

# EEX Power Derivatives PPAs and Long-Term Hedging

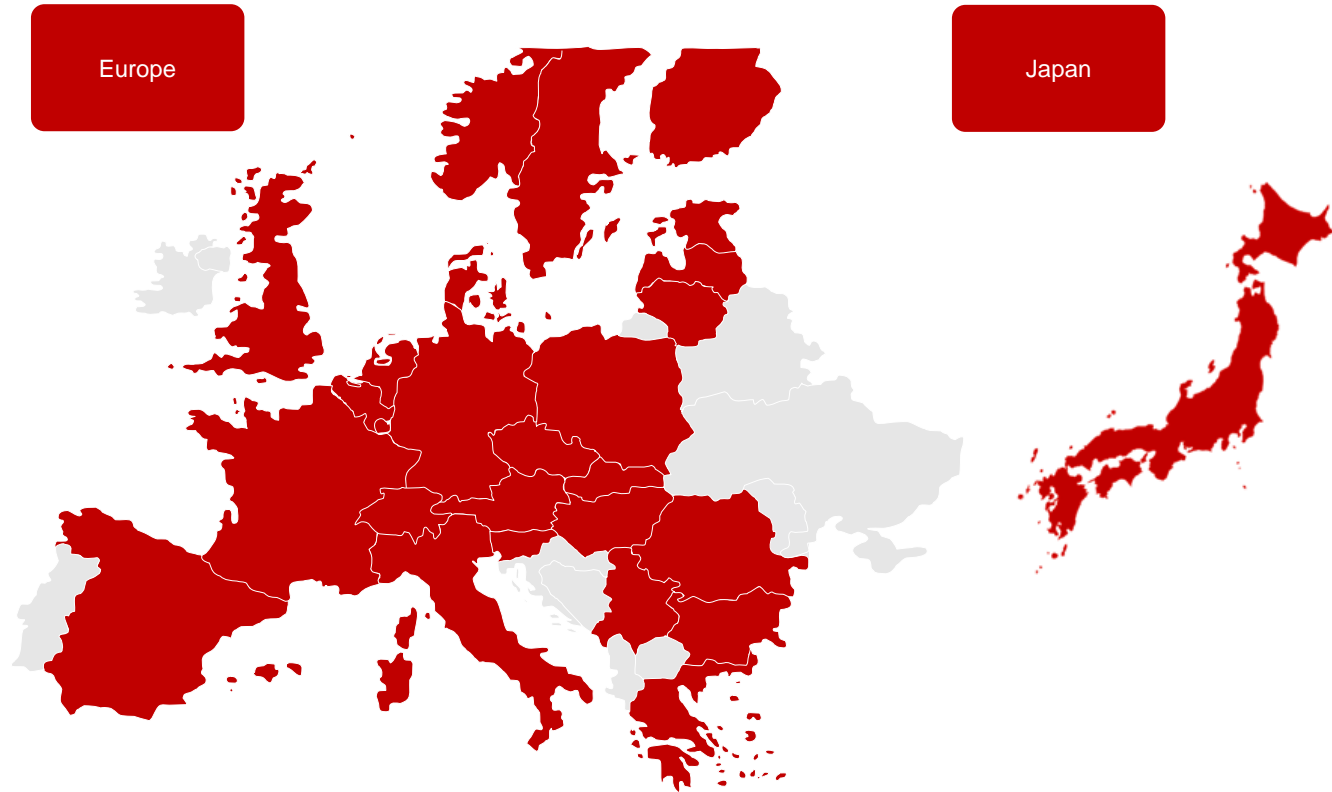
# EEX Power Derivatives Markets

- The standard Power product setup of EEX comprises financially settled Futures with the following maturities for Base and Peak Load.\*
- Each product has as its underlying the Spot index for the respective market (ie. for German power, the day-ahead price for the AMPRION control zone).
- EEX lists Power Futures for **20 European markets**.

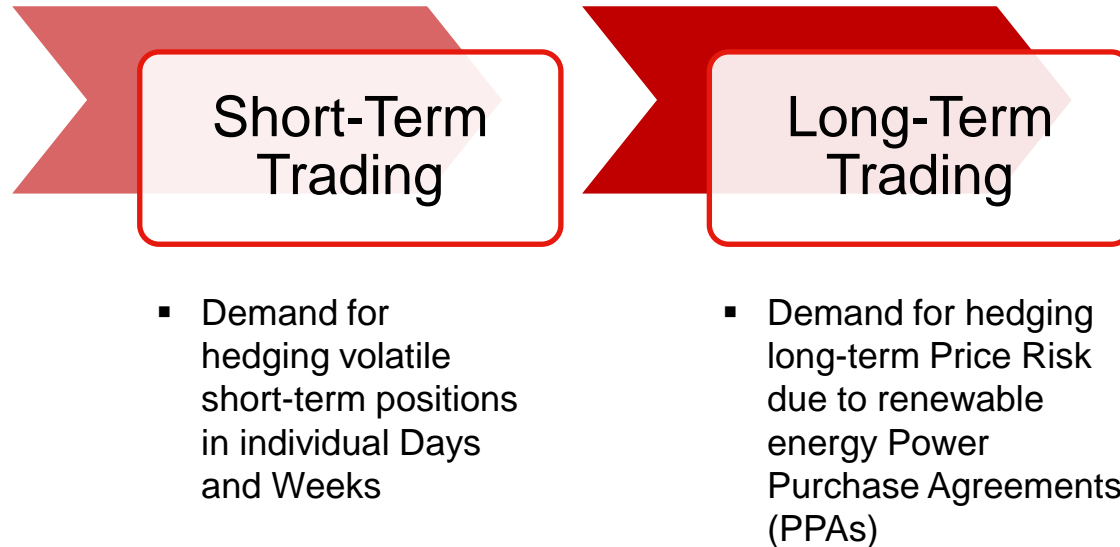
Day 1	Day ...	Day ...	Day 13							
Weekend 1	Weekend 2									
Week 1	Week 2	Week 3	Week 4	Week 5						
Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	
Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5	Quarter 6	Quarter 7	Quarter 7	...	Quarter 11	
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	

Extended maturities for DE, ES, IT Base Load

# Market Coverage – EEX Power Derivatives



# Renewables are driving two major trends in Power Derivatives markets



# Role of the Exchange in the PPA Market

## Price Transparency

- EEX's market prices provide reliable price references.
- Project developers and buyers of PPAs can assess their valuations against EEX wholesale prices.

## Price Risk Management

- Manage power price risk for renewable energy assets.
- Reduce the overall risk exposure for the largest risk element in RE portfolios.

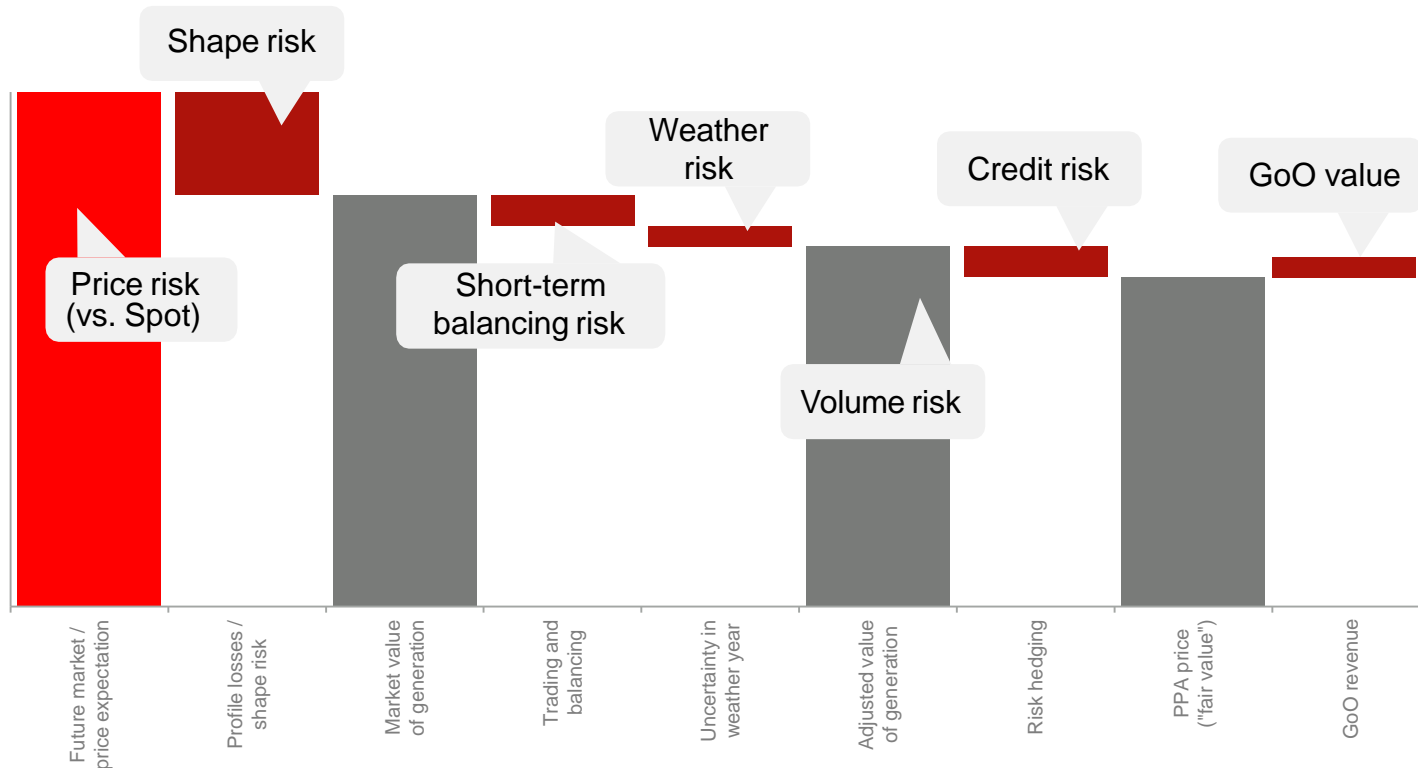
## Counterparty Risk Management

- Trading and hedging on EEX alleviates counterparty risk for trading participants.
- This is especially important for long-term risk management.

## Enabler of Renewable Energy Growth

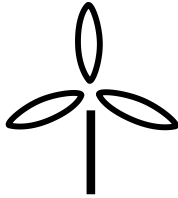
- Price and counterparty risk is offloaded onto the clearing house, freeing internal risk capacity within trading participants.
- This enables taking on more PPAs and facilitates growth of renewable energy capacity in Europe.

# Price Risk is the most important risk factor in a PPA



# How are EEX Members active in PPAs?

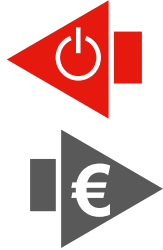
EEX Members and RE Developers sell Power via Long-Term PPAs



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



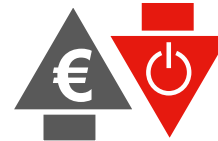
EEX Members provide balancing services on Spot & hedge via Futures



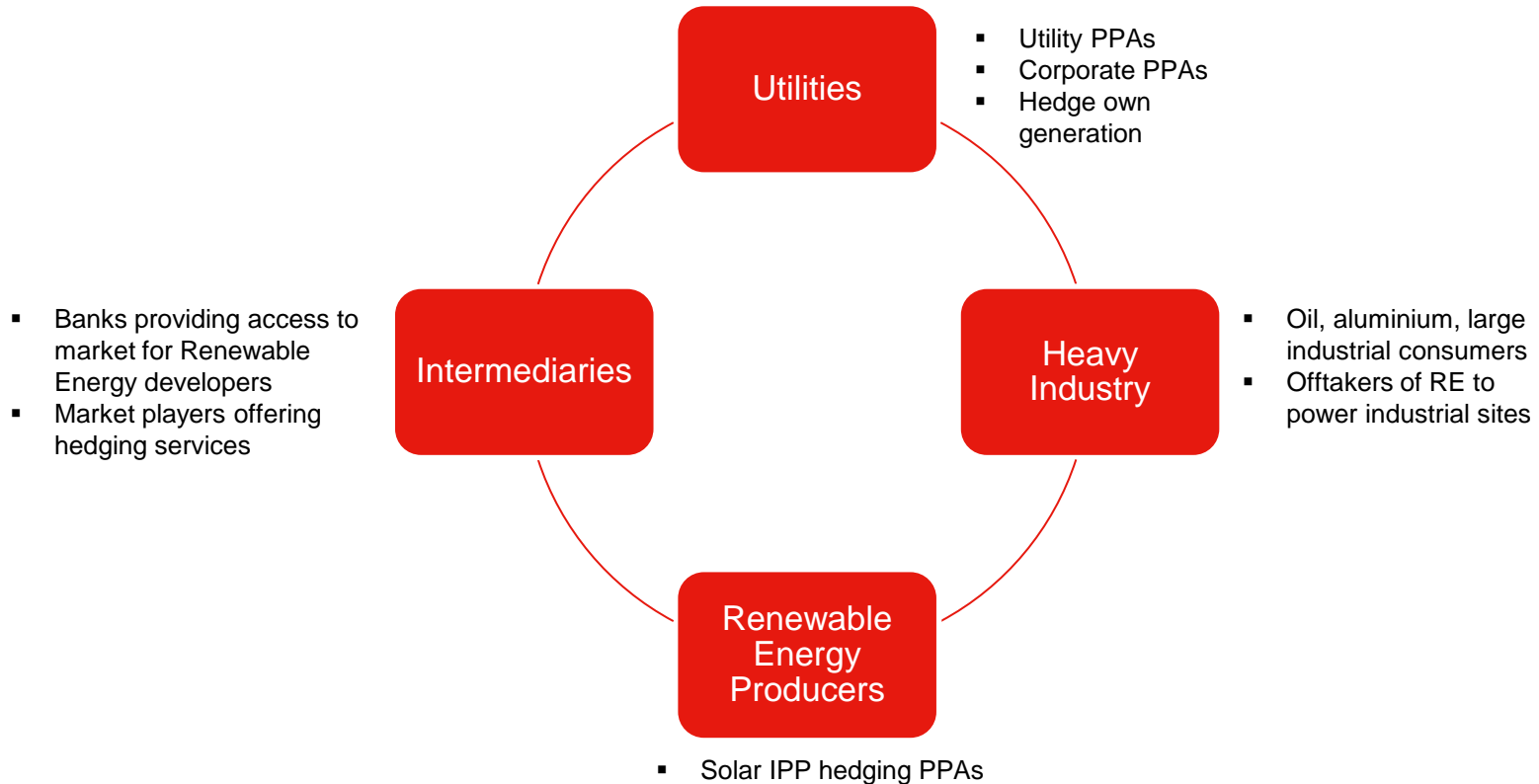
Banks provide financing once PPA is in place



EEX Members sell Power via LT Corporate PPAs

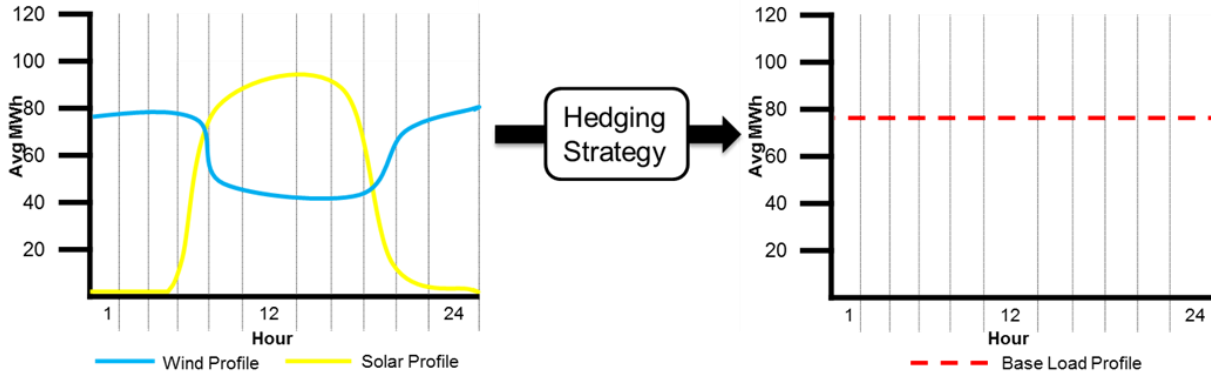


# Who are the PPA Hedgers on EEX?



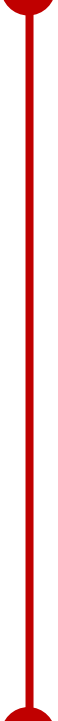


# Managing Renewable Energy Price Risk with Base Futures requires a Hedging Strategy



- Base Futures are a **best-fit product** and attract the most liquidity, creating a **strong price signal** and opportunities for trading at fair market prices
- To use the Base Futures to manage the risk of a wind or solar profile, a **Hedging Strategy needs to be designed** to translate the variable generation profile into a constant Base load profile
- Different Hedging Strategies can be employed, such as a **value-neutral hedge**

# Development of PPA Hedging at EEX

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- May 2018 First long-term PPA hedge registered up to Cal+6 in Spanish Power
  - June 2018 First long-term PPA hedge registered up to Cal+6 in German Power
  - April 2020 Sonnedix becomes a member of EEX, first solar IPP
  - September 2021 Cal+10 goes live for German, Spanish and Italian Power  
Spanish regulatory intervention / gas price cap
  - February 2022 Russia – Ukraine war; 4 long-term deals registered in 2022 to Cal+5
  - April 2023 First Cal+1 to Cal+10 deals registered in Spanish Power, totalling **3.2 TWh**  
First 8-year strip to Cal+10 registered in Italian Power
  - December 2023 28 long-term deals registered in Spanish and Italian Power in 2023, totalling **6.22 TWh**

# Long-term hedging in Spanish Power (1/2)



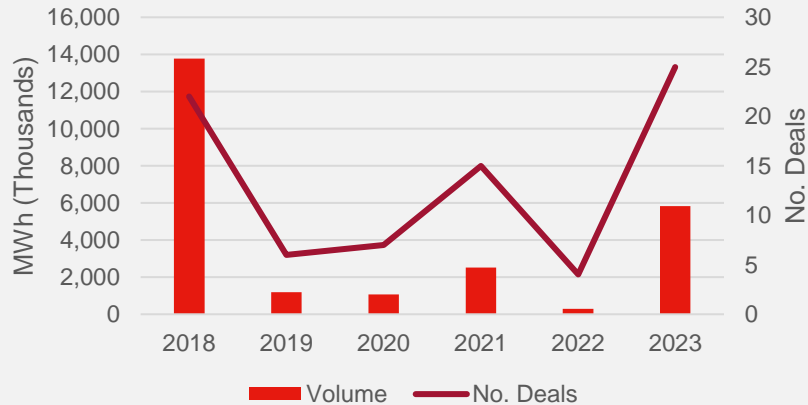
Since 2018, **81** Long-Term deals up to CAL+10 reaching **> 25 TWh**

	Trade Date m/y	Product	Trade Price	Traded Volume in MWh	Initial Margin in % of Notional Value
1	5/2018	Q3 up to Cal24 (20 lots)	48.75 €	1,139,760	<b>3.38%</b>
...					
39	6/2021	Q+3, Cal22 to Cal26 (5 lots)	53.50 €	241,200	<b>5.65%</b>
...					
78	12/2023	Cal 24 up to Cal 33 (1 lot)	62.00 €	87,672	<b>10.17%</b>
79	01/2024	Cal 25 up to Cal 33 (4 lots)	55.00 €	315,552	<b>9.63%</b>
80	01/2024	Cal25 up to Cal33 (2 lots)	54.90 €	157,776	<b>9.64%</b>
81	01/2024	Cal 25 up to Cal 33 (3 lots)	55.75 €	219,240	<b>9.17%</b>

**Total Trade Volume in MWh 25,349,088**

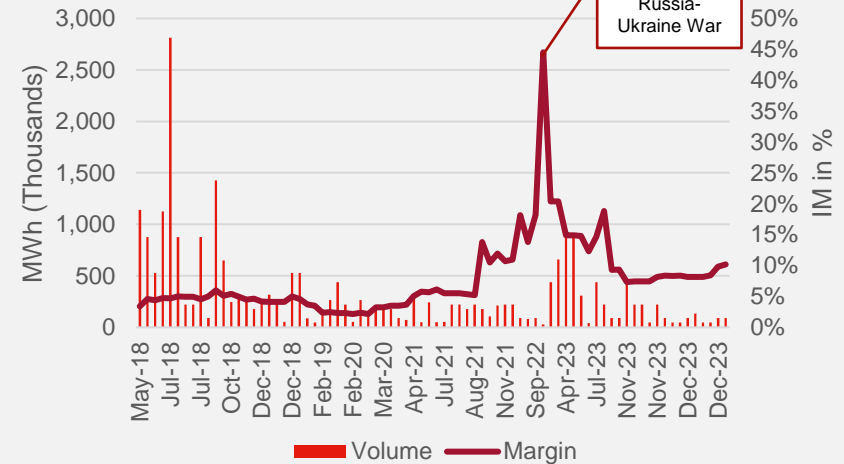
# Long-term hedging in Spanish Power (2/2)

## Volume and Number of Deals



- Cal+10 went live in H2 2021, however long-term hedging stagnated due to Spanish regulatory intervention and the energy crisis in 2022
- In 2023 **deal flow and volumes rebounded** in line with recovery of EU power markets, and market participants utilizing the full 10-year curve

## Volume and Initial Margin



- Initial margin values reflect recent volatility and have therefore reduced in line with **return to stability** in European power markets.
- Stable IM levels contributed to renewed growth and interest in long-term hedging.

# Example: Long-Term Hedge in Spanish Power

Trade Date	Product	Expiry Year	Expiry Month	Trade Price	Initial Margin per Contract	Lots	Initial Margin (in EUR)	Trade Volume (in MWh)
12/14/2023	Spanish Power Base Year	2024	1	61.25 €	64,826 €	1	64,826 €	8,784
12/14/2023	Spanish Power Base Year	2025	1	61.25 €	41,785 €	1	41,785 €	8,760
12/14/2023	Spanish Power Base Year	2026	1	61.25 €	42,223 €	1	42,223 €	8,760
12/14/2023	Spanish Power Base Year	2027	1	61.25 €	56,940 €	1	56,940 €	8,760
12/14/2023	Spanish Power Base Year	2028	1	61.25 €	61,224 €	1	61,224 €	8,784
12/14/2023	Spanish Power Base Year	2029	1	61.25 €	51,596 €	1	51,596 €	8,760
12/14/2023	Spanish Power Base Year	2030	1	61.25 €	52,034 €	1	52,034 €	8,760
12/14/2023	Spanish Power Base Year	2031	1	61.25 €	52,034 €	1	52,034 €	8,760
12/14/2023	Spanish Power Base Year	2032	1	61.25 €	51,913 €	1	51,913 €	8,784
12/14/2023	Spanish Power Base Year	2033	1	61.25 €	51,421 €	1	51,421 €	8,760
							<b>525,996 €</b>	<b>87,672</b>
							<b>Initial Margin in % of Notional Value</b>	<b>9.80%</b>

- The trading and clearing fees for this deal amounts to **1095 EUR** per counterparty.
- Market participants **benefit from counterparty credit risk** especially for long-term hedging.

\*Check daily values "Scanning Ranges" from ECC Reports & Files: <https://www.ecc.de/en/risk-management/reports-and-files>

\*\*ECC Acceptable Collateral: <https://www.ecc.de/en/risk-management/acceptable-collateral>

# Long-term hedging in Italian Power

Since 2023, **5** Long-Term deals up to CAL+10 reaching **> 0.4 TWh**

Trade Date m/y	Product	Trade Price	Traded Volume in MWh	Initial Margin in % of Notional Value
4/2023	Cal25 up to Cal33 (2 lots)	101.10 €	140,256	<b>39.43%</b>
4/2023	Cal 25 up to Cal33 (2 lots)	105.25 €	140,256	<b>34.43%</b>
6/2023	Cal 25 up to Cal 33 (1 lot)	93.00 €	70,128	<b>29.36%</b>
12/2023	Cal26 up to Cal33 (1 lot)	86.95 €	70,128	<b>8.86%</b>
01/2024	Cal 26 up to Cal 33 (3 lots)	74.90 €	219,240	<b>7.64%</b>

- Long-term hedging in Italian Power picked up in 2023 driven by the availability of Cal+10 contracts and the demand for counterparty credit risk management.
- Initial margin levels reduced significantly since early 2023, in line with the trend towards market stability and reduced price levels.

# Settlement Process for Long-Term Expiries

Establishing daily settlement prices to Cal+10 is done through a methodology combining regular Fair Value calibration and a pricing model.

Fair Value  
Market Survey

+

Daily Settlement  
Methodology

- **Bi-Weekly Market Survey** of trading members providing their Fair Values of the curve to Cal+10 for the German, Italian and Spanish Base Load Calendar contracts.
- On days where there is no market survey, trade or order book pricing information in the respective contracts during the settlement price window:
  - A **pricing model** based on an algorithmic extrapolation of real market prices in near-term expiries is used to establish settlement prices.

If you would like to participate in the market survey, please contact the  
**EEX Market Operations Team:**  
T +49 341 2156-222, [trading@eex.com](mailto:trading@eex.com)

# EEX publishes a daily price curve for the next 10 years for DE, ES and IT Power

## German Power Base 26.01.2024

Future	Last Price	Last Volume	Settlement Price	Volume Exchange	Volume Trade Registration	Open Interest
Cal-25	79.50	8,760	80.17	5,387,400	2,575,440	36,116
Cal-26	73.00	8,760	73.07	998,640	648,240	9,467
Cal-27	69.50	8,760	69.29	254,040	280,320	2,062
Cal-28	-	-	65.00	0	210,816	254
Cal-29	-	-	62.89	0	131,400	59
Cal-30	61.50	8,760	61.20	8,760	0	28
Cal-31	-	-	60.81	-	-	25
Cal-32	-	-	59.71	-	-	17
Cal-33	-	-	58.91	-	-	0
Cal-34	-	-	57.87	Backwardation	-	0

<https://www.eex.com/en/market-data/power/futures>

6 weeks historical data  
available online



Thank you

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