



CROSS-BORDER EPAD AUCTIONS

Hedging price risk between SE1–SE4 and Lithuania

A briefing for market participants — the EPAD product, how to join, market design, trading rules and the SKM Auction Portal

Practicalities



Questions in the chat, we will answer some questions in the chat during the presentation and some afterwards.



QA published in SKMs new auction portal (Auction.skm.se). It will be updated after the webinar.



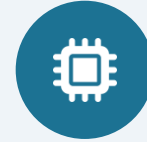
The webinar will be recorded and uploaded to SVKs website.

Who's involved



SVK

The TSOs. Act as counterparty to every transaction in the auctions — offering to buy and sell EPADs across each bidding zone border.



Litgrid

The TSOs. Act as counterparty to every transaction in the auctions — offering to buy and sell EPADs across each bidding zone border.



SKM

Svensk Kraftmäkling AB — licensed by Finansinspektionen as a broker of electricity derivatives. Acts as auction operator, organising and executing auctions on behalf of the TSOs.



N-side

Algorithm subcontractor to SKM. Operates the Power Matching Algorithm that determines clearing prices, allocated volumes, and allocation direction — also the developer of EUPHEMIA, which runs European day-ahead coupling (SDAC).

What we'll cover today



The EPAD product & project background

What an EPAD is, and why SVK and Litgrid are extending auctions across SE4–Lithuania



Market Design

Auction mechanism, volume determination



How to join

Eligibility, agreements, and onboarding steps for new and existing participants



Trading rules

Products, orders and timing



SKM Auction Portal demo

A walkthrough of login, order submission, and results



Next steps & contacts

Test environment access, auction calendar, and who to contact

What is an EPAD?

Electricity Price Area Differential

A financial derivative contract that hedges the price difference between a specific bidding zone and system price — settled against the day-ahead market clearing price for that bidding zone.

Why it matters for participants

- Removes basis risk between a bidding zone and the reference hub
- Improves the ability to hedge production or consumption price exposure
- Supports liquidity in the financial electricity market

HEDGE MECHANISM



Bidding Zone
(e.g. SE4 / LT)



System price

EPAD settles the difference

Settled against the day-ahead market clearing price for the relevant bidding zone.

A Nordic–Baltic first

Since 2023, Svenska kraftnät has auctioned EPAD contracts covering roughly 15% of Swedish grid transmission capacity between SE2–SE3 and SE3–SE4, arranged by SKM.

From late 2026, these auctions are extended cross-border to link SE4 with the Lithuanian bidding zone (Vilnius) — the first cross-border EPAD solution of its kind in Europe. Until now this practice existed only domestically in Sweden and Norway.

Regulatory approval: the proposal from Svenska kraftnät and Litgrid was approved by Ei (Sweden) and NERC (Lithuania); implementation began 20 November 2025.

≥10%

of NordBalt interconnector capacity (~70 MW) made available annually for cross-border hedging

5

bidding zones covered: SE1, SE2, SE3, SE4, and LT (Vilnius)

1 Dec
2026

target go-live for the cross-border auction service

Market design

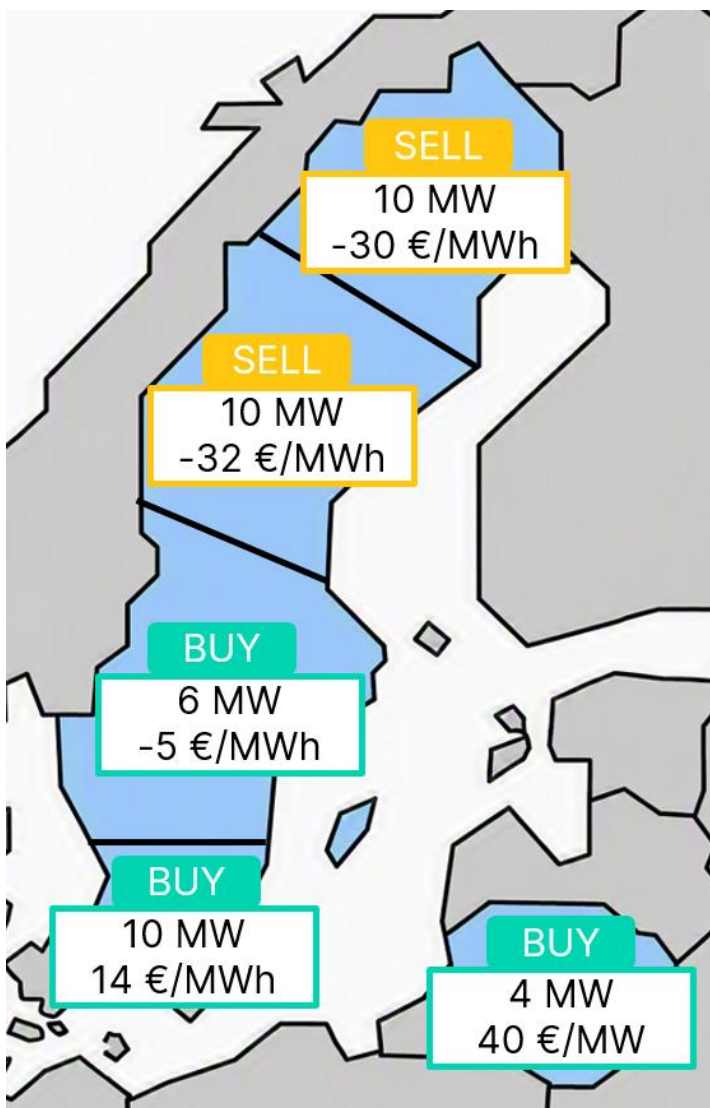
Key principles for the market design





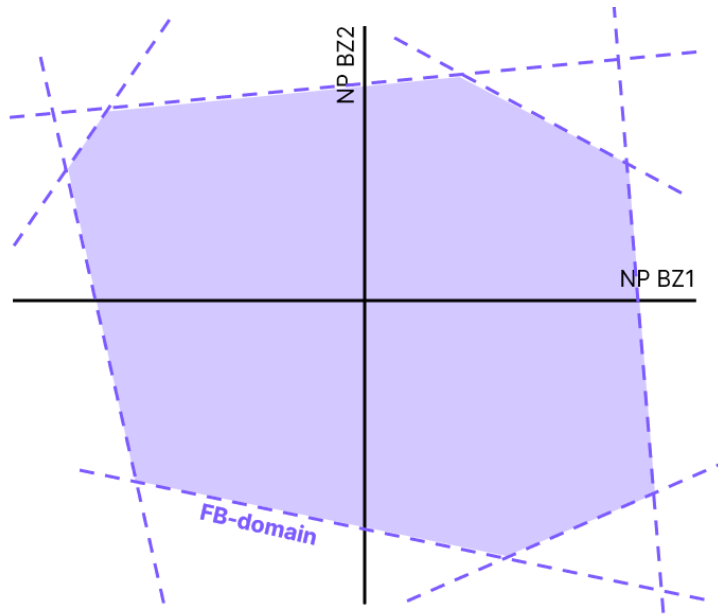
One auction for all bidding zones

- The auction algorithm matches bids across all bidding zones at once
 - One auction per maturity
 - Bids are **not** matched border-by-border
- The algorithm uses the same basic principle as in the day-ahead market
 - Maximizing social welfare
 - Bid-value of accepted buy-bids, minus bid-value of accepted sell-bids
 - Mathematical representation of “supply equals demand” with multiple zones
 - Total buy-volume must equal total sell-volume
 - The accepted volumes must remain within a flow-based domain
- Marginal pricing (pay-as-cleared) for all accepted bids in the bidding zone.



One-sided acceptance

- The algorithm is **not** allowed to accept both buy-bids and sell-bids within the same bidding zone
 - No internal matching of bids within zones
 - A TSO is the counterparty for each accepted bid
- TSOs have **not** ex-ante specified where to buy and where to sell
 - The algorithm classifies the zones based on the bids
 - It is also possible that no bids will be accepted in a particulate zone.
- This implies that there will sometimes be “paradoxically rejected bids”



$$\sum_i NP_i * PTDF_{i,j} \leq RAM_j \forall j$$

Volumes restricted by a flow-based domain

- The flow-based domain determines which combinations of buy-bids and sell-bids that can be accepted by the algorithm
 - Consists of a set of constraints (CNEC) with a corresponding capacity (RAM)
 - Each bidding zone “loads” each CNEC in accordance with a calculated PTDF
- We plan to use a simplified version of the domain that is calculated in accordance with the Nordic long-term capacity calculation methodology.
- Why FB here?
 - FB affects the price formation in the DA market
 - We want the outcomes of the EPAD auctions (in terms of TSO positions) to reflect the expected net positions in the DA market
 - Therefore, we need an allocation mechanism that is similar to DA market.

How to understand the volumes

- For each auction, the volumes are restricted by a flow-based domain
 - The domain itself will be available via the SKM portal

Constraint Name	RAM	ptdf_LT	ptdf_SE1	ptdf_SE2	ptdf_SE3	ptdf_SE4
Border_CNEC_SE1-SE2	34.39	-0.00283	0.89331	-0.01074	-0.00464	-0.00069
Border_CNEC_SE2-SE1	27.38	0.00283	-0.89331	0.01074	0.00464	0.00069
Border_CNEC_SE2-SE3	79.91	-0.01143	0.92133	0.94368	-0.01596	-0.00284
Border_CNEC_SE3-SE2	67.2	0.01143	-0.92133	-0.94368	0.01596	0.00284
Border_CNEC_SE3-SE4	62.02	0	1	1	1	0
Border_CNEC_SE4-SE3	21	0	-1	-1	-1	0
Border_CNEC_SE4-LT	4.67	-1	0	0	0	0
Border_CNEC_LT-SE4	4.67	1	0	0	0	0

How to understand the volumes

- For each auction, the volumes are restricted by a flow-based domain
 - The domain itself will be available via the SKM portal
- As complementary information, the auction calendar will specify the maximum sell and buy volumes that are theoretically possible given the domain
 - The values for each bidding zone are not simultaneously possible -> it will not be possible to reach the max volume in all zones

Constraint Name	RAM	ptdf_LT	ptdf_SE1	ptdf_SE2	ptdf_SE3	ptdf_SE4
Border_CNEC_SE1-SE2	34.39	-0.00283	0.89331	-0.01074	-0.00464	-0.00069
Border_CNEC_SE2-SE1	27.38	0.00283	-0.89331	0.01074	0.00464	0.00069
Border_CNEC_SE2-SE3	79.91	-0.01143	0.92133	0.94368	-0.01596	-0.00284
Border_CNEC_SE3-SE2	67.2	0.01143	-0.92133	-0.94368	0.01596	0.00284
Border_CNEC_SE3-SE4	62.02	0	1	1	1	0
Border_CNEC_SE4-SE3	21	0	-1	-1	-1	0
Border_CNEC_SE4-LT	4.67	-1	0	0	0	0
Border_CNEC_LT-SE4	4.67	1	0	0	0	0



Product name	Area	Period	Max Buy Quantity (MW)	Max Sell Quantity (MW)
MONTHLY CONTRACTS				
LLBMUCT-26	Luleå	October 2026	30	38
SUBMOCT-26	Sundsvall	October 2026	106	112
STBMUCT-26	Stockholm	October 2026	104	131
MABMOCT-26	Malmö	October 2026	66	25
VIBMOCT-26	Vilnius	October 2026	4	4

Illustrative example

Product name	Area	Period	Max Buy Quantity (MW)	Max Sell Quantity (MW)
MONTHLY CONTRACTS				
LLBMOCT-26	Luleå	October 2026	30	38
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VIBMOCT-26	Vilnius	October 2026	4	4

Possible outcome 1

Area	Buy (MW)	Sell (MW)
Luleå		38
Sundsvall		46
Stockholm	22	
Malmö	58	
Vilnius	4	

Possible outcome 2

Area	Buy (MW)	Sell (MW)
Luleå	30	
Sundsvall		112
Stockholm	20	
Malmö	58	
Vilnius	4	

Becoming an auction participant

1

Broker Agreement & KYC

Execute a standard Broker Agreement with SKM and complete SKM's KYC documentation process.

2

Euronext Clearing membership

Establish direct or indirect membership of Euronext Clearing (managed directly with Euronext).

3

Non-Executing Broker notification

Submit a Non-Executing Broker notification to Euronext Amsterdam before your first auction.

4

Portal access

Receive individual access credentials to the SKM Auction Portal, incl. two-factor authentication.

Existing SKM customers: no new agreement or KYC needed — you'll receive Auction Portal credentials directly. Participation is subject to EU sanctions rules (not available to Russian/Belarusian entities or majority-owned affiliates).

Products, orders & timing

Products

Monthly, quarterly, and yearly EPAD contracts in SE1, SE2, SE3, SE4, and LT — listed at Euronext Amsterdam.

Order sizing

Volume in steps of 1 MW; price in steps of 0.01 EUR/MWh. Each order flags whether it is risk-reducing (hedge) or speculative.

Default maturity split

~30% yearly / 40% quarterly / 30% monthly (LT split follows the approved SE4–LT arrangement); reviewed annually with market participants.

AUCTION DAY TIMELINE (CET)

24 h before gate closure Gate opening — orders may be submitted

10:00 Gate closure — no further changes

~11:00 Clearing managed by Euronext Clearing

~11:00 Results published (within 60 min of completion)

>16:00 Trade confirmation via the Auction Portal

Auctions run bi-weekly, every second Tuesday — the schedule is published ≥ 1 month in advance.

Fees & minimum liquidity thresholds



0.0075 EUR/MWh

Brokerage fee on allocated volume only — applies equally to all participants and zones, including the TSOs.

≥ 5

unique bidders per product & maturity (temporarily 3 for the first 4 auctions after go-live)

$\geq 200\%$

of offered volume on LT-SE4 border must be submitted in orders, per product & maturity

$\leq 100\%$

of offered volume may be submitted or allocated to any single participant

If thresholds aren't met

SKM may cancel that product/maturity for the auction; affected orders expire and do not carry forward. Cross-zonal capacity not used in an auction may be carried forward to later auctions at the TSOs' discretion.

Trading Rules are currently in draft (v1.0) and subject to change ahead of go-live — the published version at skm.se governs.



DEMO

The SKM Auction Portal

auction.skm.se — the primary channel for all auction participation

SKM
SVENSK KRAFTMÄKLING

1. Secure login & dashboard



Individual login credentials issued by SKM, with two-factor authentication (Google Authenticator).



Dashboard view of the published auction schedule and offered volumes per bidding zone and maturity.



A dedicated test environment is available on request, to practice before your first live auction.

2. Submitting an order



Specify: bidding zone, product maturity, buy/sell direction, price (0.01 EUR/MWh steps), and volume (1 MW steps).



Flag whether the order is risk-reducing (hedge) or speculative.



Submit, modify, or cancel freely from gate opening (24 hrs before gate closure) until gate closure (10:00 CET) — an order confirmation is generated automatically.

2. Submitting an order

Monday, September 21, 2026
Order Period: Sep 7, 2026 1:00 AM - Sep 21, 2026 4:00 PM

Product Areas

- All Areas
- LULEÅ
- SUNDSVALL
- STOCKHOLM
- MALMÖ
- VILNIUS

Order Entry

Submit Order

+ Add Row

Upload Excel

Product	Type	Price	Qty	Trader	Profile	Action
Select Product...	Type...	0.00	0	Select Trader...	Select Profile...	

Order book

Delete All Orders

Download Order book

Buy Orders (3)

Date Time ↓	Product	Type	Price	Qty	Trader	Profile	Placed By	Action
2026-09-14 08:31:54	SUBY-28	BUY	-17.00	4	Marcus Lindgren	Spec	Marcus Lin...	Edit
2026-09-14 08:31:54	SUBY-27	BUY	-30.00	2	Marcus Lindgren	Spec	Marcus Lin...	Edit
2026-09-14 08:29:56	SUBQ4-26	BUY	-50.00	3	Marcus Lindgren	Spec	Marcus Lin...	Edit

Sell Orders (5)

Date Time ↓	Product	Type	Price	Qty	Trader	Profile	Placed By	Action
2026-09-14 08:31:54	SUBY-28	SELL	-15.80	3	Marcus Lindgren	hedge	Marcus Lin...	Edit
2026-09-14 08:31:54	SUBY-27	SELL	-28.00	3	Marcus Lindgren	hedge	Marcus Lin...	Edit
2026-09-14 08:31:54	SUBY-27	SELL	-28.55	2	Marcus Lindgren	hedge	Marcus Lin...	Edit
2026-09-14 08:29:15	SUBQ4-26	SELL	-49.50	4	Marcus Lindgren	hedge	Marcus Lin...	Edit
2026-09-14 08:29:15	SUBQ4-26	SELL	-49.55	2	Marcus Lindgren	hedge	Marcus Lin...	Edit

2. Submitting an order

Auction: 2026-09-21

Order window closes: 2026-09-21 16:00:00

[Download Template](#)

[← Back to Order Entry](#)

 **Upload Order File**



Click to select your .xlsx order file

Q Parse & Preview

💡 How to use:

1. Download the template above and fill in your orders.
2. Set **Risk Reducing** to **Y** or **N** — the system will automatically match your clearing profile.
3. If multiple profiles match, you will be asked to select one before saving.
4. Upload the completed file and review the preview before saving.

2. Submitting an order

	A	B	C	D	E	F	G
1	Product	Type (BUY/SELL)	Price	Qty	Trader ID	Risk Reducing (Y/N)	
2	LLBQ1-27	BUY		5	MARLIN		
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

3. Results & trade confirmation



Auction results — clearing price, allocated volume, supply/demand curves — published within 60 minutes of completion.



Individual trade confirmations delivered via the portal after 16:00 CET on the auction day.



Results are downloadable in Excel/CSV; historical results are publicly available on auction.skm.se.

3. Results & trade confirmation

 Auction:

2026-09-21

▼

☒ Allocated Only



Trader	Product	Type	Submitted Qty (MW)	Submitted Price (EUR)	Status	Allocated Qty (MW)	Clearing Price (EUR)
Marcus Lindgren	SUBQ4-26	SELL	2	-49,55	Allocated	2	-33,46
Marcus Lindgren	SUBQ4-26	SELL	4	-49,50	Allocated	4	-33,46
Marcus Lindgren	SUBY-27	SELL	2	-28,55	Allocated	2	-23,69
Marcus Lindgren	SUBY-27	SELL	3	-28,00	Allocated	3	-23,69
Marcus Lindgren	SUBY-28	SELL	3	-15,80	Allocated	3	-13,67

3. Results & trade confirmation

 Auction:

2026-10-06



 Auction Date: 2026-10-06

This auction includes the periods: NOV-26, Q1-27, Q2-27, YR-27, YR-28

Buy								Sell					
Contract name	Area	Price (EUR)	Allocated Qty (MW)	Bid Qty (MW)	Max Qty (MW)	Orders	Participants	Price (EUR)	Allocated Qty (MW)	Offer Qty (MW)	Max Qty (MW)	Orders	Participants
MONTHLY CONTRACTS													
SUBMNOV-26	Sundsvall	—	0	2	30	1	1	−59,75	30	140	30	42	9
STBMNOV-26	Stockholm	−9,96	30	211	30	71	12	−10,92	30	154	30	59	14
MABMNOV-26	Malmö	23,00	30	192	30	77	14	—	0	14	30	14	1
QUARTERLY CONTRACTS													
SUBQ1-27	Sundsvall	—	0	7	30	7	1	−57,99	30	141	30	51	10
STBQ1-27	Stockholm	−10,50	30	135	30	49	13	−10,55	30	157	30	64	12
MABQ1-27	Malmö	11,87	30	144	30	60	12	—	0	5	30	1	1
SUBQ2-27	Sundsvall	—	0	2	20	1	1	−22,80	20	98	20	43	9
STBQ2-27	Stockholm	−1,60	20	80	20	30	13	−0,56	20	98	20	41	12
MABQ2-27	Malmö	13,18	20	93	20	41	11	—	0	0	20	0	0
YEARLY CONTRACTS													
SUBY-27	Sundsvall	—	0	0	10	0	0	−30,88	10	61	10	34	8
STBY-27	Stockholm	−4,95	10	49	10	25	10	−4,89	10	53	10	32	9
MABY-27	Malmö	13,01	10	51	10	26	11	—	0	0	10	0	0
SUBY-28	Sundsvall	—	0	0	10	0	0	−17,50	10	60	10	33	8
STBY-28	Stockholm	−2,73	10	52	10	28	10	−2,48	10	50	10	31	11
MABY-28	Malmö	13,00	10	49	10	26	9	—	0	3	10	1	1

Getting ready to participate



Get access

Request test-environment access from SKM to explore the portal before your first live auction.



Watch the calendar

The auction schedule is published at skm.se ≥ 1 month ahead — dates, products, and offered volumes.



Reach out

Questions on the trading rules or onboarding?
Contact SKM auction operations directly.

Contacts

SKM auction operations: auction@skm.se • +46 8 5062 63 66 • www.skm.se

Svenska kraftnät: www.svk.se LITGRID: www.litgrid.eu Euronext Clearing: www.euronext.com/clearing



Thank you

Questions & discussion