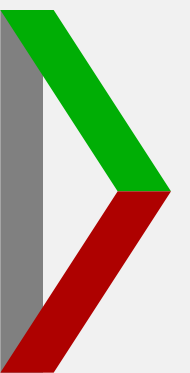


SOD Obligation Trade Validation Platform

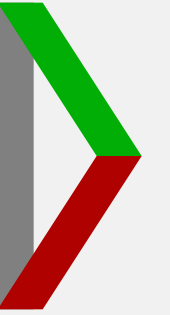
A platform for LSEs and the CPUC

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The Forward Market Design team



We are a consulting group with expertise in market design, algorithmic game theory, economics, and computer science with experience ranging from advising grid operators to building products.



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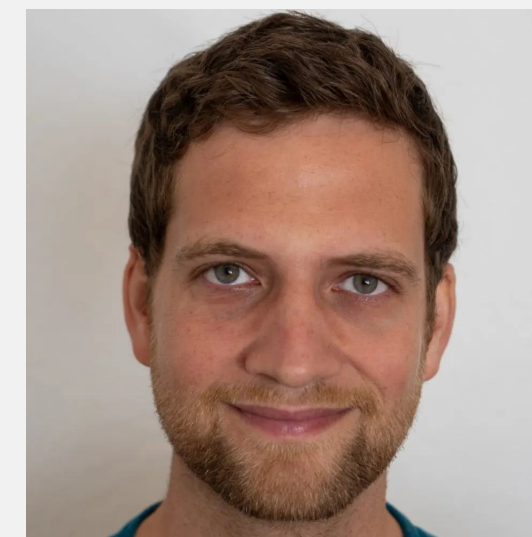
Market design and algorithms. Consulting advisor.



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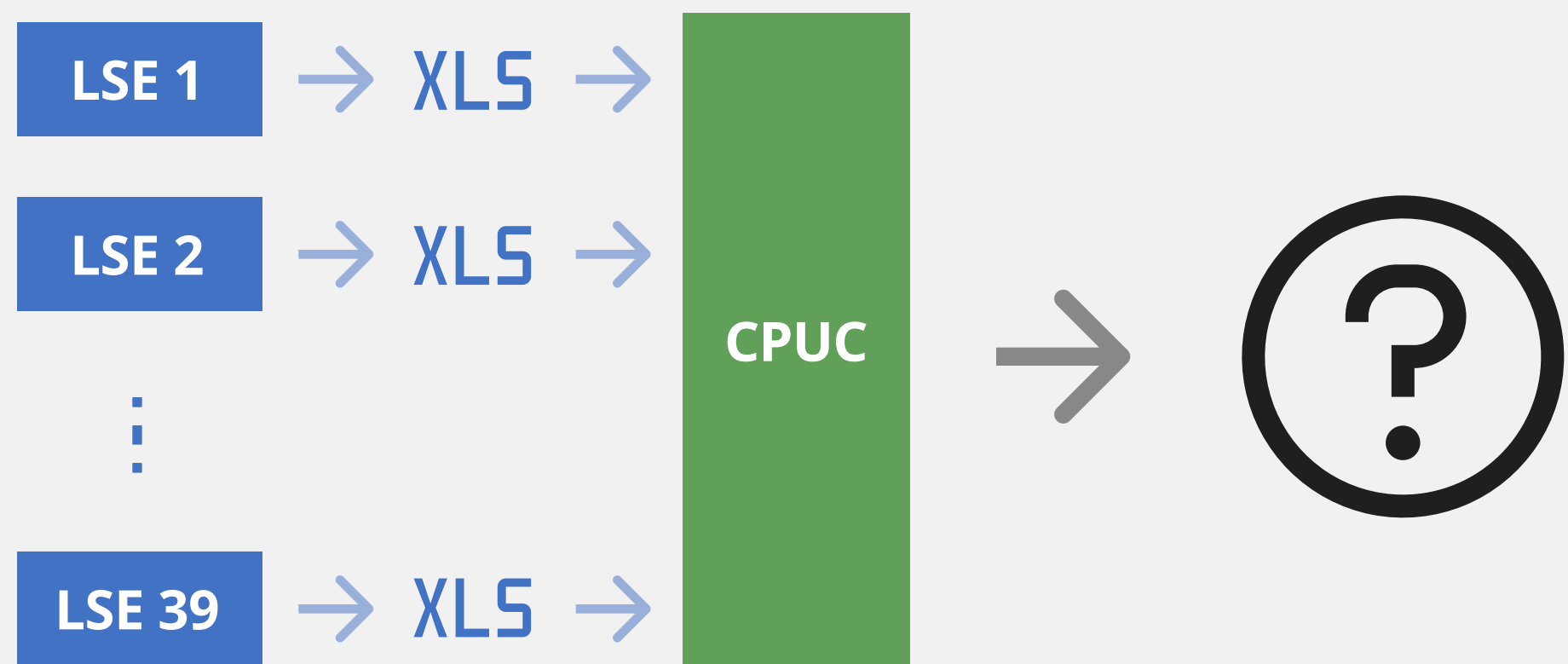
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The validation problem

LSEs independently submit showing spreadsheets. Within a few days, the CPUC must reconcile reported trades, diagnose mismatches, and validate corrections.



Independent generation of showing spreadsheets creates many opportunities for error, and resolving issues can be challenging.

Potential mismatches:

Quantity mismatch	One side reports 10 MW, another reports 12 MW.
Product mismatch	One side reports H19, another reports H20.
Direction mismatch	Both sides report being the seller
Omission	Only one side reports a trade
Stale record	Showing does not reflect contract amendments

The CPUC has days to diagnose these mismatches and oversee a solution.

The platform solution

A SOD validation platform reduces independence and automates validation, limiting errors up front and minimizing CPUC effort.

Without platform

LSEs submit independent reports

Conflicts are not found until CPUC tries to reconcile showings

CPUC must trace mismatches manually

Excel revisions can lead to repeated inconsistent submissions

With platform

LSE reports are built from shared records of key contract details

Conflicts are surfaced and resolved before showing submission

Platform groups exceptions and identifies likely source

Platform forces consistency in every submission

Example:

Red CCA
XLS Sell **10 MW** of H19 to Blue CCA

Blue CCA
XLS Buy **12 MW** of H19 from Red CCA

Why are Red CCA and Blue CCA reporting different quantities?

Without platform: Mismatch is discovered by CPUC when after are submitted, must be diagnosed and resolved in days.

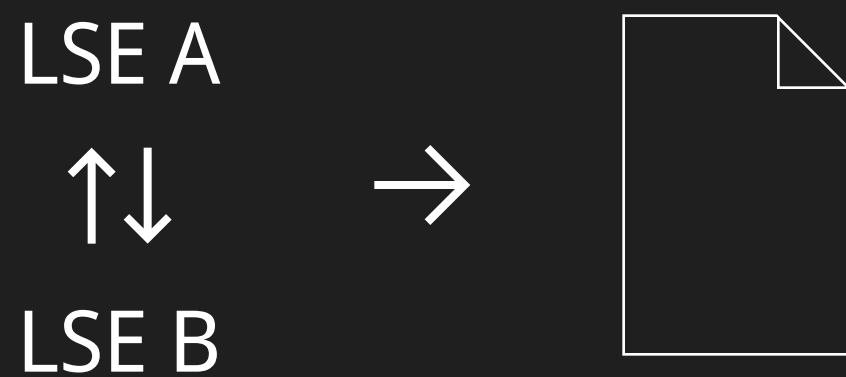
With platform: Mismatch never happens because showings are built from shared contract records.

The integrity chain

The SOD validation platform makes **showings consistent by construction**.

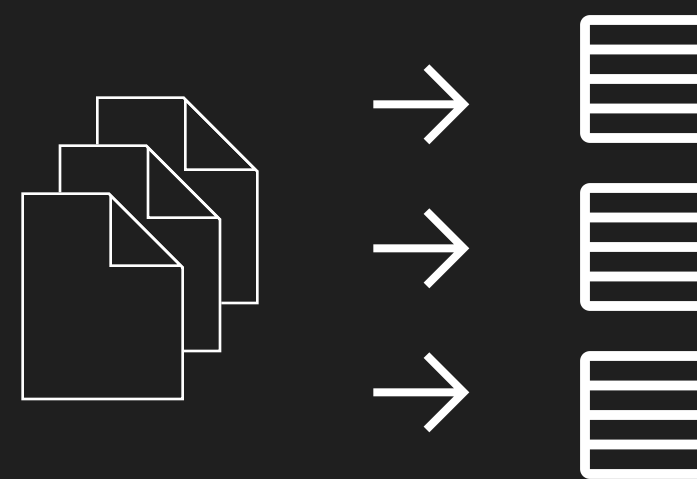
1. Confirmation

LSEs follow handshake protocol to create a shared record of key details for each contract.



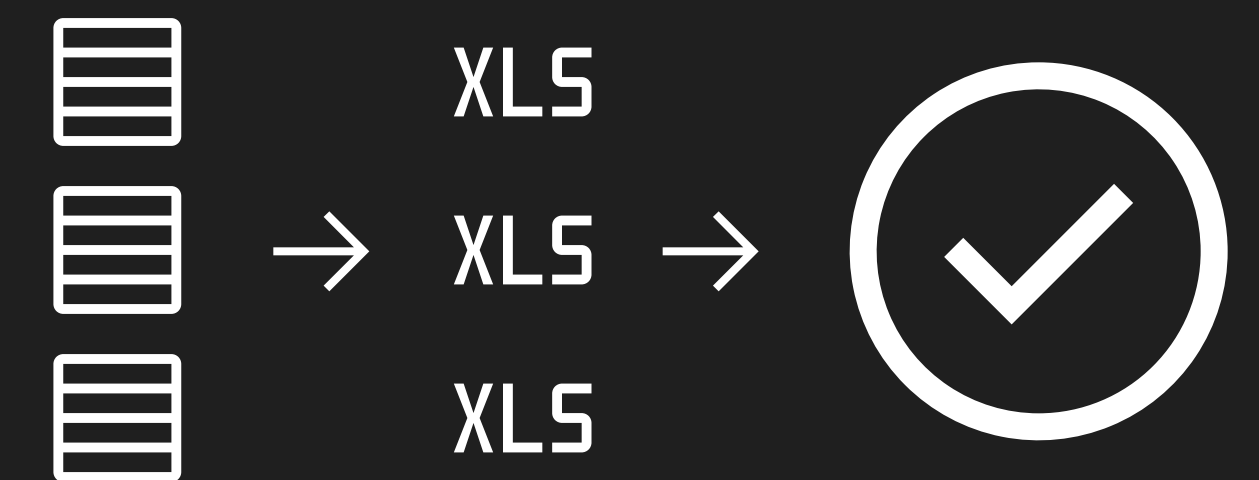
2. Affirmation

Showing tables are generated from confirmed contracts. LSEs affirm showing tables are up-to-date.



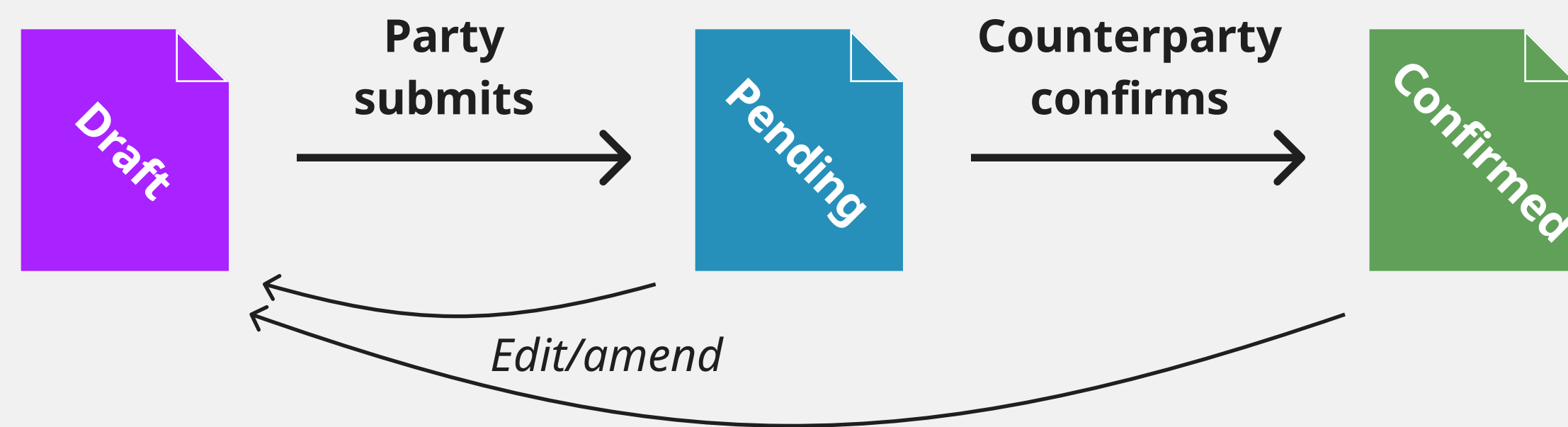
3. Validation

CPUC checks excel showings against affirmed tables.



Contract confirmation

Handshake protocol creates a **single, shared record of a contract**.



Draft:

- Either LSE can edit the contract record and submit

Pending:

- One LSE has attested that the record is correct
- The other LSE must confirm or edit

Confirmed:

- Both LSEs have attested that the record is correct
- Trades from the contract will be included in showing

Example: Confirming a contract

Red CCA and Blue CCA sign contract off-platform

Red CCA sells 10 MW of H19 and 8 MW of H20 obligation to Blue CCA for May–September 2026.



Red CCA creates draft—Red CCA clicks “record trade” and enters the details.



Red CCA submits to Blue CCA—Red CCA clicks “submit” to attest that the details are correct



Blue CCA Confirms—Blue CCA clicks “confirm.” Red CCA and Blue CCA now share a single on-platform record of the contract.

Recording on-platform

The platform walks LSEs through the confirmation process:

- 1. One LSE enters the details of the trade and submits for confirmation.
- 2. The counterparty LSE checks the contract and confirms. If changes are needed, the contract is returned for confirmation.

Draft

Pending

Confirmed

Waiting for you to confirm

Overview

My role

Buyer

First month ⓘ

July 2026

Counterparty

Red CCA

Last month ⓘ

September 2026

Internal document ID ⓘ

RedCCA123456789

Obligations

Hour	July 2026 (MW)	August 2026 (MW)	September 2026 (MW)
H19	150	180	
H20	60	100	70

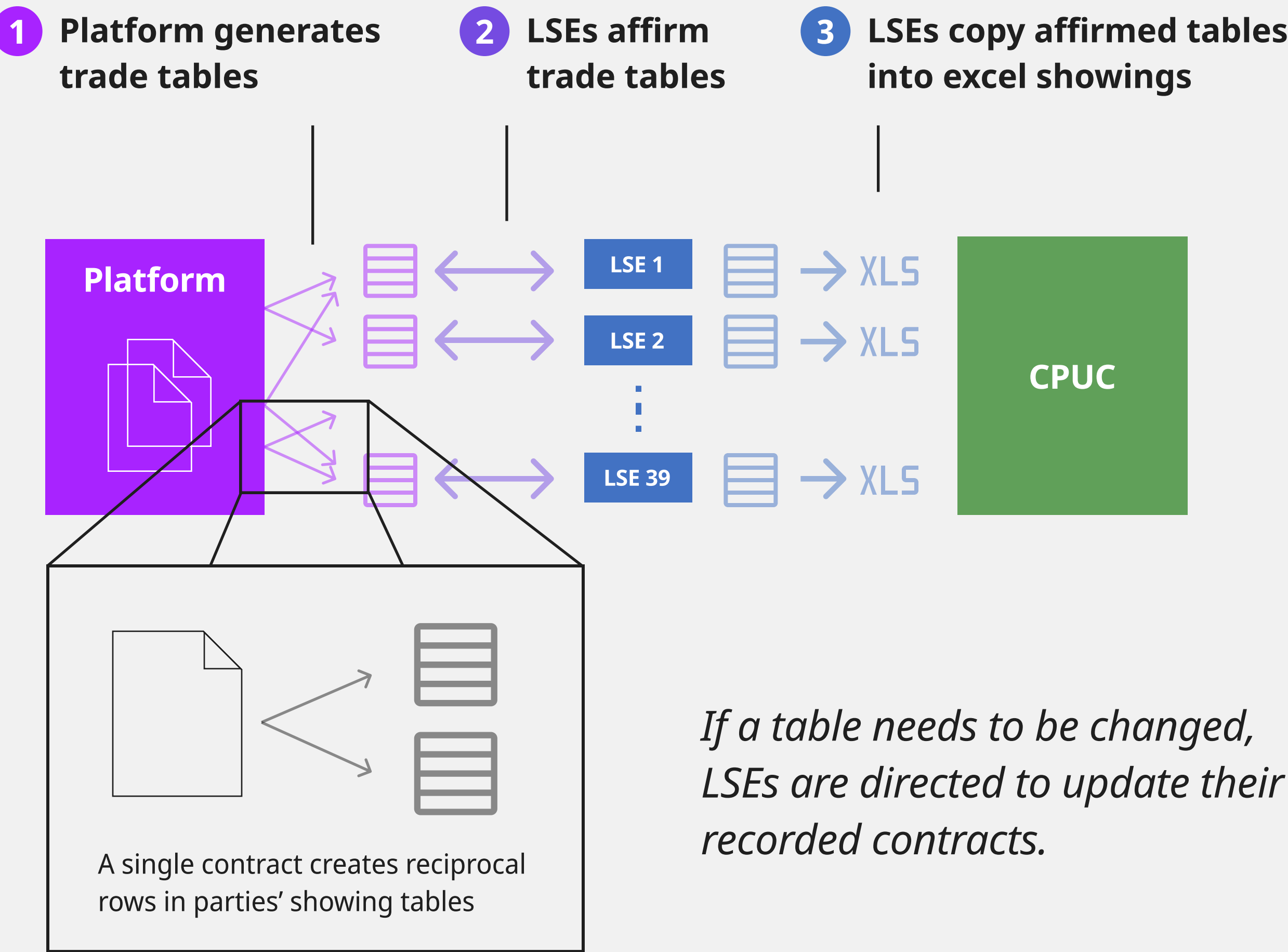
Delete

Edit

⤴ Confirm

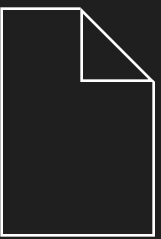
Showing tables

Showing tables are consistent by construction because they are generated from shared contract records.



If a table needs to be changed, LSEs are directed to update their recorded contracts.

Example



Shared contract record:
Red CCA sells 10 MW of H19 and 8 MW of H20 obligation to Blue CCA for May–September 2026.

Showing tables generated for June

Red CCA	Blue CCA
	
Sell 10 MW of H19 to Blue CCA	Buy 10 MW of H19 from Red CCA
Sell 8 MW of H20 to Blue CCA	Buy 8 MW of H20 from Red CCA
...	...

Tables match—Red CCA and Blue CCA have reciprocal rows in their tables.

Showing tables on-platform

LSEs get showing tables directly from platform:

- 1. The platform generates tables of obligation trades based on contracts.
- 2. LSEs affirm their trades and download tables to paste into their Excel showings.

Trade rows cannot be edited unilaterally. If a contract has changed, LSEs must amend the shared record.

Contract trades ⓘ

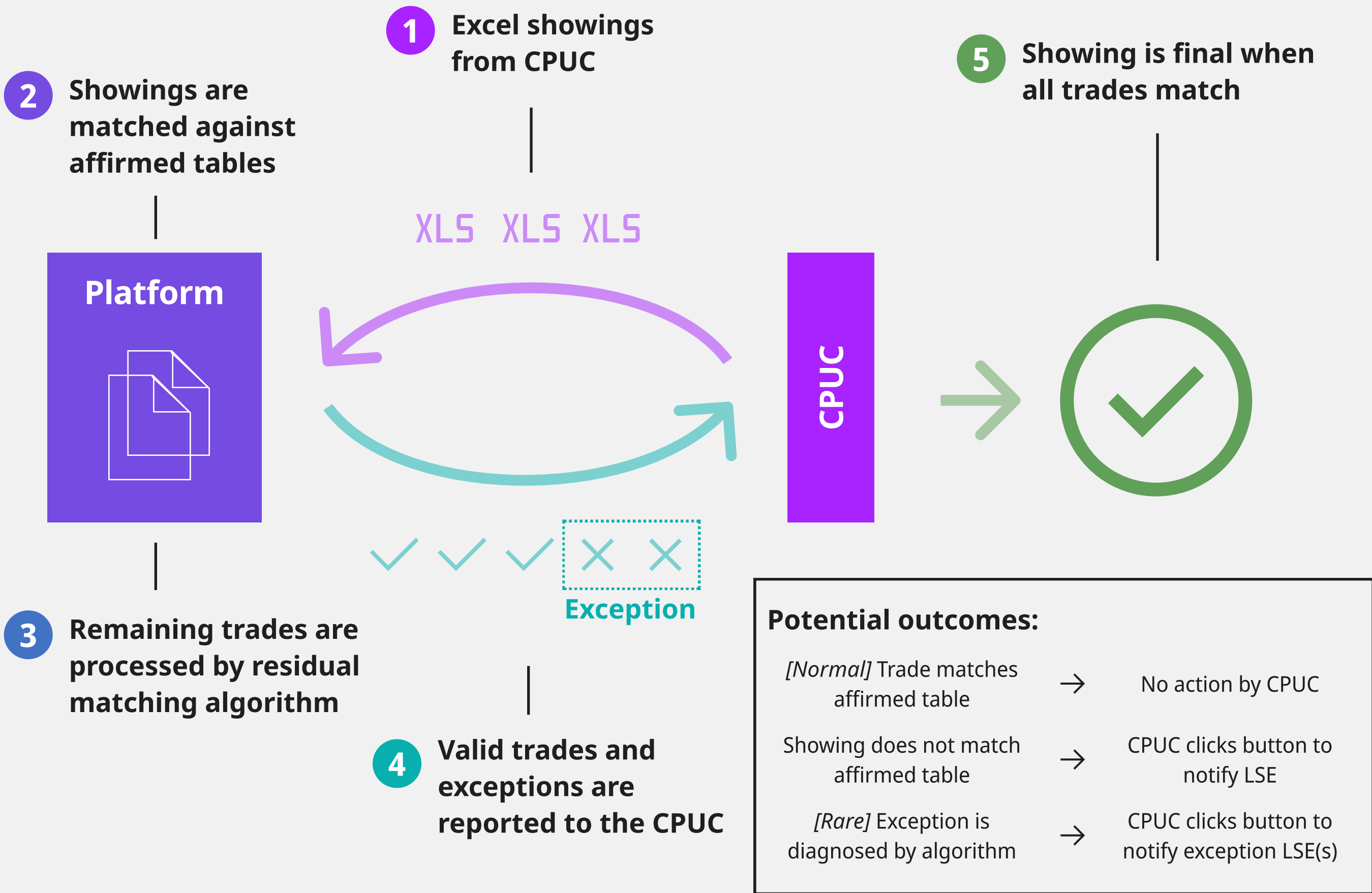
You must affirm trades for this showing

Hour	Buy/Sell	Quantity (MW)	Counterparty	
H1	Buy	4	Green Community Choice Association	Amend contract
H1	Sell	8	Orange Community Choice Association	Amend contract
H2	Sell	2	Green Community Choice Association	Amend contract
H19	Sell	10	Blue Community Choice Association	Amend contract
H20	Sell	8	Blue Community Choice Association	Amend contract
H20	Sell	6	Purple Investor Owned Utility	Amend contract

✓ Affirm and download

Validation

CPUC work is reduced from full reconciliation to occasional review of diagnosed exceptions. Most showings pass without issue; most exceptions are addressed with a single click to notify LSEs.



Examples

Red CCA transcription error—Red CCA makes an error copying their affirmed trades into their showing

Affirmed trade	Excel showing
 Sell 10 MW of H19 to Blue CCA ...	XLS Sell 12 MW of H19 to Blue CCA ...

Outcome: Residual matching algorithm detects mismatch and sees that Red CCA is responsible. The CPUC clicks a button to notify Red CCA

Offline mismatch—Green CCA and Yellow IOU do not use the platform to confirm trade and their showings do not match

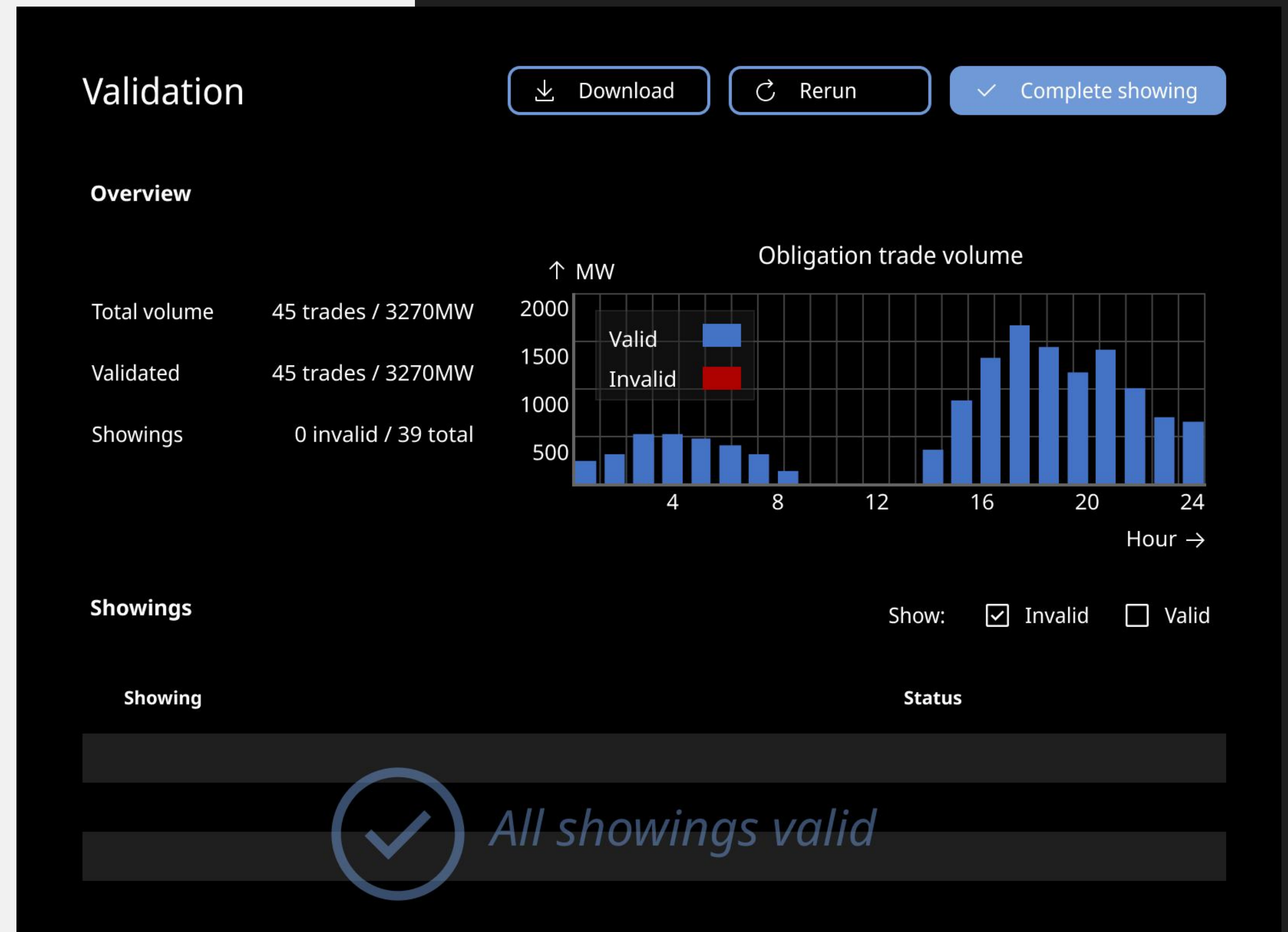
Green CCA showing	Yellow IOU showing
XLS Sell 10 MW of H19 to Yellow IOU ...	XLS buy 12 MW of H19 from Green CCA ...

Outcome: Residual matching algorithm detects mismatch but cannot determine which showing is correct, Green CCA and Yellow IOU share responsibility. The CPUC clicks a button to notify *both* Green CCA and Yellow IOU.

Validation on-platform

CPUC uses built-in validation tool to check showings for consistency:

1. Validation tool compares trades against known contracts. Trades that match are automatically valid.
2. Remaining trades are matched by an algorithm.
3. If all trades come from contracts, showings will pass. If some trades do not match, the algorithm identifies problem groups, and the CPUC repeat validation when revised showings are available.

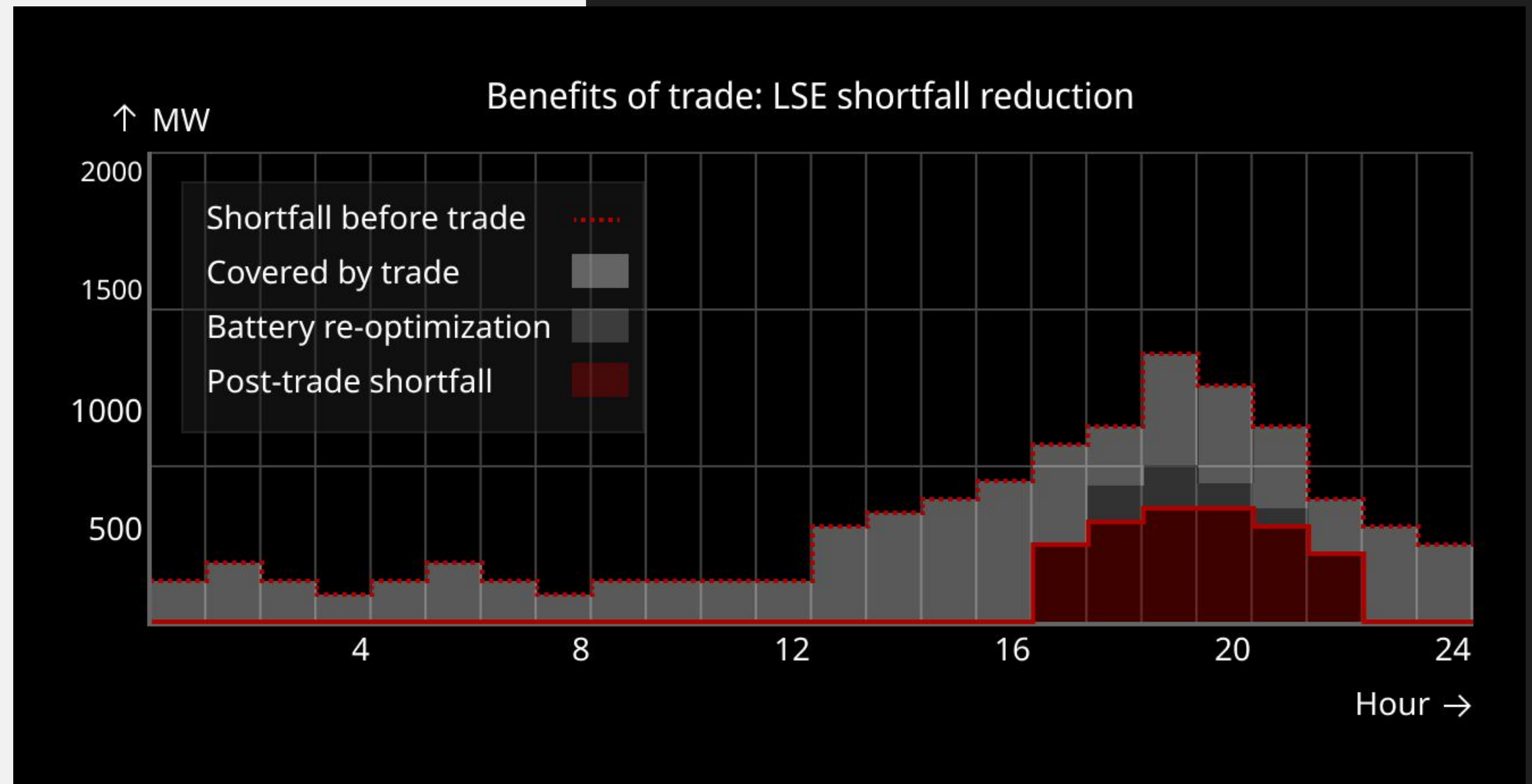


Future option: Facilitating trade

In the future, the platform may offer supplemental services to facilitate obligation trading. Potential mechanisms include:

- Bulletin board for expressing interest
- Scheduled obligation clearing events 1 month ahead of showing

Participation would be optional and independent of validation capabilities.



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