract Underlying: The Spot Market Index

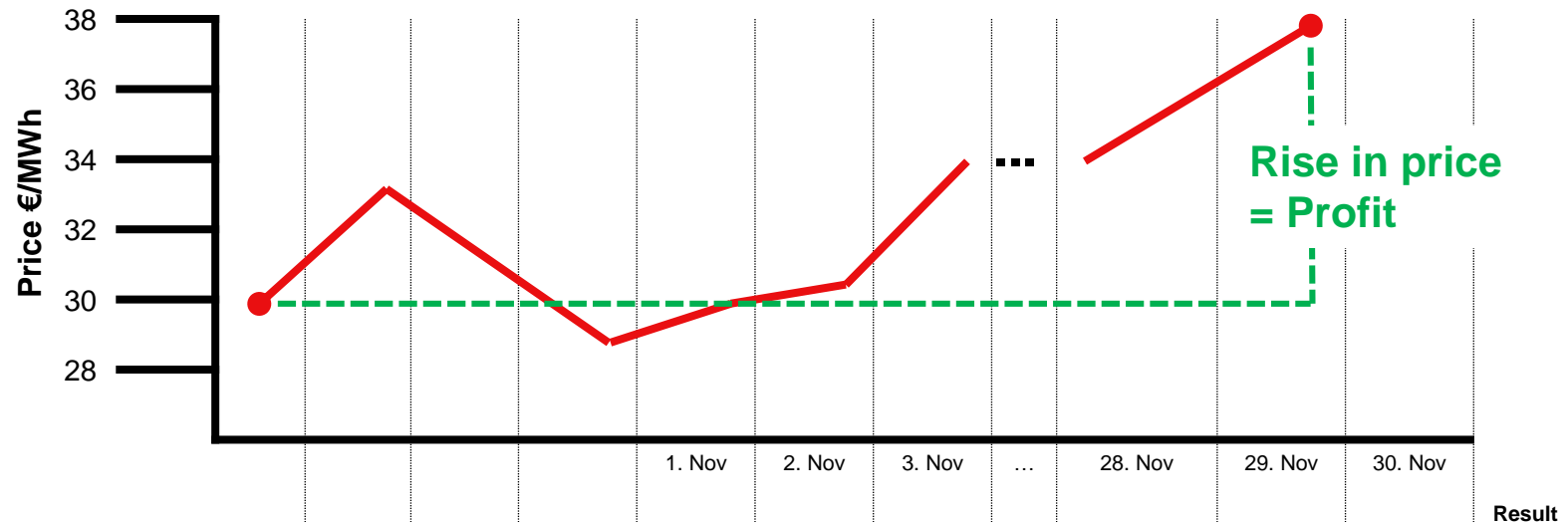
Contract Specification for the EEX Phelix-DE Power Future

Germany Base & Peak	Underlying	Index based on the hourly prices determined by EPEX Spot for the market area that comprises the control area operated by Amprion GmbH (AMP) , calculated for a particular delivery date, for the hours between 00:00 (CET) and 24:00 (CET) for all days of the respective delivery period for base / for the hours between 08:00 am and 08:00 pm for all days of the respective delivery period for peak.
	Available delivery periods	At maximum the following delivery periods can be traded: <ul style="list-style-type: none"> • the next 34 days (DB01-DB34, DP01-DP34) • the next 5 weekends (DWB1-DWB5, DWP1-DWP5) • the current and the next 4 weeks (DEB1-DEB5, DEP1-DEP5) • the current and the next 9 full months (DEBM, DEPM) • the next 11 full quarters (DEBQ, DEPQ) • the next 6 full years (DEBY, DEPY)
	Contract Volume	= Number of contracts (lot size) x Contract volume (24h base load or 12h peak load) x Number of delivery days 1 Future Month contract base : 1 x 24 x number of delivery days (April = 720 MWh)
	Minimum lot size	1 MW
	Volume increment	1 MW
	Price unit	€/MWh, 2 decimal digits
	Price tick	0.01 €/MWh

Financial Futures: How do they work?

Example payment of a long Power Futures position

Purchase 1 month November Future at 30 €/MWh



												Result
Trade price [€/MWh]	30											
Settlement price [€/MWh]	31	33	31	29	30	31	34	...	36			
Final settlement price [€/MWh]										38		
Change [€/MWh]	+1	+2	-2	-2	+1	1	+3	...	+2	+2		+8
Contract volume [MWh]	720	720	720	720	720	720	720	...	720	720		720
Position	1	1	1	1	1	1	1	...	1	1		1
Variation margin [€]	+720	+1,440	-1,440	-1,440	+720	-720	+2,160	...	+1,440	+1,440		+5,760

- The last variation margin is called **cash settlement**
- **Margin Payments** and final cash settlement is entirely handled by the clearing house, ECC

EEX lists Power Derivatives in 17 EU Markets

	Base							Peak						
	Day	WkEnd	Week	Month	Quarter	Season	Year	Day	WkEnd	Week	Month	Quarter	Season	Year
DE/AT (Phelix)	14	2	5	10	11		6	14	2	5	10	11		6
DE (Phelix)	14	2	5	10	11		6	14	2	5	10	11		6
AT (Phelix)				10	11		6				10	11		6
FR	14	2	5	7	7		6	14	2	5	7	7		6
IT	14	2	5	7	7		6	14	2	5	7	7		6
ES	14	2	5	7	7		6							
NL	14	2	5	7	7		6	14	2	5	7	7		6
BE				7	7		6							
CH	14	2	5	7	7		6							
Nordic			5	7	7		6							
UK	14	2	5	4	4	4	2			5	4	4	4	2
GR (TR only)				7	7		6							
CZ	14	2	5	7	7		6	14	2	5	7	7		6
PL				7	7		6				7	7		6
SK				7	7		6				7	7		6
HU	14	2	5	7	7		6	14	2	5	7	7		6
RO			5	7	7		6			5	7	7		6
SI			5	7	7		6			5	7	7		7
RS			5	7	7		6			5	7	7		7

The CEP: Key 2030 Targets

40%

Cut in **greenhouse gas emissions** (at least)

32%

Renewable energy generation (at least)

32.5%

Increase in **energy efficiency** (at least)

The Clean Energy Package: Key Components and Content

Market Design

Regulation on the internal electricity market

Directive on common rules for the internal market in electricity

Regulation on establishing an Agency for the Cooperation of Energy Regulators (ACER)

Regulation on risk-preparedness in the electricity sector

Governance

Regulation on the governance of the Energy Union

Renewable Energy

Directive on the promotion of use of energy from renewable sources

Other legislations

EE, EPB, Eco-design

Assessing the CEP: Wholesale Market Design

THE CEP WILL IMPLEMENT

- **Energy-only market** as **target model** for power markets
- Strict rules for **capacity markets**
- Important role of **market-based price signals** and price formation for the efficient functioning of wholesale energy markets

IMPACT ON ENERGY MARKETS

- **Strengthened role** of market and market places
- Free and undistorted **price formation**

Assessing the CEP: Organised Marketplaces

THE CEP WILL IMPLEMENT

- Recognition of the **role of long-term markets** for delivering the energy transition in Europe
- Any **regulatory change** must take into account the effect on long-term markets
- Energy exchanges' prerogative to develop **products and trading opportunities** is explicitly recognised
- Market operators are also allowed to facilitate trading energy

IMPACT ON ENERGY MARKETS

- Acknowledges exchanges as a **critical component** of the future energy market design
- Identifies the central value of **long-term markets**
- Recognition of the value of trading as close to **real time** as possible

Assessing the CEP: Bidding Zones

THE CEP WILL IMPLEMENT

- No **deadline** for the implementation of new bidding zone configurations
- Member States to reserve **70%** of the available grid cross-border capacities for physical (Spot) electricity trading

IMPACT ON ENERGY MARKETS

- No specific deadlines for the implementation of bidding zone changes: **positive** as to avoiding constraints (DE-AT BZ experience) but **risky** as to national interpretation
- 70% cross-border capacity: **encouraging** as to cross-border trading, but the impact on potential for BZ reconfiguration needs to be assessed carefully

Assessing the CEP: Renewable Energy Market Integration

THE CEP WILL IMPLEMENT

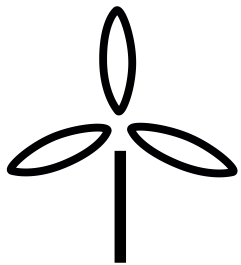
- **Renewables** granted less derogations from balancing responsibilities and priority dispatch
- Over the counter long-term hedging contracts (**PPAs**) are recognised but not granted any preferential conditions

IMPACT ON ENERGY MARKETS

- More renewable energy operators to actively **participate in the market**
- Market-based solutions to support PPAs, which at the same are not offered **preferential conditions**

How are EEX Members active in PPAs?

RE Developers sell Power via Long-Term PPAs



EEX Members buy Power via Long-Term PPAs and build RE assets



EEX Members provide balancing services on Spot & hedge via Futures



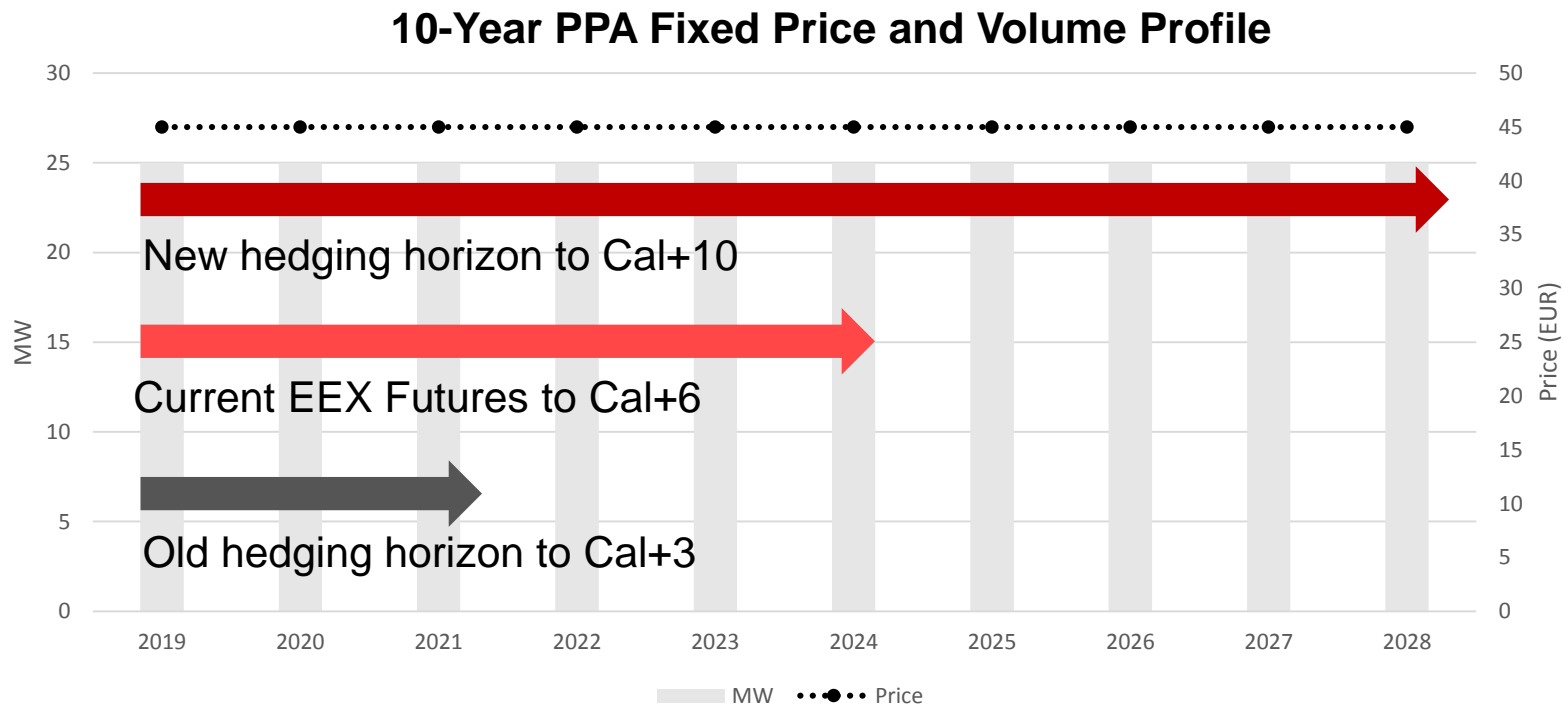
Banks provide financing once PPA is in place



EEX Members sell Power from their own RE assets via LT Corporate PPAs



Synthetic PPAs affect the hedging profile of EEX Members and extends it to the long-term



- EEX members have been using **Power Futures to hedge merchant risk from conventional power plants** for years
- EEX is investigating **listing further calendar expiries to Cal+10** to support long-term hedging of Renewable Energy assets

How do EEX Power Derivatives help to mitigate PPA Price Risk?

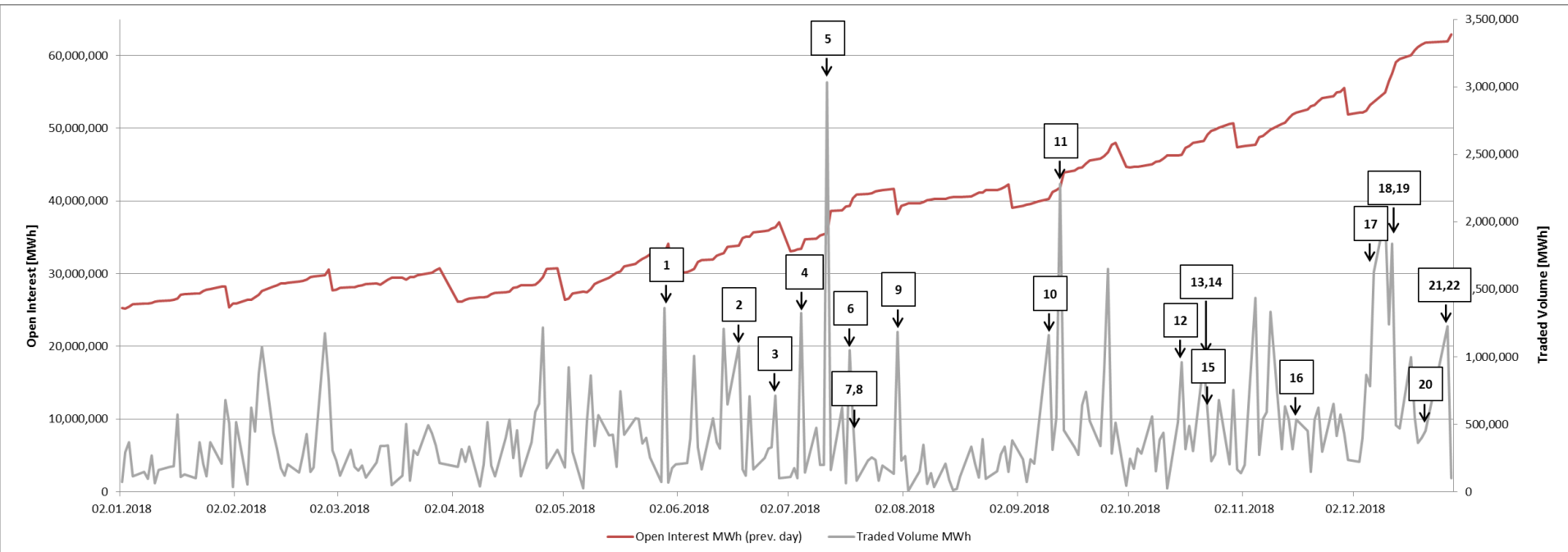
- Market participants who enter into long-term PPAs can **register a strip of cash-settled calendar futures out to Cal+6** for clearing with EEX.
- This means that **sellers can lock in a secure cash flow for up to 6 years**, for the sale of electricity in the respective market area
- Buyers lock in a **guaranteed price of purchase** for up to 6 years, providing **certainty** on their future electricity price and **protecting against upswings**
- Therefore the purchase or sale of electricity derivatives provides **long-term price risk hedging** together with **counterparty risk mitigation** through the ECC clearing house.
- Since 29th May 2018, **23** long-term hedges of **calendar contracts up to 2024** have been registered OTC in Spanish Power, with a total volume of **13.9 TWh**.

Example Long-Term hedge cleared on Spanish Power on 23.10.18

Trade Date	Product	Expiry Year	Expiry Month	Trade Price	Initial Margin per Contract	Lots	Initial Margin (in EUR)	Trade Volume (in MWh)	Notional Value
23/10/2018	Spanish Power Base Year	2019	12	51.65 €	18,133 €	5	90,665 €	43,800	2,262,270 €
	Spanish Power Base Year	2020	12	51.65 €	14,317 €	5	71,585 €	43,800	2,262,270 €
	Spanish Power Base Year	2021	12	51.65 €	12,614 €	5	63,070 €	43,800	2,262,270 €
	Spanish Power Base Year	2022	12	51.65 €	19,535 €	5	97,675 €	43,800	2,262,270 €
	Spanish Power Base Year	2023	12	51.65 €	26,280 €	5	131,400 €	43,920	2,268,468 €
	Spanish Power Base Year	2024	12	51.65 €	30,393 €	5	151,965 €	43,920	2,268,468 €
							606,360 €	263,040	13,586,016 €
Initial Margin in % of Notional Value									4.46%

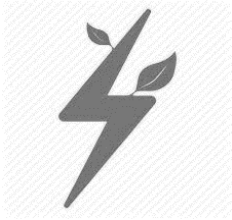
- A 5 MW long-term hedge was cleared in Spanish Power on 23 October 2018, with an **initial margin requirement of 606,360 EUR**
- The **execution price of each trade** was **51.65 EUR**
- The **Initial Margin percentage** of the notional value of the trade was **4.46%**

Long-term Hedges contribute to overall Open Interest in Spanish Power



- Long-term hedges cause **volume spikes** and contribute to Open Interest

Renewable PPAs are an enabler of the Energy Transition



PPAs are an enabler of new Renewable Energy developments....



...but the market is in need of more standardisation and better risk management products in order to grow and meet the EU's ambitious targets.



Major energy players are already starting to hedge their long-term price risk with standard EEX products.



EEX will ensure we remain part of our Members' long-term hedging strategy, and explore opportunities to build new PPA-related products.

Thank you!

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