

Baltic 15 minute imbalance
settlement period
implementation
Concept Document

1. Introduction and regulatory framework

Commission regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity guideline (EB GL) 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.**

As the EB GL 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 may be granted maximum until 1 January 2025.

Baltic TSOs aims to implement 15 minute ISP on 1st of December 2020. The exact go-live date is subject to change depending on 15 minute ISP implementation in Nordic area, implementation of 15 minute intraday market products or any other external circumstances that may impact Baltic countries. On April 26 (2019), the Nordic TSOs posted the information about a delay in the implementation of 15 minute ISP for more than a year. A more detailed roadmap will be presented on a Nordic Balancing Model on May 29th. The updated roadmap will be subject to public consultation. Taking the responses from the consultation into account, the Nordic TSOs will revise the roadmap and submit a new deadline for implementation of 15 minute ISP. The date is then to be decided by the Nordic National Regulatory Authorities.

This document is prepared in cooperation with Elering AS, AS “Augstsprieguma tīkls”, LITGRID AB (hereinafter: Baltic TSOs) with the aim to present a concept model for the implementation of 15 minute ISP in Baltic countries as required by EB GL.

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

2. The scope of 15 minute ISP implementation

AS defined in EB GL, a change of ISP means a change of time unit for which imbalance volumes and imbalance prices shall be calculated for.

To ensure a smooth and consistent implementation of said EB GL 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
2. Intraday market
3. Balancing market
4. TSO-BRP imbalance settlement
5. Metering data

The 15 minute ISP implementation concept proposal for Baltic area foresees step wise approach towards final solution, described in table 1 and summarised as:

- a) Step 1 includes 15 minute ISP implementation for intraday and balancing market purposes;
- b) Step 2 includes 15 minute ISP implementation with additional balancing market products and changes in Baltic power system balancing setup¹. Proposal for Step 2 is initial and may be changed.

Table 1. The 15 minute ISP implementation concept proposal details

Market level	Current state	STEP 1 2020.12.01	STEP 2 Exact timeline TBD, latest by 2025
Day-Ahead		60 minutes	
Intra-day market	60 minute products GCT 60 minutes before ISP for all borders except FI-EE border, where GCT 30 minutes before ISP	15 minute product along with existing 60 minute products GCT 60 minutes before ISP for all borders except FI-EE border, where GCT 30 minute before ISP	15 minute product along with existing 60 minute products GCT 30 minutes before ISP
BRP scheduling	60 minute resolution schedules	15 minute (LV, LT) along with existing 60 minute resolution (EE only)	15 minute (LV, LT) along with existing 60 minute resolution (EE

¹ The prerequisite for Step 2 is an operating aFRR market in Baltic countries; Step 2 is prognosed to be in place latest by year 2025, when Baltic countries plan to synchronize with European power system.

	GCT 45 minutes before ISP (LV, LT) GCT 20 minutes before ISP (EE)	schedules according to national BRP terms and conditions GCT 45 minutes before ISP (LV, LT) GCT 20 minutes before ISP (EE)	only) schedules according to national BRP terms and conditions GCT 25 minutes before ISP
Balancing market (mFRR)	<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 	<ul style="list-style-type: none"> • 15 minute products • CMOL for each 15 minutes • GCT 25 minutes before ISP • Full activation time 12,5 minutes • Settlement volumes per 15 minute ISP • Marginal price during 60 minutes for each 15 minute ISP 	Requirements as defined for European mFRR balancing energy platform ²
Balance control by TSOs	Target to minimize Baltic system imbalance for 60 minutes		Target to minimize Baltic system imbalance for 15 minutes
Settlement for BSPs	60 minutes	15 minutes	
Settlement for BRPs	imbalance volume and imbalance price for 60 minutes	imbalance volume and prices for 15 minutes	Imbalance price methodology update

² all EU TSOs proposals for mFRR balancing energy platform means: 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, 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 and All TSOs' proposal for classification methodology for the activation purposes of balancing energy bids pursuant to Article 29(3) of EBGL

2.1. Day-ahead market

The Baltic day-ahead market is coupled with the European day-ahead market with trading products of 60 minute resolution. The objective to implement 15 minute ISP, by definition, does not warrant any changes in the day-ahead product resolutions. According to the proposal for a regulation of the European Parliament and of the Council on the internal market for electricity (2016/0379/COD) Article 8, which might come in force starting in mid-2019, 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 there are working solutions for intraday market, which allow to trade 15 minute products, there is no information about development of such solutions for day-ahead market. Since such changes would impact the whole European day-ahead coupling mechanism, further analysis is required on a Baltic-Nordic and European level.

Hence, for the implementation of 15 minute ISP in the Baltics by the end of 2020, no changes are foreseen in the day-ahead market operations.

2.2. Intraday market

Today, the Baltic intraday market operates within the European Cross-Border Intraday Market (XBID) mechanism, with trading products of 60 minute resolution. The intraday gate closure time in Baltic countries is 60 minutes before delivery hour with the exception of Estonian-Finnish border, where a gate closure of 30 minutes is in place.

For the Baltic 15 minute ISP implementation by 1st of December 2020, the introduction of an additional 15 minute market time unit and products on all Baltic CCR cross borders and intraday trade between bidding zones is foreseen.

By implementing the 15 minute intraday market time unit, relevant changes should be made to the Capacity calculation processes within the Baltic Capacity Calculation Region (CCR) in order to calculate and allocate cross zonal capacities for intraday markets with 15 minute product resolution.

2.3. Balancing market

Today, the Baltics operate a balancing market based on 60 minute resolution mFRR standard product. For the implementation of 15 minute ISP in the Baltics, changes to of the existing standard product characteristics incl. the pricing of balancing energy are required. Proposal for balancing market changes are developed based on all EU TSOs proposals for mFRR balancing energy platform.

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 which is prepared by all TSO in the proposal of mFRR implementation framework for a European platform (hereinafter – mFRR platform proposal). With respect to the implementation of 15 minute ISP, the following changes to Baltic standard mFRR product are 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 12,5 minutes according to mFRR platform proposal.
2. **Minimum duration of delivery period.** 5 minutes according to mFRR platform proposal. 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 platform proposal.
4. **CMOL.** CMOL will be created for each quarter hour.

Pricing of mFRR balancing energy and TSO-BSP settlement

For the Step 1 of the 15 minute ISP implementation it is foreseen that Baltic balance control will be performed for the 60 minutes. The pricing of mFRR balancing energy bids activated for normal activation purposes shall be priced based on marginal price of four quarters of an hour.

Pricing of mFRR balancing energy bids activated for special activation purposes shall be priced according to pay as bid principle.

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 implementation of 15 minute ISP, Balancing energy volume shall be calculated and allocated for each respective quarter.

In the beginning of 2020, the Baltic TSOs will submit to public consultation the agreed updated and detailed Baltic balancing market rules (including standard product) for 15 minute ISP implementation.

2.4. 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 implementation of 15 minute ISP, 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.

Imbalance price shall be calculated based on Baltic CoBA settlement rules with the follow 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.

In the beginning of 2020, the Baltic TSOs will submit to public consultation the agreed updated Baltic imbalance settlement (including pricing) rules for 15 minute ISP implementation.

2.5. 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.

About technical solution:

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 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 Distributed system operator (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 DSO's chosen profile (e.g. 15 minute grid profile, base profile by dividing hourly values by 4, etc.).
 - c. For metering points which to not have hourly metering possibility 15 minute resolution values will be to apply standard profile for 15 minutes.
- 3) **For Lithuania** the option would be to handle the metered data allocation for imbalance settlement as follows:
2. TSO shall provide 15 minute resolution data for all metering objects which will be collected from metering devices in 15 minute resolution.
 3. 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 were 15 minute metering is installed.

- b. For metering points which meter only hourly values 15 minute resolution values shall be calculated by applying DSO's chosen profile (e.g. 15 minute grid profile, base profile by dividing hourly values by 4, etc.).
- 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	Baltic TSOs commonly
Final document for 15 minute ISP implementation Concept	2019 Q3	Baltic TSOs commonly
Initiation of amendments of relevant national legislation	2019 Q4	TSO, NRA, Ministry
Public consultation on updated Baltic balancing market rules (including standard product) and imbalance settlement rules for 15 minute ISP implementation	2020 Q1	Baltic TSOs commonly
Final amendments of relevant national legislation	2020 Q2-Q3	NRA, Ministry
Change of national standard terms and conditions for BRPs and BSPs	2020 Q2-Q3	TSO, NRA
Testing of procedures and data exchange and IT systems amendments	2020 Q3-Q4	Baltic TSOs, BSPs, BRPs
Go-Live of 15 minute ISP implementation	01.12.2020	Baltic TSOs commonly + each connecting TSO

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;

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.