

Cooperation between the Nordic and the Baltic power systems in Electricity Balancing

Integration of Renewable Energy and Future Electricity Market Design

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Reliable Sustainable Connected

Basis for the study: BEMIP

Common balancing market is foreseen by BEMIP:

Step 3. Activities Target timescale 2011 - 2013.	Status
Baltic common day ahead market (based on Nord Pool Spot trading platform)	Completed
Stepwise introduction of Intra-day market	Completed
Market based congestion management, implicit auction between Baltic countries managed by NPS	Completed
Estonia, Latvia, Lithuania and Finland have a common position and trading principles towards non EEA third countries	No
Transparency according to the ERGEG's North European Electricity Regional Initiative	Completed
Common reserves and balancing power market	TSO-TSO
Harmonized imbalance settlement and imbalance pricing	Partially
Common market monitoring and surveillance rules	Completed
Development of financial markets (OTC)	Partially

Basis for the study: Entso-E Balancing Pilot Project



In response to the call for cross border pilot projects on integration of electricity balancing issued by ENTSO-E,
the Nordic TSOs nominated a Pilot Project for Balancing Electricity.

To examine possibilities of the cooperation between Nordic TSOs and TSOs from neighbouring countries four feasibility studies are planned within the Nordic Pilot Project.

- The Nordic-German feasibility study
- The Nordic-Polish feasibility study
- **The Nordic-Baltic feasibility study**
- The Nordic-Netherlands feasibility study

Goal: Expansion of cooperation between Baltic and Nordic TSOs in balancing electricity exchange

Study Content and Goals



- **Identify opportunities (and obstacles) for the balancing energy exchange in current market set-ups.**
- **The necessary actions to implement the Baltic CoBA: Principles for common Baltic imbalance netting and coordinated Baltic balancing.**
- **Necessary steps to facilitate balancing energy exchange between the Baltic and Nordic markets (considering goal for Baltic and Nordic balancing markets integration).**

Study results: Baltic and Nordic balancing market cooperation development

Suggested Baltic - Nordic balancing market cooperation and developments process may be split into four steps:

Step 1

- Development of current TSO-TSO assistance, testing new functions and extending TSO-TSO assistance

Step 2

- Creation of common Baltic Balancing Area (incl. harmonisation of the balance management system principles and creation of common balancing market)

Step 3

- Establishment of deeper cooperation between Baltic and Nordic balancing markets aiming at CMO

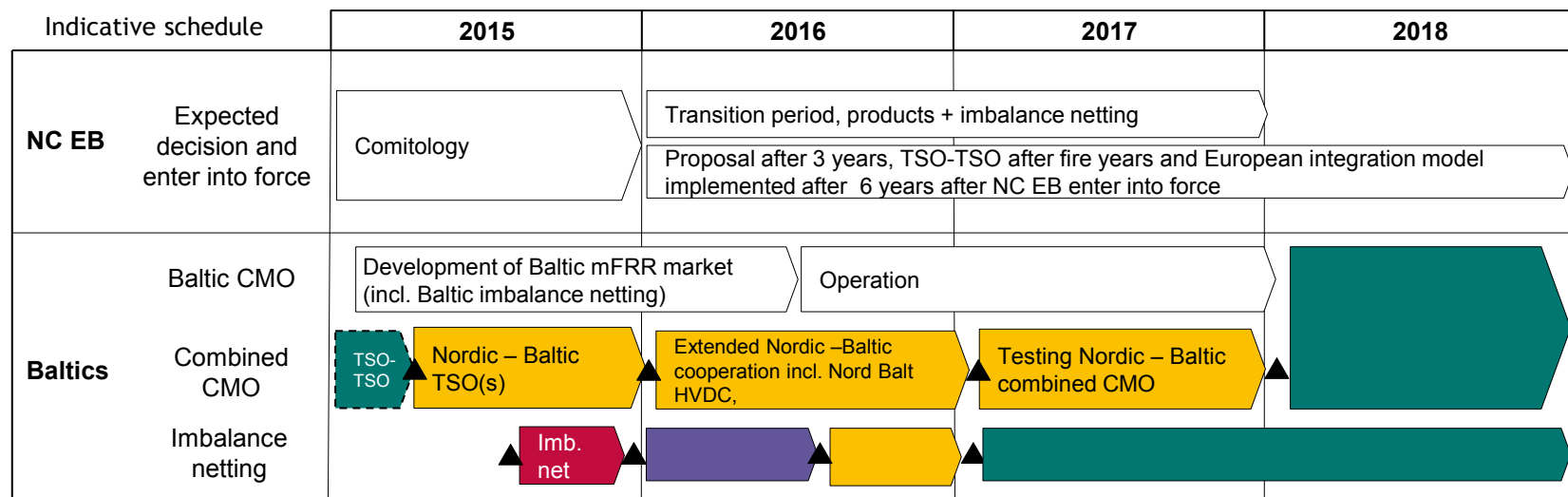
Step 4

- Creation of common Baltic - Nordic balancing market

Pilot 5: Illustration of timeline

Illustration - deadlines have not been discussed and are only for illustrationary use

- Feasibility,
- Implementation
- Testing
- Operation
- Decision gate (Nordics)



Step 1. Development and extension of current TSO-TSO assistance

- The current TSO-TSO assistance between Fingrid and Elering should be further developed and new possibilities for cooperation should be tested.
- Tested and proven well-functioning principles should be implemented.
- After commissioning of NordBalt DC connection, the cooperation could be extended to take place between Svenska Kraftnät and Litgrid with harmonized principles, if agreed between relevant parties.
- This kind of assistance could also be extended to include a Baltic TSO - Nordic mFRR market CMOL cooperation model where it would be possible to activate more mFRR bids than just the bids available in the connecting countries.

Step 2. Creation of common Baltic CoBA



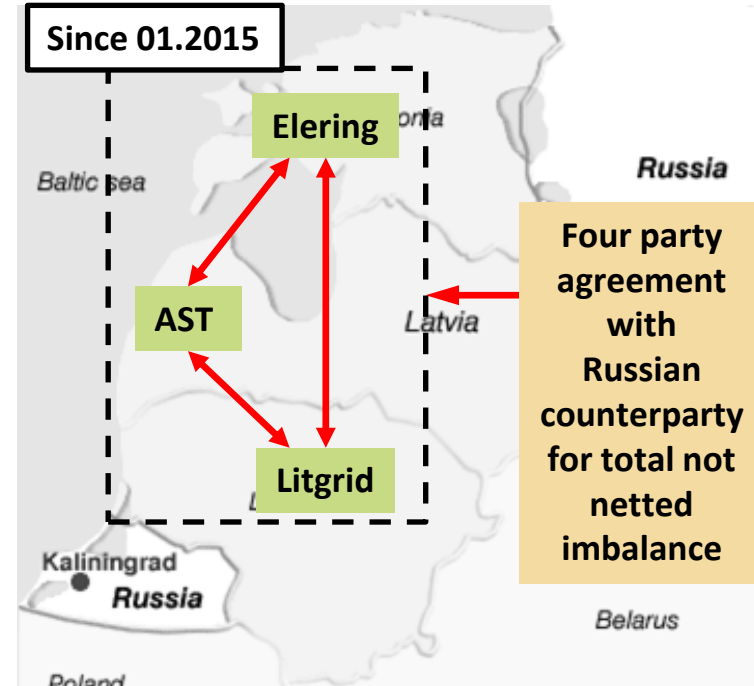
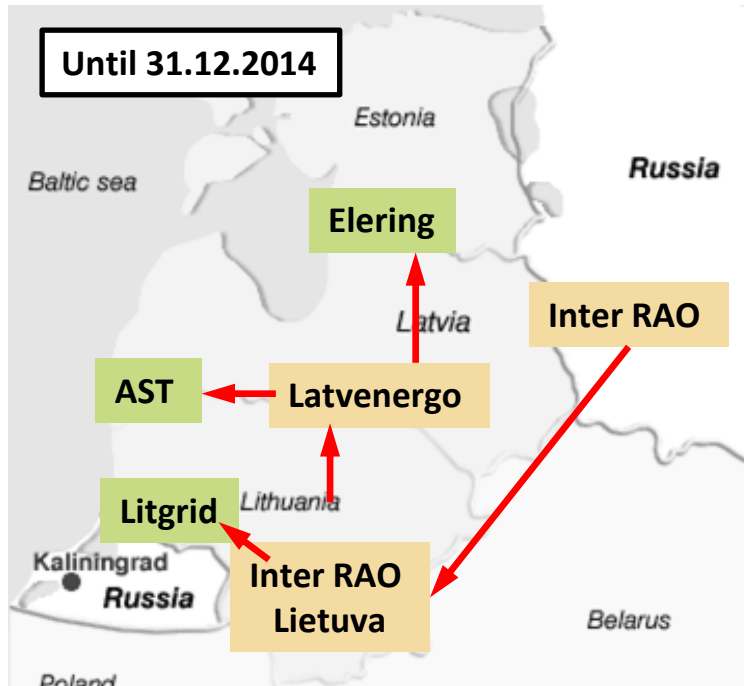
Current balancing market set-up differences and lack of harmonisation between the Baltic mFRR-markets and Nordics hinder an efficient co-operation for mFRR exchange.

Study WG proposes to proceed with Baltic balancing market development to create common Baltic balancing market for the efficient balancing energy exchange within Baltic power systems and with Nordic power systems.

Proposals for improvement of the current situation:

- **The Baltic TSOs should take more clear role in balancing power systems in Baltics;**
- **Common Baltic balancing energy (mFRR) market shall be created;**
- **Activation procedures, pricing and settlement of exchanged balancing energy shall be harmonised across the Baltics;**
- **mFRR product definition shall be harmonised.**

Step 2. Baltic power system imbalance netting



The previous practice and the new goal of imbalance settlement and pricing in the Baltic is described in detail in the Nordic-Baltic feasibility study on electricity balancing.

Baltic TSOs Open Balance Agreement

The agreement on the Sale and Purchase of Imbalance Energy in the Baltic Electricity System has been signed by AB “INTER RAO Lietuva”, Elering AS, AS “Augstsprieguma tīkls” and LITGRID AB and is effective as of January 1st, 2015.

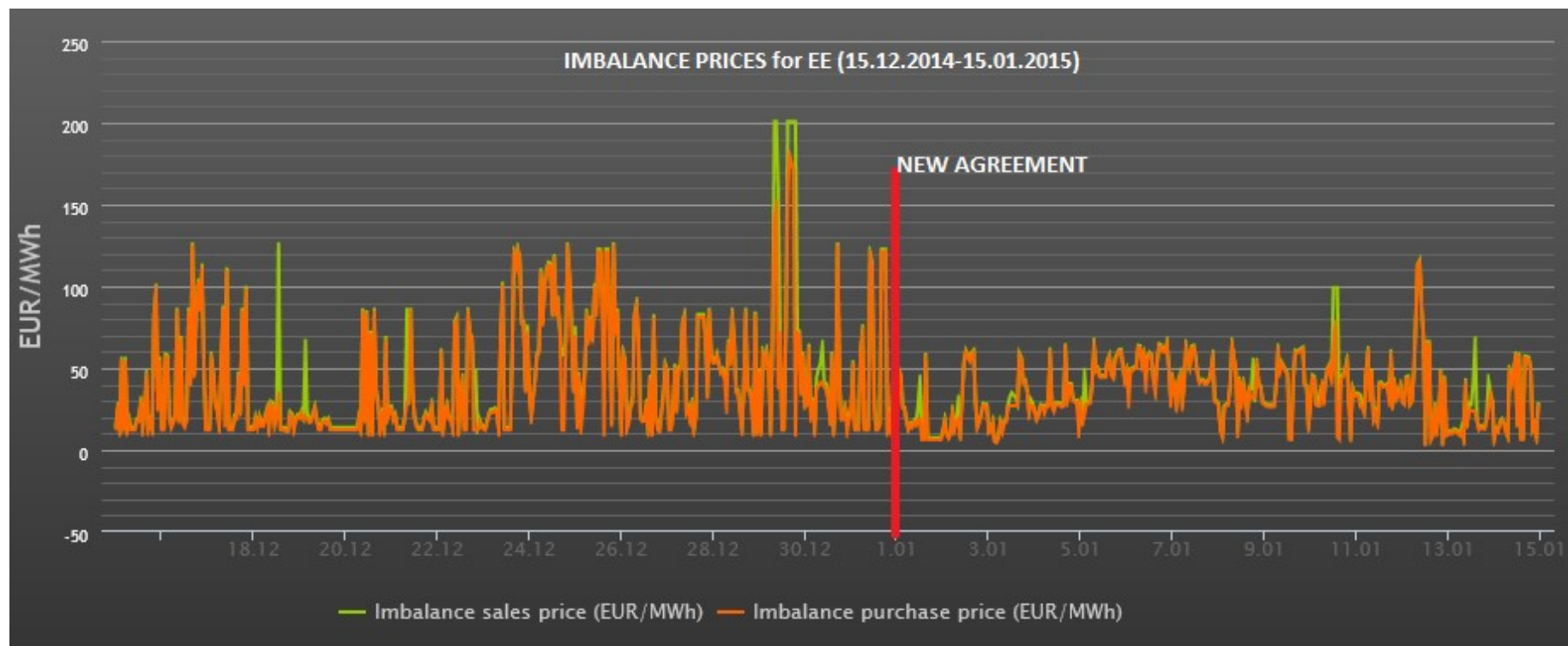
Under the agreement:

- The Baltic electricity systems constitute as a Baltic Coordinated Balance Area (“Baltic CoBa”).
- **Elering** acts as the **Settlement Coordinator** and shall perform the Baltic CoBa settlement reports and shall be responsible for data exchange and invoicing between the Baltic CoBa and the Open Balance Provider.
- Each TSO is responsible for the data of their own Balance Area.

Statistics



*For Baltic there has been 63% hours with imbalance netting values in January 2015
For EE: the methodology for calculating the imbalance electricity prices for the Estonian power system remains unchanged. But as the reference price is based on new principles, the picture with effect is below:*



Target model for Baltic CoBA



	Day Ahead Market	Intraday Market	Balancing Market	Settlement of balance area's ACE	Settlement of balancing deliveries	Imbalance settlement
Deadline	D-1	H-1	Intra-hour	D+1	D+1	M+15
Chain	NPS and BRP > TSO	NPS and BRP > TSO	TSO-TSO-BSP	TSO-TSO	TSO-TSO-BSP	TSO-BRP
The goal	Physical trading	Extra-trading with purpose to avoid imbalance energy	System balancing: CoBa shall be based on total Baltic's ACE.	Imbalance netting inside the Baltic's CoBa. Not-netted imbalance energy traded with open balance provider.	Each TSO shall settle the activated volume of balancing energy with the BSP in its balance area and between other areas	Each TSO shall calculate the Imbalance for each BRP
The pricing principles*	Marginal pricing		The pricing methods shall be based on marginal pricing.	The price of netted imbalance is based on average Elspot prices of Baltic's bidding area. The price of not-netted imbalance is based on Open Supply price.	Marginal pricing	Input shall be based on balancing market prices. Incentives to reduce imbalance.
Pre-conditions	OK	OK	Common ACE agreement; New IT solutions or common platform and bid activation algorithms should be developed.			Harmonization of imbalance pricing model should be analysed separately

Baltic standard mFRR product



Baltic mFRR standard product: All technical requirements among Baltic TSOs can/should be harmonized with Nordic mFRR standard product

Key characteristics of common Baltic mFRR product:

Standard Products	The proposal of mFRR standard products to be exchanged
Full Activation Time	15 min
Minimum and maximum quantity	MIN = 5 MW MAX = no restrictions
Deactivation Period	< 15 min
Pricing Method	Marginal price
Divisibility	Offers are divisible
Minimum and maximum duration of Delivery Period	MIN = 1 min; MAX = 60 min (but not more than until the end of operational hour).
Mode of Activation	Manual
Gate closure of the offers	H-45min
Firmness of the offers	All received offers are firm (fixed). Market participant has responsibility to inform TSO if there are unplanned technical restrictions to execute the offer after the Gate closure but not later than exact order.

Step 3. Establishment of deeper cooperation between Baltic and Nordic balancing markets

Expansion of Baltic and Nordic balancing market cooperation could go in parallel depending on the following developments of Baltic and Nordic balancing markets:

- Exchange of the Baltic and Nordic balancing merit order lists between TSOs for information and testing purposes;
- Harmonization of mFRR product exchanged between FI-EE and LT-SE;
- Creation of the model for cooperation between common Baltic and Nordic balancing markets aiming at common merit order (CMO);
- Decision on cooperation of Baltic - Nordic separate CMO and mFRR product activation and settlement procedures;
- Implementation of the model for cooperation between common Baltic and Nordic balancing markets aiming at CMO and needed IT solutions.

Step 4. Creation of common Baltic - Nordic balancing market

- Proven the successful cooperation between the Baltic CoBA and Nordic CoBA the integration of mFRR markets with similar market setups can be considered as final target
- Parallel to the creation of common Baltic - Nordic balancing market also other harmonization processes (such as German, Netherlands, UK and Polish markets) might happen,
 - as the ultimate goal is to have common European-wide balancing market.



Thank you!