

Market Code Consultation WS 8

Longer-term trading

The difference between physical and financial trading,
what is hedging and why do we need it?



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Short term markets

The best practices in almost all markets are based on:

- Physical trading

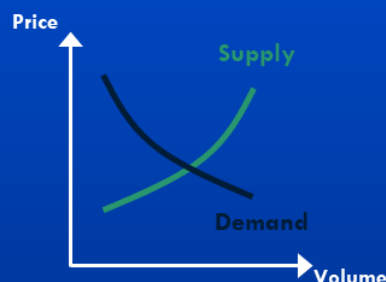
- Normally starts at “day-ahead” stage

Most EU, US, Asian and African models includes some sort of Day-ahead market


The same applies for SAWEM

Power Pool

Day Ahead	Intraday
<ul style="list-style-type: none">▶ Physical Contracts▶ Market Equilibrium▶ One day ahead▶ Auction trade	<ul style="list-style-type: none">▶ Physical Contracts▶ Hours ahead▶ Continuous trading



The graph shows a coordinate system with 'Price' on the vertical axis and 'Volume' on the horizontal axis. A downward-sloping black curve is labeled 'Demand'. An upward-sloping green curve is labeled 'Supply'. The two curves intersect at an equilibrium point.



A white outline of a laptop computer. On the screen, there is a line graph showing a fluctuating upward trend.



Medium- and long-term markets

These markets are targeting hedging as well as financing

Generically two models (with a lot of sub-models)

Financial contracts: not connected to physical delivery

Physical contracts: connected to a physical delivery



Bilateral versus Financial Contracts

Bilateral Physical Contract

between seller and buyer

specifies delivery period and delivery points, delivery volume (MWh/h or MWh/period), price(s) and variables influencing delivery volume and/or price(s)

results in generation by seller and consumption by buyer of the specified volume

Bilateral Financial Contract – just replacing the physical contract

Between seller/buyer

specifies delivery period, contract volume (MWh/h) and contract price

Settles against a **robust** physical reference price

results in cash flow from seller to buyer (if contract price lower than procurement costs) or buyer to seller (if contract price higher than procurement costs)

Financial Contract (through a marketplace)

Between seller/buyer and an Organized Market Place and Clearing House

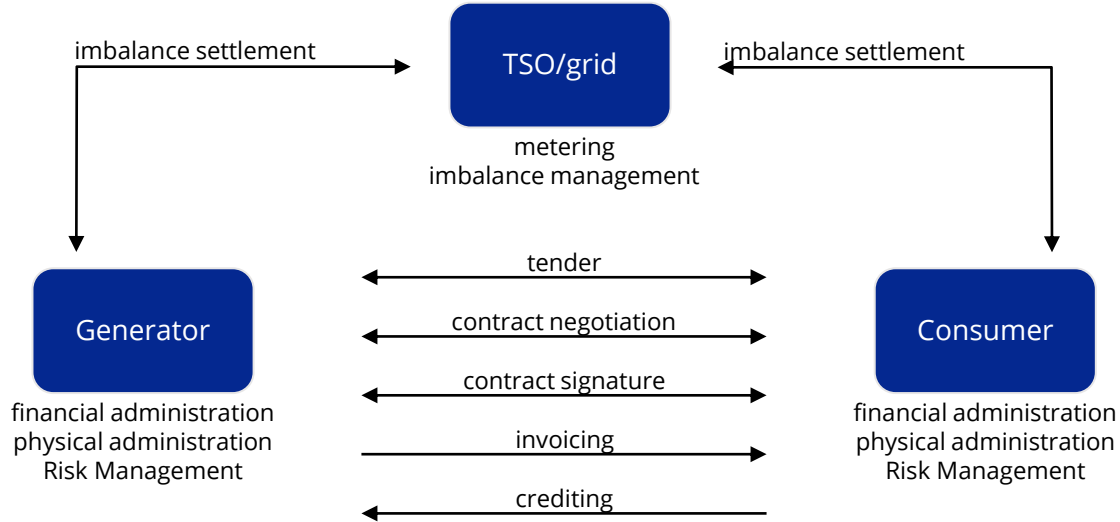
specifies delivery period, contract volume (MWh/h) and contract price using standardized products (contract)

Settles against a **robust** physical reference price

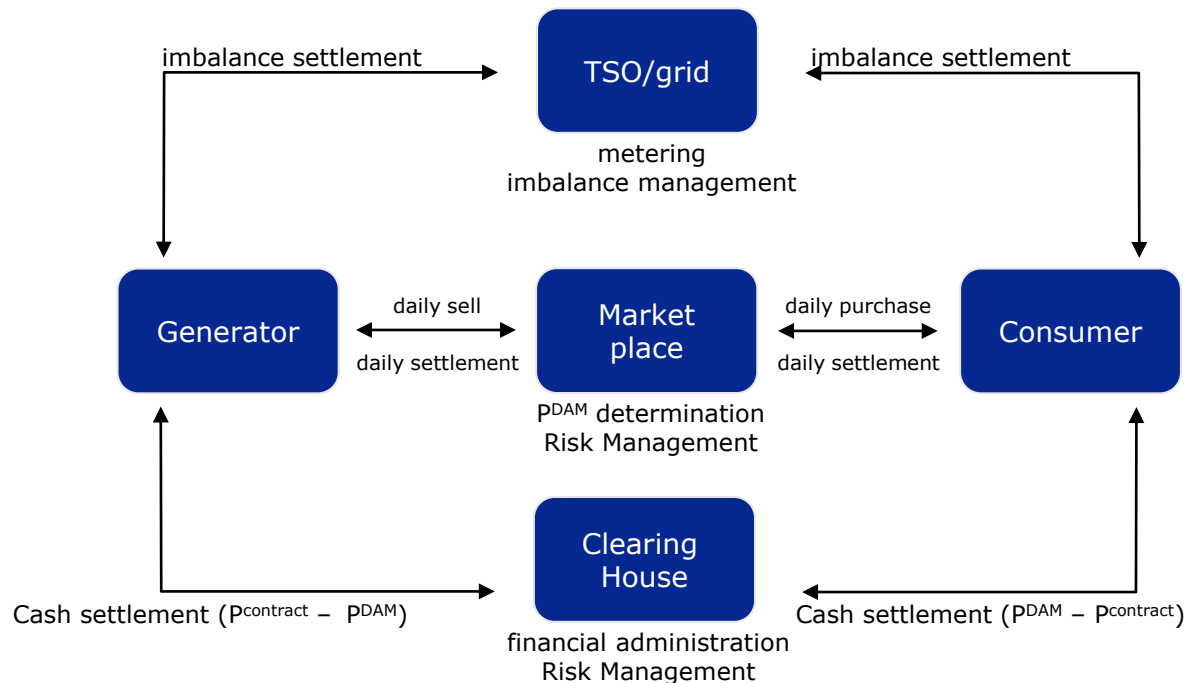
results in cash flow from seller to buyer (if contract price lower than procurement costs) or buyer to seller (if contract price higher than procurement costs)



Bilateral versus Financial Contracts



Bilateral versus **Financial** Contracts



Bilateral versus Financial Contracts

In bilateral physical contracts the main cash flow is between participants (generators, consumers and traders) and equals the **total contract value**.

In financial contracts the cash flow is between Clearing House (i.e. regulated institution) and participants (organized market) and equals the **difference between contract- and market price**.

In bilateral physical contracts the participants must generate/purchase or consume/sell the contract volume. Any deviations are settled as imbalances.

In financial contracts the participants are not committed to generate or consume volumes. Their physical participation is a “separate business” and dealt with through the physical short-term market.

The financial contract will secure each participant the contract price as total realization value for the physical volume, if the participant uses the DAM to realize the contract volume. (i.e. the participant receives / pays the difference between contract and DAM prices)

Bilateral contracts must be negotiated (and administrated before, during and after total delivery period until contract has been finally settled).

Financial contracts are generally be traded in a financial market plus totally administrated by the Clearing House (organized market) bringing the benefit of central risk management and clearing service (central counterpart).



WHAT DOES IT MEAN: HEDGING?

WHAT IS HEDGING?

- A hedge is used to manage the price volatility of the spot market for both producers and electricity purchasers.

HOW AND WHERE HEDGING

- Hedges are either agreed directly between the parties (known as over-the-counter - OTC) or bought as derivatives on the power futures exchange markets.

WHY HEDGING

- Is a strategy to reduce risks/volatility of earnings.
- Traders tend to minimize investment volatility by “hedging” the risk of future adverse price fluctuations with futures contracts that lock-in the commodity’s price for a certain amount based on a specific date. As prices fluctuate over time, traders can either close out or hold their futures positions to make money or minimize losses.



Role of Forward Contracting in Electricity Markets

A fact: Electricity spot markets are volatile

- This has been shown to be the case in all energy only markets
- Capacity price is recovered over a few hours each year

Vesting contracts allocated for a variety of reasons

- Stabilise generator and retailer cash flows
- Limit market power
- Asset value prior to privatisation

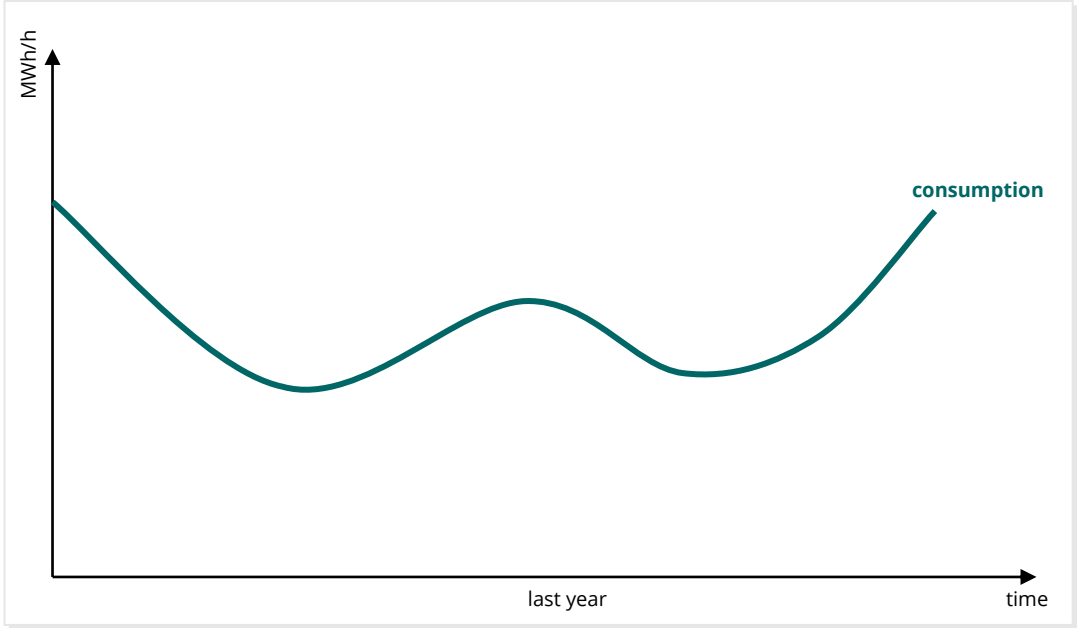
Commercial contracts

- Hedge price movements (when underpinned by physical sale)
- Speculation (traders)
- Risk management



Consumption

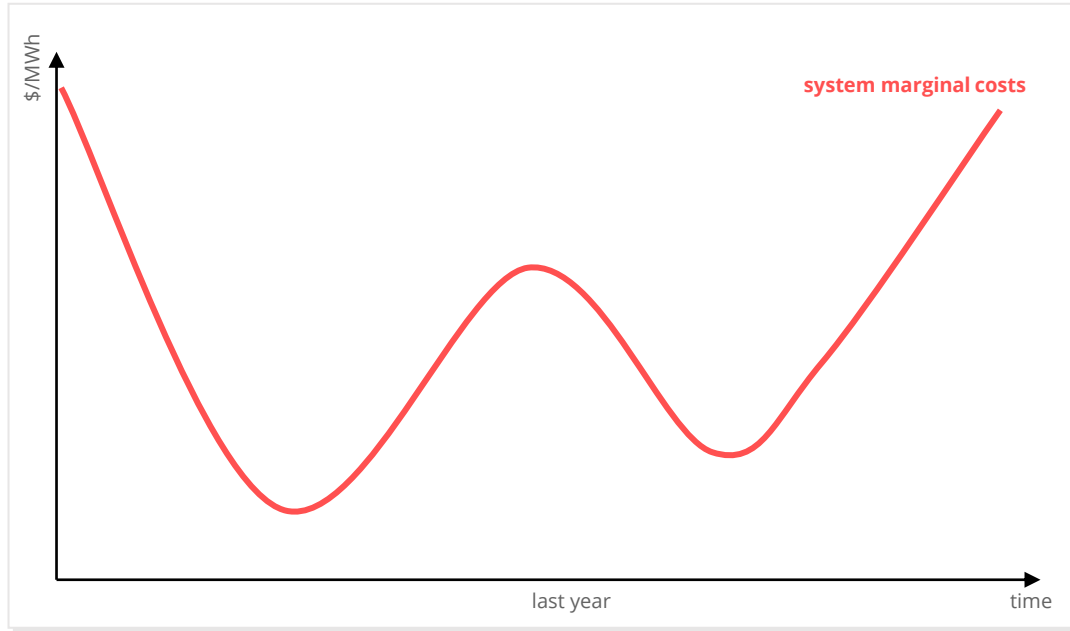
Fundamental factors - consumption



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Based on a Consumption Pattern

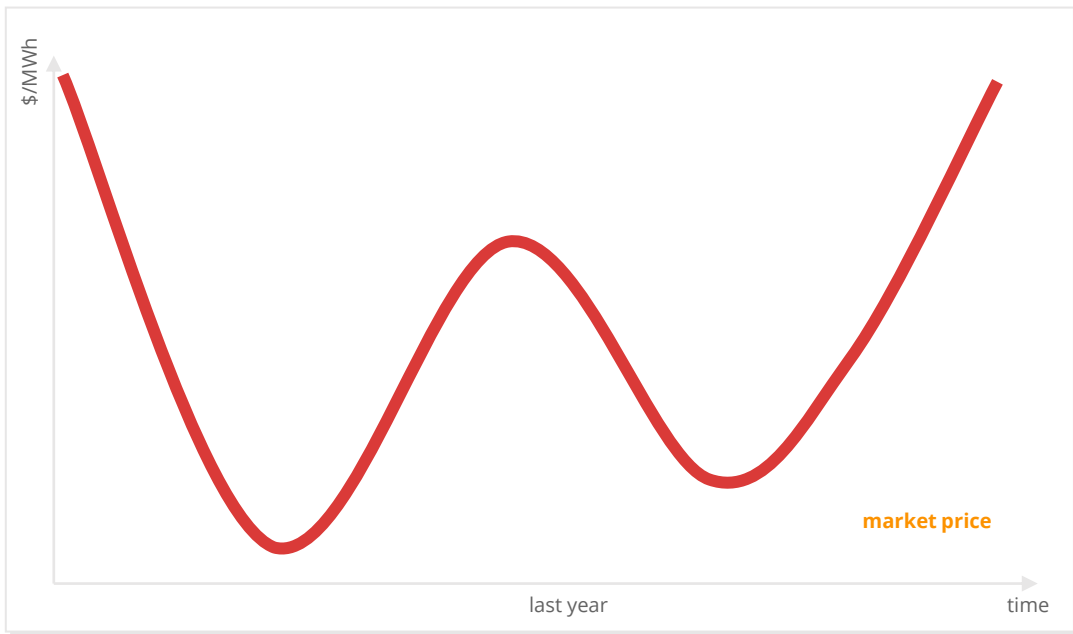
Fundamental factors – system marginal cost



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Based on Marginal System Costs

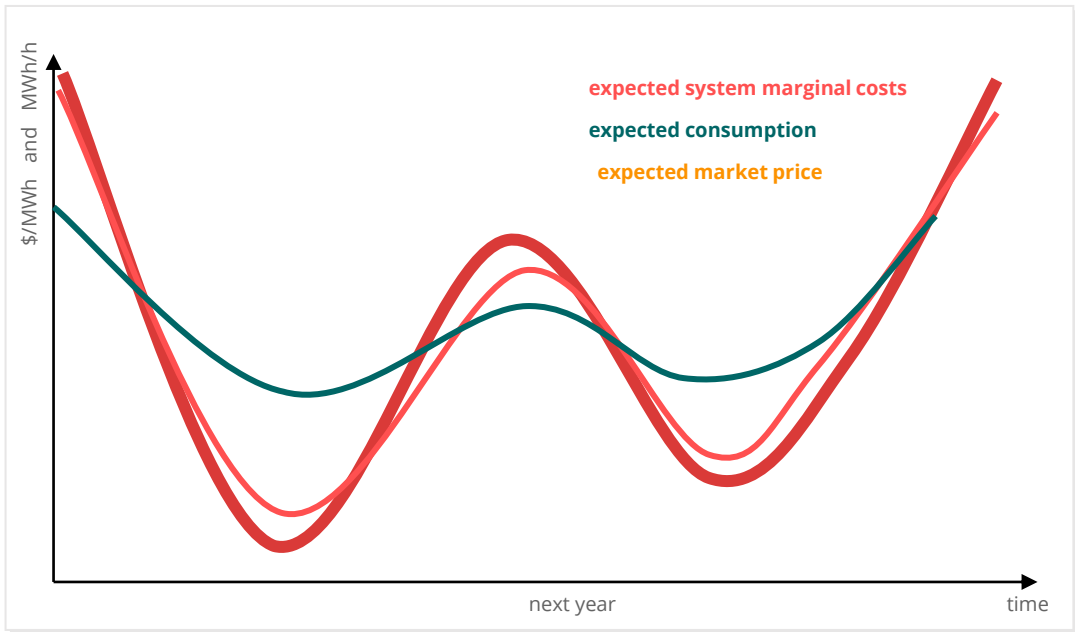
Fundamental factors – market price



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Based on Input

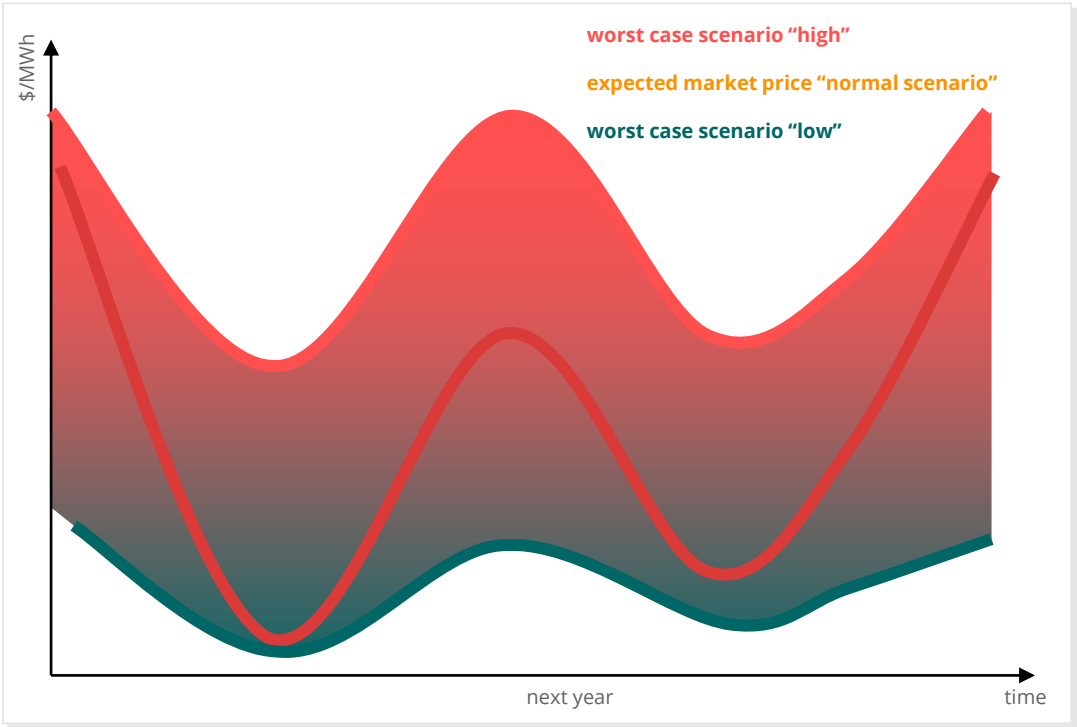
Market expectancy



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Scenarios

Market expectancy



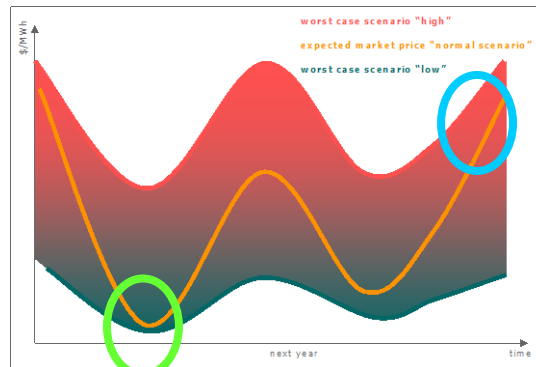
In an electricity market, where an electricity reference price is determined and information about fundamental factors are published, participants are able to analyze historical prices and they will be able to develop scenarios for future periods, which result in expected reference prices for these future periods.



The Expected Reference Price

Market Expectancy

- Each participant will analyse historical data and design scenarios resulting in expected prices for future periods
- The derivatives market is a place, where participants can offer “insurances” against higher or lower than the by them expected future reference prices
- **If they expect that prices more likely will be higher than the expected reference price**, they will be willing to sell an insurance against lower than expected reference prices:
 - should the price be lower, they will pay the difference!
 - should the price be higher they will as return service receive the difference!
- **Vice versa, if they believe, that prices more likely will be lower**



Definition of a Derivative

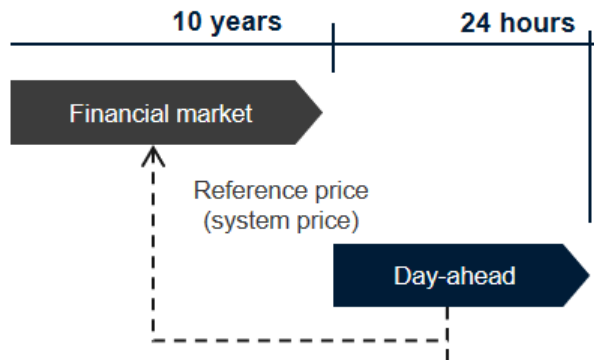
“A financial contract whose value is based on, or derived from, a traditional security (such as a stock or bond), an asset (such as a commodity), or a market index.”

Financial market: Futures/DS Futures

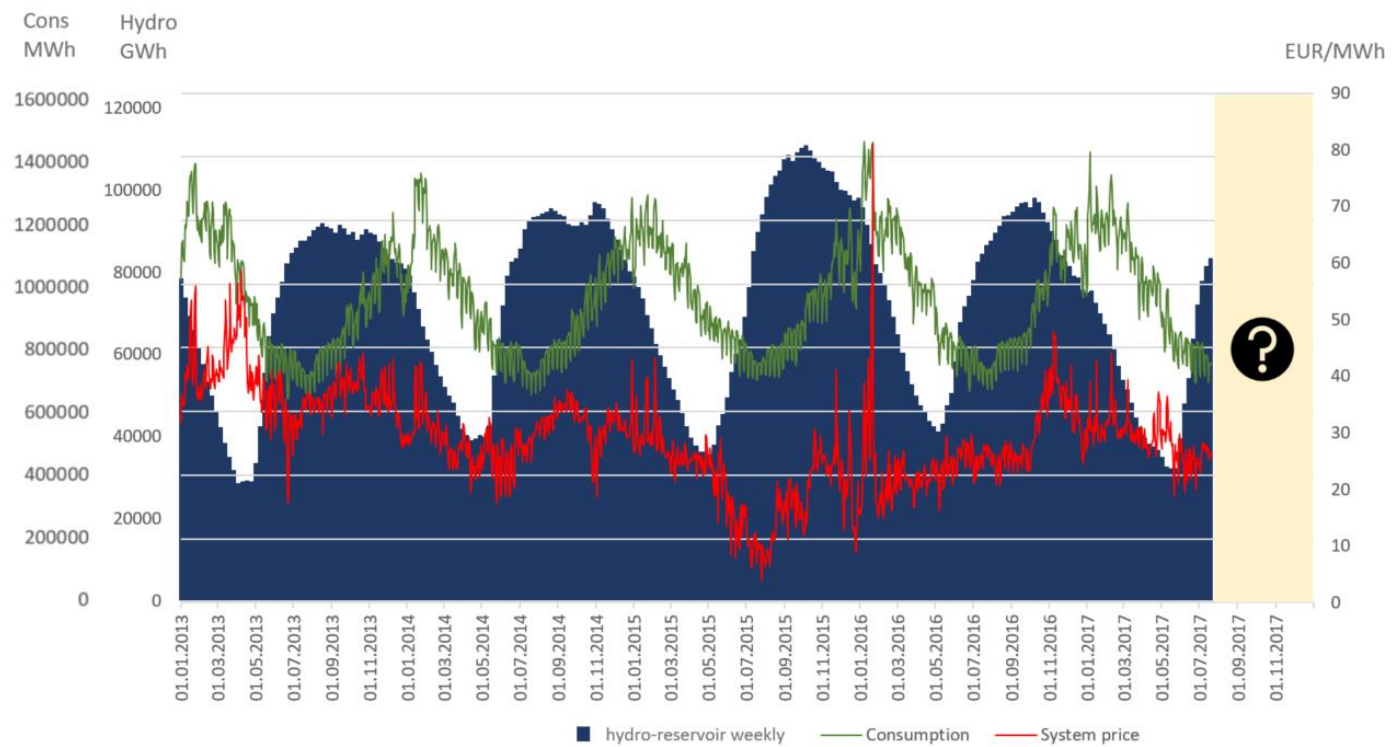
- ▶ Hedging of sell/buy price in advance
- ▶ From 10 years to day-ahead
- ▶ Continuous trading with market makers

Physical market: Day-ahead market

- ▶ Hourly price formation for the following day
- ▶ Bids and offers gate closure at 12:00 every day
- ▶ Market results published 12:42



The key question for a market participant; how to budget?

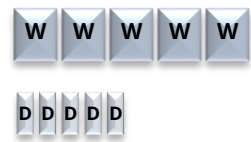


Product structure – Nordic power

DS
Futures/Futures
 cash settlement
 only in delivery
 period



Cascading
 From Y-Q. Q-M, M-W



Futures
 Daily cash
 settlement

Underlying reference price:

Nordic system price

Currency: EUR

Tick size: 0,01 EUR/MWh

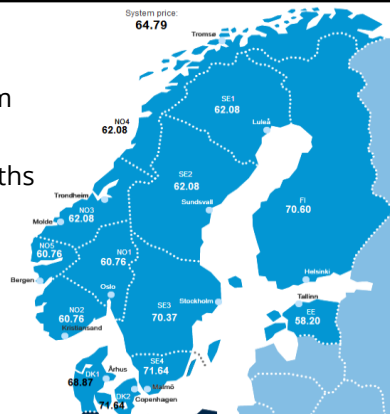
Min contract size: 1 MW * h in the contract

Source: Nasdaq/EEX

EPADS

Area price – system
 price

Year, Quarters, Months

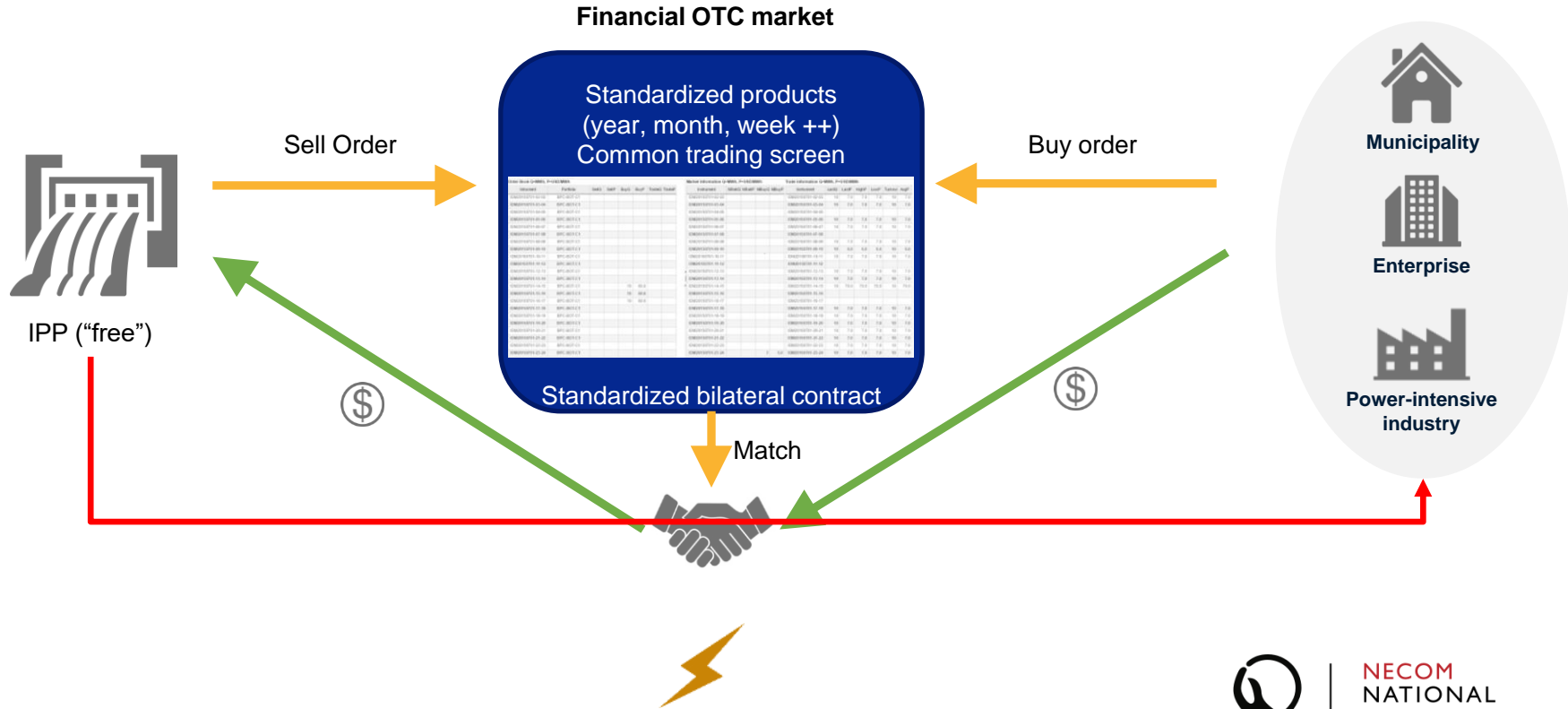


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Opportunities – (Financial) OTC market



Either as a physical flow, or through the national market

