FARCROSS

Co-optimized cross-border power transmission capacity auction algorithm

This demonstrator deals with day-ahead capacity allocation for regional cross–border trading, by utilizing available transfer capacities for balancing capacity procurement and for energy trading, simultaneously. It extends current, energy-only transfer capacity auction algorithms, thus assuring broader system security and the more effective and valuable allocation of the grid capacity.

Major Impact Factors:

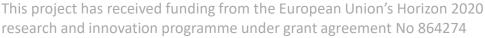Integrating balancing capacity and energy auctions:

- Use of the available cross-border capacity for reserve procurement while transitioning from ATC to Flow Based operation.

- Cooperative energy and balancing capacity exchange between interconnected countries to enable more efficient ancillary services market and cross-border market coupling.

DEMO LEADER

MŰEGYETEM 1782

SLOVENIA

HUNGARY

CROATIA

ROMANIA

"This demonstrator is a crucial part of FARCROSS project, its results will create a huge impact on the market integration in the CEE/SEE region"
- Péter SŐRÉS, BME Hungary

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Technology Types:

Co-optimized cross-border capacity auction algorithm (OPTIM-CAP) for optimal energy and balancing capacity bid matching: Market animation algorithm and mathematical model to efficiently represent balancing capacity and energy products in a day-ahead auction market

ICT market platform for co-optimized day-ahead energy and balancing capacity auction

- aFFR: Automatic Frequency Restoration Reserve.
- mFFR: Manual Frequency Restoration Reserve.
- PTDF: Power Transfer Distribution Factor.
- MTU: Market Time Unit.

Components:

- Use of optimization solution – tools for the analysis of corresponding mathematical models:
  - ➢ Math model in Advanced Mathematical Programming Language (**AMPL**) + Optimization solver (**CPLEX**).
  - ➢ Demonstration market platform in industrial environment (NEMO DMZ), configurable auction management

Fields of Application:

- **Market Platform** applicable to energy markets of Slovenia, Hungary, Romania and Croatia.

Transmission System Operators	Market Operators	End Users	Technology Providers/ Research Institutes
Transelectrica	HUPX	UNIPER	UPB
MAVIR	BORZEN	HSE	BME
HOPS			UNIZG – FER
			MEI

Expected Benefits:

- Improved day-ahead energy and balancing capacity market coupling for cross--border connections.
- Simultaneous energy reservation and coordinated utilization of it, in an optimized way (on a network and market level).
- Exploitation of inactive transmission capacity, to procure additional network ancillary and accurately allocated market – balancing services.

Technology Readiness Level (TRL):

- The architecture and service distribution of software components has been validated in an industrially relevant environment. Thus, a **TRL 5** has been achieved. The aim is to achieve a **TRL 7** by the end of the FARCROSS project.