

Baltic 15 minute imbalance settlement period implementation

Concept Document after PC

1. Introduction and regulatory framework

Commission regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity guideline (hereinafter EBGL Regulation) sets requirements for target balancing markets and settlement in European Union. **Article 53(1) states that: By three years after the entry into force of this Regulation, all TSOs shall apply the imbalance settlement period (ISP) of 15 minutes in all scheduling areas while ensuring that all boundaries of market time unit shall coincide with boundaries of the imbalance settlement period.**

Commission regulation (EU) 2019/943 of 5 June 2019 on internal market for electricity (hereinafter IME Regulation)) requires by 1 January 2021, the imbalance settlement period shall be 15 minutes in all scheduling areas, unless regulatory authorities have granted a derogation or exemption (IME, Art.8.4). As the EBGL entered into force in 18.12.2017, the formal deadline for 15 minute ISP implementation is 18th of December 2020. The TSOs of a synchronous area may jointly request an exemption from the requirement to the relevant regulators, by performing in cooperation with the Agency and at least every three years, a cost-benefit analysis concerning the harmonisation of the ISP within and between synchronous areas. The derogation laid down in article 62 of EB GL may be granted maximum until 31 December 2024.

To secure the streamlining of all boundaries of market time units with the boundaries of the imbalance settlement period TSOs and NEMOs shall joint follow also the requirements of the Articles 7 and 8 of IME Regulation and Articles 7 and 8 Commission Regulation (EU) 2015/1222 of July 2015 establishing a guideline on capacity allocation and congestion management (hereinafter – CACM Regulation). This is requested by the above three regulations with the main objective to allow market participants to trade as close as possible to the operation hours and provide the market participants with the capabilities to reduce their potential imbalances.

The term market time unit is defined in the Article 2(19) of COMMISSION REGULATION (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets (hereinafter – Transparency Regulation) and is applicable to all constituencies of the functioning of the market starting with the long term market to the balancing market and requires both TSOs and NEMOs to accommodate their system and services to secure required streamlining. Elering AS, AS “Augstsprieguma tīkls”, LITGRID AB (hereinafter: Baltic TSOs) carried out the public consultation on the Baltic 15 minute imbalance settlement period implementation concept document during 10.05 -10.06.2019. The preliminary concept document aimed to implement 15 minute ISP on 1st of December 2020. Feedback was received from 14 market participants, of which BRPs, DSOs and BSPs were represented. The majority of respondents submitted negative feedback to the TSOs proposals, outlining the following:

- The two-step approach for the transition to a shorter ISP seems impractical: step I of the proposal provides no added value when compared to existing arrangements, stakeholders do not see added value from proposed changes if it does not motivate self-balancing closer to real time and does not create signals and incentives for it;
- Insufficient time to develop or make changes to IT systems in order to accommodate a shorter ISP incl. quality of measurement data and measuring resolution, stakeholders see IT implementation challenging and costly, need more time to prepare and allocate budget;
- Potential reduction of illiquidity of market products traded on the power exchange shorter than the existing 60 minute resolution taking into account the Nordics decision to postpone the implementation of the 15 minute ISP;
- Differences in balancing product characteristics in the Baltic-Nordic balancing market, stakeholders indicate that changes to balancing market should not affect liquidity for Baltic-Nordic balancing market cooperation.

On November 14 (2019), the Nordic TSOs published the updated roadmap for implementation of Nordic Balancing Model. The revised roadmap for the Nordic Balancing Model introduces a period of parallel operation before the new 15 minutes imbalance settlement is proposed to go live in Q2 2023¹.

Taking into account the feedback received from market participants, Baltic TSOs hereby submits an updated roadmap for the implementation of the 15 minute ISP in the Baltics.

This document is prepared by Baltic TSOs with the aim to present a concept model for the implementation of 15 minute ISP in Baltic countries as required by EBGL.

This concept document covers main aspects in market operational arrangements in the Baltics that require changes performed gradually in light of the 15 minute ISP implementation.

¹ Link to Nordic roadmap document: <http://nordicbalancingmodel.net/wp-content/uploads/2019/11/NBM-Roadmap-Report-updated-after-consultation.pdf>

2. The scope of 15 minute ISP implementation

As defined in EBGL, a change of ISP means a change of time unit for which imbalance volumes and imbalance prices shall be calculated for and this involves also addressing the issue of streamlined market time unit boundaries with intraday and also day ahead markets.

To ensure a smooth and consistent implementation of said EBGL requirement, Baltic TSOs consider the following market and operational activities within the implementation of 15 minute ISP that are further analysed in this Concept document:

1. Day-ahead market coupling and intraday market coupling
2. Balancing market
3. TSO-BRP imbalance settlement
4. Metering data

The 15 minute ISP implementation concept proposal for Baltic area foresees derogation application until 31st of December 2024 to implement 15 minute ISP together with additional balancing market products and changes in Baltic power system balancing setup.

Baltic TSOs have agreed to submit the derogation application to NRAs according to EBGL requirements with main arguments as follows:

- 1) Moving to 15 minutes time resolution affects the whole chain of business processes which entails investments especially for IT systems for the all market participants (including network operators). Along with the changes related to Datahubs and 15 minute metering, market participants need to modify their processes when 15 minute ISP and market time unit are implemented, e.g. updates in trading, balance management and production planning systems;
- 2) As indicated above and from the feedbacks from market participants it shall be addressed also the streamlining of the market time units across all markets, including the day ahead and intraday markets and their applicability in Baltic countries bidding zones and TSOs and NEMOs systems, services and business process adjustments and adaptation for different market time units;
- 3) For the purpose to establish incentives for BRPs when balancing and imbalance price is set for each 15 minute ISP the Baltic total balance control shall be done on 15 minutes, which requires implementation of automatic FRR balancing energy market.. Implementation of 15 minute balance control and aFRR process is challenging and time consuming requires adaptation of national legislations to ensure compliance to requirements of Regulations (SOGL, EBGL, CEP) and significant changes in IT systems;

- 4) Expected 15 minute ISP implementation derogation for Nordic balancing areas may decrease the liquidity for Baltic-Nordic balancing market cooperation.

Taking into account the implementation of European mFRR balancing energy platform (MARI) which includes 15 minute mFRR balancing products and preparation for synchronisation with Continental Europe in Baltics which requires introduction of aFRR processes, the full implementation of 15 minute ISP in Baltics is foreseen to be done by completing 2 major milestones:

Milestone 1 with target date Q4 2022 – changes in Baltic balancing setup according to the EB GL requirements concerning mFRR processes and for joining MARI platform and implementation of related 15 minute data exchange capability on TSO-TSO, TSO-BRP and TSO-BSP business processes level.

Milestone 2 with target date Q4 2024 – a) introduction of aFRR processes in Baltics for preparation to synchronise with Continental Europe and joining PICASSO platform; b) 15 minute ISP measurement data collection on DSOs level according to national legislation.

Reaching these milestones will ensure that all elements of Baltic balancing setup and energy markets (Balancing and Intraday) are in place to incentivise market participants in keeping and/or helping to restore the system balance. Main changes to the elements of the Baltic balancing setup and energy markets are shown in Table 1.

Table 1. Expected changes to the Baltic balancing setup and markets

Market elements	Current status	Expected changes and interrelation with milestones	
		Milestone 1	Milestone 2
BRP scheduling	60 minute resolution schedules GCT 45 minutes before ISP (LV, LT) GCT 20 minutes before ISP (EE)	15 minute along with 60 minute resolution (EE only) schedules according to national BRP terms and conditions GCT 25 minutes before ISP	
ID market	Established Single Intraday Coupling (XBID) allows trading with 15 min ID products, but TSOs and NEMOs local systems and joint business processes shall be addressed	Baltic local developments and adaptation to ensure that all boundaries of MTU shall coincide with boundaries of the ISP15	
mFRR Balancing market	<ul style="list-style-type: none"> • 60 minute products • CMOL for each 60 minutes • GCT 45 minutes before ISP • Full activation time 15 minutes • Marginal price for each 60 minute ISP 	Requirements as defined for European mFRR balancing energy platform	
Settlement for BSPs	60 minutes	15 minutes	
Settlement for BRPs	Imbalance volume and imbalance price for 60 minutes	15 minutes Imbalance price methodology update to include European mFRR balancing energy standard product and pricing	15 minutes Imbalance price methodology update to include European aFRR balancing energy standard product and pricing
aFRR Balancing market	Not established	Requirements as defined for European aFRR balancing energy platform	
Balance control by TSOs	60 minutes	60 minutes	15 minutes

Regardless of the application for a derogation, the Baltic systems shall start with changes in the development of IT systems, changes in legislation and further development of the rules of the balancing market in order to be ready to introduce changes according to the identified milestones and deadlines, thus ensuring introduction of 15 minute ISP.

2.1. Day-ahead and intraday markets

The Baltic day-ahead market is coupled with the European day-ahead market through Multi Regional Coupling as Single Day ahead Coupling (SDAC), and Baltic countries are part of the XBID system which is securing the functioning of European Single intraday coupling (SIDC). The market is functioning through pre-, post- and coupling business processes with different roles of TSOs and NEMOs in those business process. This allows Nominated electricity market operators to offer different trading products for market participants. According to the Article 8 of IME Regulation nominated electricity market operators shall provide market participants with the opportunity to trade in energy in time intervals at least as short as the imbalance settlement period in both day-ahead and intraday markets, while TSOs performing their tasks under Article 8 of CACM Regulation shall cooperate with NEMOs in order to ensure that all boundaries of MTU shall coincide with boundaries of the ISP15. Currently both day-ahead and intraday markets in Baltics uses only 60 minute resolution products.

Established Single Intraday Coupling (XBID) allows trading with 15 min ID products in general, but TSOs and NEMOs local systems and joint business processes shall be addressed nationally or regionally, namely before introducing 15 min products in Baltic Bidding Zones respective business processes shall be reviewed and adapted.

Current SDAC solution doesn't allow to trade in other time resolution than only 60 minutes. But following the requirements of the IME Regulation TSOs together with NEMOs under the framework of SDAC governance have started the work planning to address the possible trading in shorter time resolutions. It is currently foreseen that after a centralised European solution will be completed, there will be likely gradual rollout of this solution in different European Union Member States considering the national and/or regional state of readiness to accommodate such solution.

For ensuring Milestone 1 of Baltic 15 minute ISP implementation Baltic TSOs proposes for NEMOs active in Baltic area to introduce additional 15 minute market time unit and products on all Baltic CCR cross borders for intraday trade between bidding zones.

2.2. Balancing market

Today, Baltic TSOs perform Baltic balance control on 60 minute resolution using resources available in Baltic mFRR balancing market. As provided in the Table 1 the full implementation of 15 minute ISP requires establishment of 15 minute Baltic balance control with 15 minute balancing market time unit. In order establish well functioning and efficient Baltic balancing energy market with 15 minute market

time unit the automatic FRR balancing energy market should be established. Baltic TSOs estimate that implementation of aFRR balancing market would require changes in national legislation, standard terms and conditions for BRPs and BSPs, and also IT development both for TSOs and BSPs. Thus, the implementation of Baltic aFRR balancing energy market is expected until end of 2024 and Baltic TSOs will engage stakeholders for the development of Baltic aFRR balancing market in accordance with European aFRR balancing energy platform (PICASSO).

The Milestone 1 as provided in the Table 1 is directly connected with Baltic implementation of European mFRR balancing energy platform (MARI) which is expected to go-live in 2022. It is expected that relevant changes will be implemented before Baltic countries join the MARI platform pursuant to All TSOs' proposal for the implementation framework for a European platform for the exchange of balancing energy from frequency restoration reserves with manual activation in accordance with Article 20 of EBGL (hereinafter – mFRR IF) which is currently under approval process.

Standard product characteristics

A change in the Baltic mFRR standard product characteristics is required shifting from the current setup to the one based on the European standard mFRR balancing energy product as defined in mFRR IF. With respect to the implementations concerning Milestone 1, the following changes to Baltic standard mFRR product could be foreseen:

1. **Full activation time “FAT”.** The period between the activation request by the connecting TSO and the corresponding full delivery of the balancing power will be not more than 12,5 minutes according to mFRR IF.
2. **Minimum duration of delivery period.** 5 minutes according to mFRR IF. Minimum duration of delivery period means the minimum period of delivery during which the balancing service provider delivers the full requested change of power in-feed to, or the full requested change of withdrawals from the system.
3. **Balancing energy gate closure time.** BSP shall provide mFRR balancing energy bids no later than 25 minutes according to mFRR IF.
4. **CMOL.** CMOL will be created for each quarter hour.

The above mentioned changes are subject to change considering that mFRR IF is not yet approved and still under development.

Pricing of mFRR balancing energy and TSO-BSP settlement

Pricing of mFRR balancing energy shall be changed in accordance to All TSOs' proposal on methodologies for pricing balancing energy and cross-zonal capacity used for the exchange of balancing

energy or operating the imbalance netting process pursuant to Article 30(1) and Article 30(3) of EBGL in the timeframe of implementation of European mFRR balancing energy platform.

TSO-BSP settlement is performed in accordance with national terms and conditions for BSPs which are based on Baltic balancing market rules. For the implementations concerning Milestone 1, the balancing energy volume shall be calculated and allocated for each respective quarter.

Baltic TSOs will develop the detailed updated mFRR balancing market model document in Q3 2020 for public consultation purposes

2.3. TSO-BRP imbalance settlement

TSO-BRP settlement is performed in accordance with national terms and conditions for BRPs which are based on Baltic balancing market rules. For the implementations concerning Milestone 1, the following changes shall be applied for calculation of imbalance:

1. BRP Position shall be calculated based on confirmed BRP schedule for each 15 minute ISP in MWh;
2. BRP Imbalance adjustment shall be calculated based on TSO-BSP settlement result for each 15 minute ISP in MWh;
3. BRP allocated volume shall be calculated for each 15 minute ISP in MWh;
4. BRP imbalance shall be calculated for each 15 minute ISP in MWh.

For the implementations concerning Milestone 1, the imbalance price shall be calculated pursuant to EBGL requirements based on Baltic CoBA Imbalance settlement rules with following changes:

1. Imbalance price shall be equal for all 15 minute ISPs within an hour;
2. Main components of imbalance price shall be the balancing market prices of activated products within an hour and monthly based targeted component;
3. In case of no activation the price shall be determined based on value of the avoided activation of mFRR.

Value of avoided activation of mFRR may be calculated according to EBGL requirements taking into account the bid price or bid prices, per direction, for balancing energy available for this ISP from Baltic BSPs.

For the final implementations concerning Milestone 2, the imbalance price shall be calculated pursuant to EBGL requirements:

	Imbalance price for short	Imbalance price for long
Activated balancing energy from aFRR, mFRR and RR products	At least the weighted average price of up-FRR activations	At least the weighted average price of down-FRR activations
No activation of balancing energy	Reference price shall be as the value of the avoided activation of FRR	

Baltic TSOs will develop the detailed updated imbalance settlement model document in Q3 2020 for public consultation purposes.

2.4. Metering data allocation and 15 minute ISP implementation

With the objective of implementing 15 minute ISP as a full package primary metering data in 15 minute resolution is need. In order to have 15 minute resolution metering data the meters should be changed or reconfigured, if possible. Such changes have impact for all electricity grid users and especially distribution system operators, therefore specific requirements to implement 15 minute resolution metering should be included in relevant amendments to the national legislation.

The timeline for national legislation amendments proposed by Baltic TSOs is included in chapter 3.

For the implementations concerning Milestone 1 the 15 minute resolution metering data exchange should be implemented for metering points on transmission network level and for BRPs portfolio level according to national rules and conditions.

For the implementations concerning Milestone 2 the 15 minute resolution metering data exchange should be implemented for metering point on distribution network level according to national rules and conditions.

About technical solution:

For the purpose to implement interim step of 15 minute ISP Baltic TSOs have analysed possible national options as follows:

- 1) **For Estonia** the option would be to handle the metered data allocation for imbalance settlement via Data Hub platform as follows:
 1. Master data per each metering point shall include a 15 minute or 60 minute time resolution criteria;
 2. If the metering point includes a 15 minute resolution, the network operator shall submit to Data Hub the measurement data using 15 minute resolution time series. The measurement data shall be submitted to BRPs portfolio directly;
 3. If the metering point includes a 60 minute resolution, the network operator shall submit to Data Hub the measurement data using 60 minute resolution time series. In this case Data Hub shall divide the hourly volume to 15 minute resolutions and allocate the volumes to BRP portfolio.
 4. The national legislation (grid code) shall set the obligation for network operators to install 15 minute readers for customers based on criteria.

- 2) **For Latvia** the suggested way would be to handle the metered data allocation for imbalance settlement as follows:
 1. By target date of Milestone 1, the national data hub shall be capable to provide aggregated BRP data in 15 minute resolution and all relevant IT processes shall be established:
 - a. all metering data from TSO and all DSOs shall be submitted to the national data hub with 15 or 60 minute resolution (as individual meter point data or as aggregated data by trader);
 - b. at least for the grid users with installed capacity above 5 MW metering data shall be submitted to the national data hub as individual meter point data in 15 minute resolution.
 2. By target date of Milestone 2, metering data for at least 80% of amount of total consumption shall be submitted to the national data hub as individual meter point data in 15 minute resolution.

- 3) **For Lithuania** the option would be to handle the metered data allocation for imbalance settlement as follows:
 1. TSO shall provide 15 minute resolution data for all metering objects which will be collected from metering devices in 15 minute resolution.
 2. Each DSO shall provide 15 minute resolution metering data per each BRP which shall consist from following metering data:

- a. Metering data with 15 minute resolution will be collected from all transmission network metering devices and those metering devices in distribution network where 15 minute metering is installed.
- b. For metering points which meter only hourly values 15 minute resolution values shall be calculated by applying rules defined in national legislation.
- c. For metering points which do not have hourly metering possibility 15 minute resolution values will be to apply standard profile for 15 minute.

3. Roadmap for implementation

A roadmap for the implementation of 15 minute ISP along with stakeholder involvement is as follows:

Task	Deadline	Responsible party
Public consultation on Baltic 15 minute ISP implementation Document	2019 Q2 (done)	Baltic TSOs commonly
Updated document for 15 minute ISP implementation Concept	2019 Q4 (done)	Baltic TSOs commonly
Request for derogation	18.06.2020	Baltic TSOs commonly
For implementations concerning Milestone 1:		
Public consultation on updated Baltic balancing market rules (including standard product) and imbalance settlement rules for Milestone 1	2020 Q3	Baltic TSOs commonly
Initiation of amendments of relevant national legislation (for Milestone 1)	2020 Q4	TSO, NRA, Ministry
Approved Baltic balancing market rules (including standard product) and imbalance settlement rules for implementation of Milestone 1	2020 Q4	Baltic TSOs commonly
Final amendments of relevant national legislation	2021	NRA, Ministry
IT developments for a) 15 minute ISP data exchange capability on TSO-TSO; TSO-BRP and TSO-BSP business processes level; b) 15 minute ISP measurement data exchange on TSOs metering point's level	2021-2022	Each TSO, BRP, BSP
Change of national standard terms and conditions for BRPs and BSPs	2022	TSO, NRA

Testing of procedures and data exchange and IT systems amendments	2022	Baltic TSOs, BSPs, BRPs
Go-Live of implementations concerning Milestone 1	Q4 2022	Baltic TSOs commonly + each connecting TSO
For implementations concerning Milestone 2		
Updated roadmap and activities for amendments of Baltic Balancing Model	Q4 2022	Baltic TSOs commonly
Latest deadline for 15 minute ISP measurement data exchange on DSOs metering point's level according to national legislation	Q4 2024	DSOs, Ministry
Go-Live of implementations concerning Milestone 2	Q4 2024	Baltic TSOs commonly + each connecting TSO

Deadlines set in the roadmap are indicated taking into account that all necessary decisions from supervisory institutions will be taken timely.

Definitions

Balance Responsible Party (BRP) means a market-related entity or its chosen representative responsible for its imbalances;

Balancing means all actions and processes, on all timelines, through which TSOs ensure, in a continuous way, the maintenance of system frequency within a predefined stability range, and compliance with the amount of reserves needed with respect to the required quality;

Balancing energy means energy used by TSOs to perform balancing and provided by a balancing service provider;

Balancing energy gate closure time (GCT) means the point in time when submission or update of a balancing energy bid for a standard product on a common merit order list is no longer permitted;

Balancing market means the entirety of institutional, commercial and operational arrangements that establish market-based management of balancing;

Balancing service provider (BSP) means a market participant with reserve-providing units or reserve-providing groups able to provide balancing services to TSOs;

Baltic power system means the power systems of Estonia, Latvia and Lithuania;

Common merit order list (CMOL) means a list of balancing energy bids sorted in order of their bid prices, used for the activation of those bids;

Imbalance means an energy volume calculated for a balance responsible party and representing the difference between the allocated volume attributed to that balance responsible party and the final position of that balance responsible party, including any imbalance adjustment applied to that balance responsible party, within a given imbalance settlement period;

Imbalance Price means the price, positive, zero, or negative, in each imbalance settlement period for an imbalance in each direction;

Imbalance settlement means a financial settlement mechanism for charging or paying balance responsible parties for their imbalances;

Imbalance settlement period (ISP) means the time unit for which balance responsible parties' imbalance is calculated;

Marginal Price means a principle according to which the price of the last activated balancing energy offer following merit order applies to all activated bids during the particular imbalance settlement period;

Market time unit means the period for which the market price is established or the shortest possible common time period for the two bidding zones, if their market time units are different (Transparency regulation – Art. 2(19));

mFRR (Manual Frequency Restoration Reserves) means the active power reserves activated manually to restore system frequency to the nominal frequency and for synchronous area consisting of more than one LFC area power balance to the scheduled value.

Standard product means a harmonised balancing product defined by all TSOs for the exchange of balancing services.