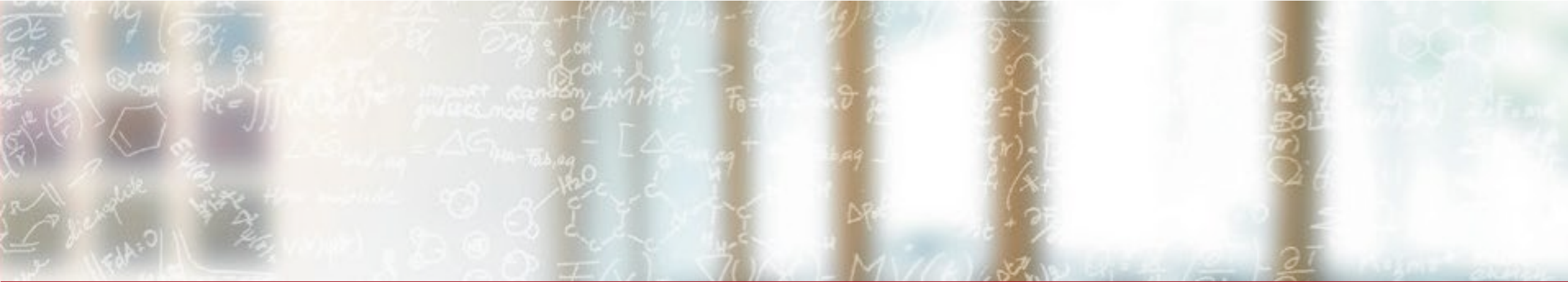**CSCS**
Centro Svizzero di Calcolo Scientifico
Swiss National Supercomputing Centre

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Public procurement (GATT/WTO) of electricity: the CSCS approach

EE HPC WG

Ladina Gilly, CSCS

October 3rd, 2018

General Agreement on Tariffs and Trade (GATT)
World Trade Organization (WTO)

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# Energy and public procurement in Switzerland: historic background

- Switzerland has been a member of the World Trade Organization (WTO) since July 1st 1995 and has been bound by the Government Procurement Agreement (GPA) since January 1996.

- January 2009 liberalization of the Swiss energy market for large consumers (> 100'000 kWh).

- The applicability of GPA rules to energy procurements continues to be debated.

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Composition of Electricity Price

2018
Energy = 41%
Network = 35%
Taxes = 24%

Composition of Energy Price in cts. / kWh
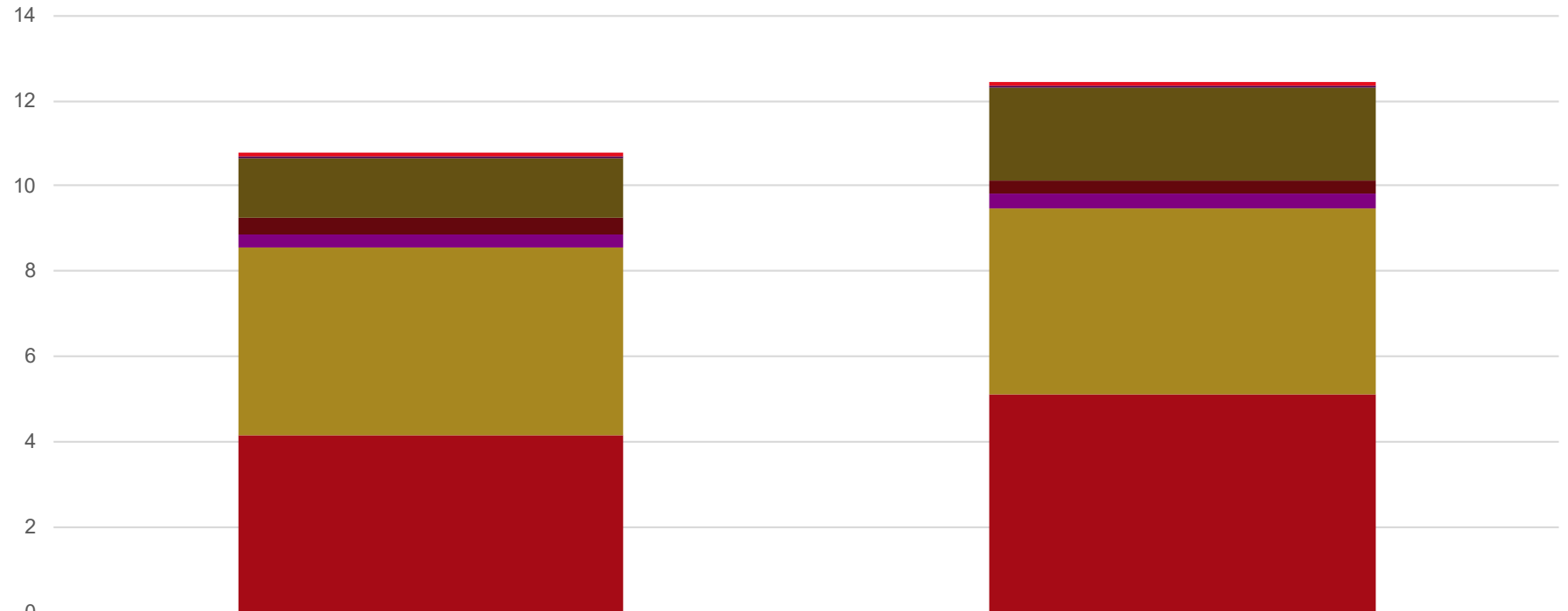
|	2017	2018
■ Contribution to the refurbishment of hydrolic plants	0.1	0.1
■ Contribution to the cantonal renewable energy fund	0.03	0.03
■ Contribution to the federal renewable energy fund	1.4	2.2
■ Supplement for national grid	0.4	0.32
■ Contribution to public property	0.33	0.32
■ Network usage	4.37	4.38
■ Energy	4.17	5.1

CSCS energy acquisitions 2008 - 2023

- **Till 2008:** negotiated contract with cantonal energy provider AET, dating back to 1992

- Due to market liberalization CSCS was reassigned to the local provider Aziende Industriali Lugano (AIL) at the end of 2008.

- **2009 – 2013:** standard contract (not negotiated)

- **2014 – 2017:** negotiated contract

- *2017: decision by ETH Zurich management board that energy should be procured according to WTO process.*

- **2018:** WTO procurement; 1 lot purchase

- **2019 – 2023:** WTO procurement; multi-lot purchase distributed over time

Average price (cts.) per kWh CSCS - EU 28 industrial customers

Legend: Average total cost cts/kWh | EU average cost in CHF cts/kWh | Energy component cts/kWh
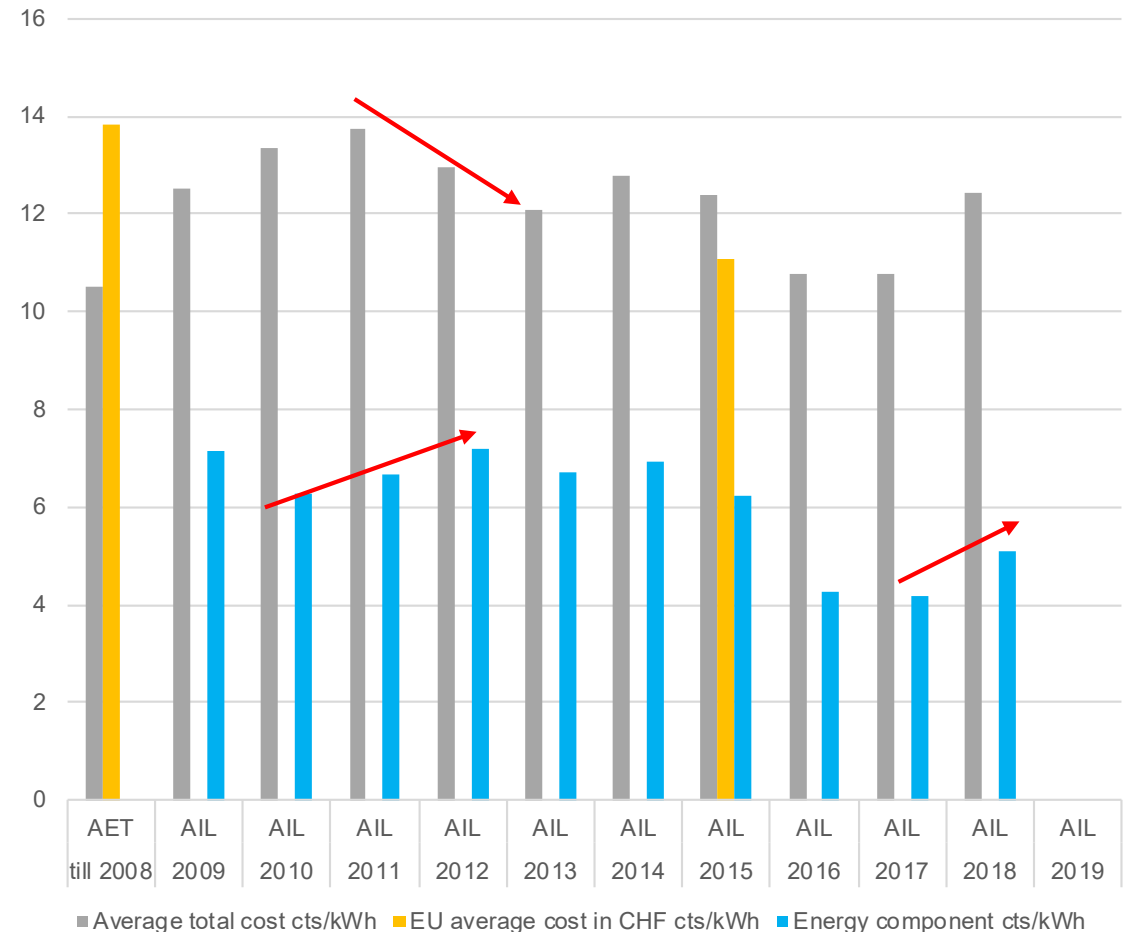
Basis for public procurement

Procurements exceeding the following threshold values excl. VAT) are subject to public procurement:
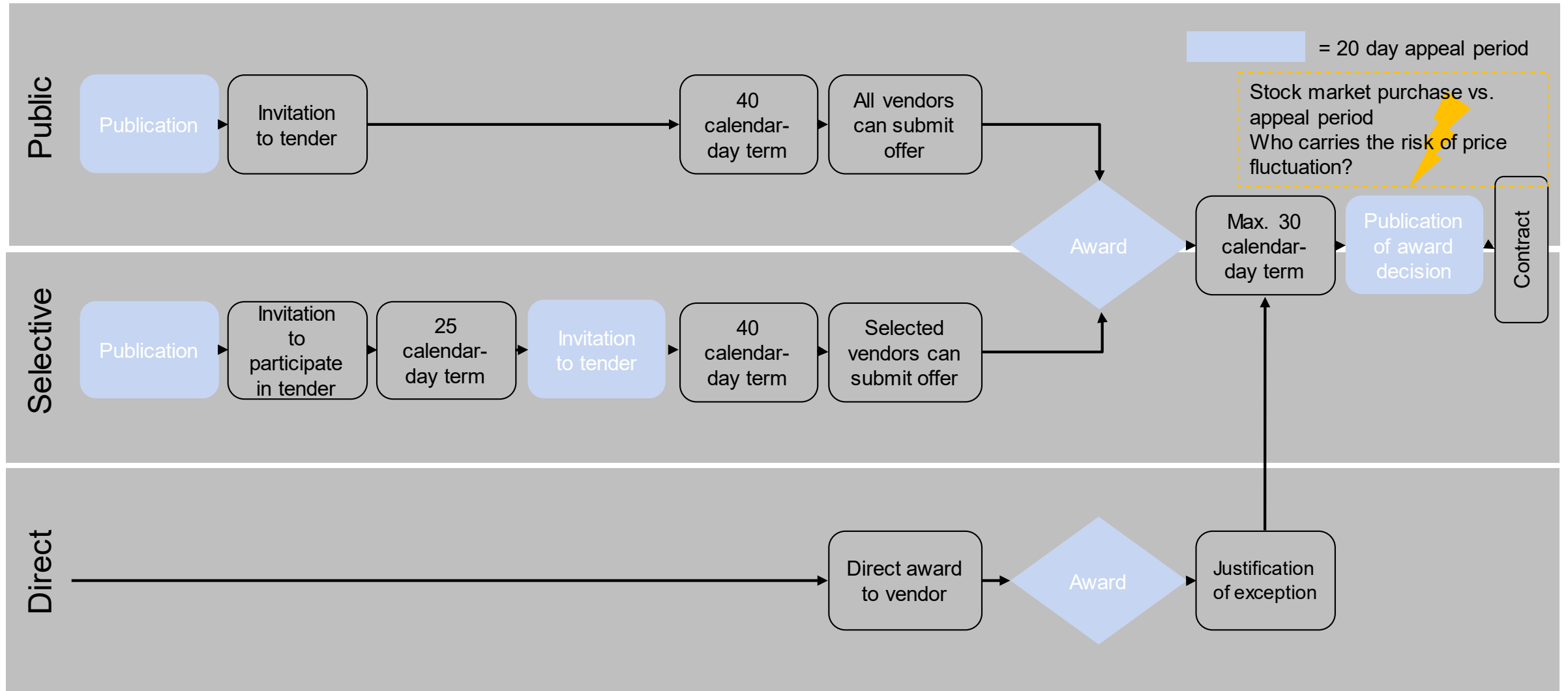
- Goods > 230'000 CHF
- Services > 230'000 CHF
- Building construction > 8.7 Mio CHF

Electricity falls in the category "Services"

CSCS procures electricity* for ~ 3 Mio. CHF / year

Challenge presented by WTO procurement of energy

Public

Publication → Invitation to tender → 40 calendar-day term → All vendors can submit offer → Award

Selective

Publication → Invitation to participate in tender → 25 calendar-day term → Invitation to tender → 40 calendar-day term → Selected vendors can submit offer → Award

Direct

Direct award to vendor → Award → Justification of exception

Award → Max. 30 calendar-day term → Publication of award decision → Contract

= 20 day appeal period

Stock market purchase vs. appeal period
Who carries the risk of price fluctuation?

Purchase <u>based on price</u> and single lot for 2018

- Advantages:
  - Evaluation criteria very straight forward; price
  - Once the contract is signed, both buyer and seller are protected from future price fluctuations and have a firm basis for budget planning.
 - One-time purchase – no additional administrative work once contract signed.

- Disadvantages:
  - Real-time market offer vs. 20 day appeal period →Exposes the deal to price fluctuations that may take place between the moment the offer was made and the contract signature.
  - **Purchase after appeal period**:
    - **Price increase risk** between the offer and the contract: the seller cannot pass on the increase to the buyer as he must guarantee offered price.
    - **Price decreases risk** between offer and contract: the buyer cannot benefit from the decrease as he must sign for the originally offered price.
  - **Purchase at time of offer**:
    - **Appeal risk**: if appeal is granted, seller get's stuck with energy that he may not be able to sign contract for and has to resell at a potential loss.
  - The seller will want to factor these risks into their offer.

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Purchase based on price formula for CSCS energy tender 2019 - 2023

$$P_{j,t} = \left(P_{j,t}^{EEX\ DE\ BL} \times \alpha + P_{j,t}^{EEX\ DE\ PL} \times \beta + P_{j,t}^{Nordgrenze} \right) \times FX_t + \gamma_1 + \gamma_2$$
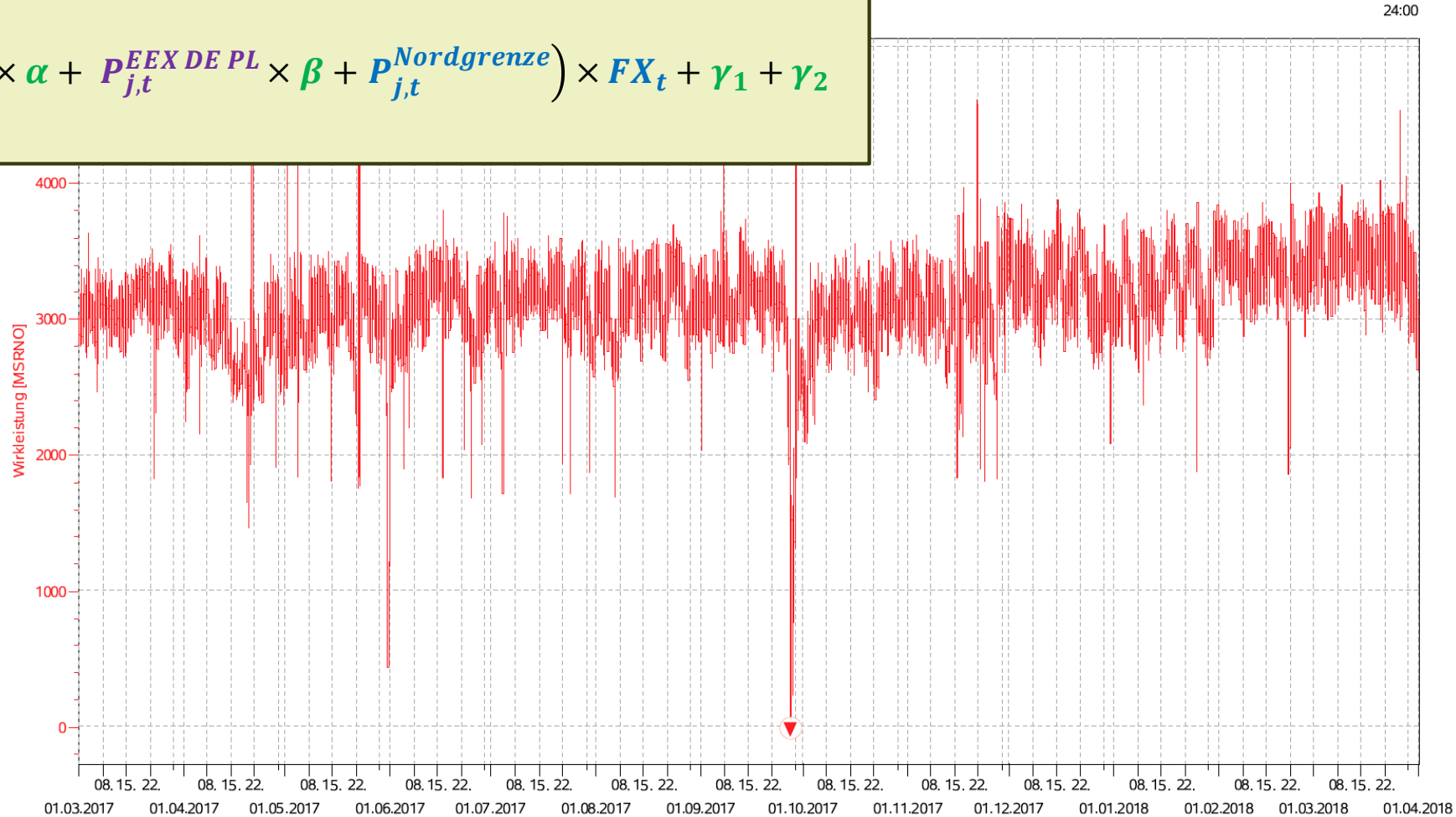
Comparison of offers based on resulting price per MWh on a given submission date.

Icon	Messstelle	Beschreibung	MSR-Nr.	TBA	TBE	SBA	SBE	Einheit	Min	Max	Mittelwert	Zeit Min	Zeit Max	T-Offset
☑	LCAD_ELM01_P010_MA	Wirkleistung	MSRNO	0	13000	-266.611	5065.61	kW	0	4799	3127.7	27.09.2017 06:52:03	22.05.2017 15:15:57	—

Purchase based on price formula for CSCS energy tender 2019 - 2023

Price formula:

In which:

- $P_{j,t}$ = procurement price
- (j) = delivery year
- (t) = time of calculation

$$P_{j,t} = \left(P_{j,t}^{EEX\,DE\,BL} \times \alpha + P_{j,t}^{EEX\,DE\,PL} \times \beta + P_{j,t}^{Nordgrenze} \right) \times FX_t + \gamma_1 + \gamma_2$$

- **Market given components:**
  - $P_{j,t}^{EEX\,DE\,BL}$ =Price at moment (t) of the Product „Phelix-DE Baseload Year Future" for year (j) on the German EEX Market. Best Ask. Offer must be valid for 15 minutes.

  - $P_{j,t}^{EEX\,DE\,PL}$ = Price at time (t) for product „Phelix-DE Peakload Year Future" for year (j) on German EEX Market. Best Ask. Offer must be valid for 15 minutes.

- **Calculated components**
  - $P_{j,t}^{Nordgrenze}$: Premium for Switzerland compared to Germany for delivery year(j) at time (t).
  - FX_t = exchange rate EUR/CHF

Components defined by bidder

α = profile factor for baseload

β = profile factor for peak load

γ_1 =Premium for required quality of energy in CHF/MWh. (e.g. green energy/ hydro)

γ_2 = Premium set by seller for handling costs, balancing energy, risk, margin. Indicated in CHF/MWh.

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Distributing purchasing windows over time

Quantity	Purchasing year 2018												%
	GWh	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Delivery year 2019														
Lot Nr. 1/19	6	▬	▬											25%
Lot Nr. 2/19	6			▬	▬									50%
Lot Nr. 3/19	6					▬	▬							75%
Lot Nr. 4/19	6							▬	▬					100%
Delivery year 2020														
Lot Nr. 1/20	8			▬	▬	▬	▬							33%
Lot Nr. 2/20	8							▬	▬	▬	▬	▬	▬	67%
Delivery year 2021														
Delivery lot Nr. 1/21	9				▬	▬	▬	▬						38%

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Public procurement based on price formula – multi-lot purchase

- Advantages
  - Clear evaluation criteria; price formula
  - Buyer can take advantage of market fluctuations and reduce their risk by purchasing energy in lots distributed over time.
  - Reduction of risk of having to buy at a high point in the market.
  - Seller does not have to bear the risk of price fluctuations or appeals between the award and contract signature.
  - The seller will not have to factor price fluctuation risk into their offer.

- Disadvantages:
  - Requires the tendering party to define a price formula.
  - The buyer may need to contract with a third party to ensure market observation in order to take advantage of price fluctuations.

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Take home message

If you run a procurement based on a price formula:

- Seller not exposed to price fluctuations appeal risks between award and signing of contract

- Removes risk of getting locked into high-price purchase moment

- Takes advantage of market fluctuations and evens these out over time, reducing the risk they pose

- Good budgeting basis by completing purchases for year ahead by end of August

Running such an RFP teaches you a whole lot about the energy market ☺!

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