

Forewords

In December 2017 EU commission established a guideline on electricity balancing in order to develop and harmonize European electricity markets. It includes many new requirements and harmonizable subjects for Nordic imbalance settlement model. The major changes concern the imbalance settlement period, the calculation of imbalance and the pricing of imbalance. The imbalance settlement period will change from hour to 15 minutes. It will affect all messages and views which include time series as well as the calculation of imbalances which will be made for every 15-minute period in the future. The imbalance calculation will change in a way that there won't be a separate production and consumption imbalances. The two imbalances are replaced by a single imbalance which is the combination of the two. Currently the production imbalance has different prices for positive and negative imbalance while the consumption imbalance has same price for both. The new pricing model will have same price for positive and negative imbalances during normal situation, but in specific conditions a dual pricing may be applied.

Proposal is that structural management will remain on a daily level as it is currently, and national time zones are applied also in the future. One minor change is that the minor production which has currently been under the BRP for consumption, will be under the BRP for production in the future. The concept of the settlement data reporting won't change but due to the 15 minutes imbalance settlement period the reporting deadlines will follow the 15 minutes schedule instead of current hourly schedule. For example, deadline for reporting of bilateral trades will be 45 minutes (or 20 minutes in Finland) before each imbalance settlement period. Another change is that due to the new calculation model, the production plans won't be part of the settlement data but they may be used for key performance indicators.

This document is draft for the comments and it describes how the imbalance settlement calculations will be changed due the one balance.

Imbalance Settlement

This chapter contains an overview of the imbalance settlement including a calculation example. Also applied, national, reconciliation settlement models are presented.

In the Nordic Imbalance Settlement Model, the settlement of BRPs' imbalances is based on the harmonised Nordic model which was implemented in Finland, Sweden and Norway 2009 and it will be updated on 2020. The updated model is based on one imbalance calculated and settled.

Imbalance volume is calculated as the deviation between consumption, metered production, trades, MGA imbalance and imbalance adjustment.

eSett will conduct a preliminary imbalance settlement every day starting from the second day after the delivery day until the final settlement 13 days after delivery.

Imbalance volumes are calculated as follows:

$$\text{Consumption} + \text{Production} - \text{Trade} + \text{Imbalance adjustment} + \text{MGA imbalance} = \text{Imbalance power}$$

The BRPs and the DSOs are responsible for resolving possible errors with the counterpart within the reporting window. No corrections of the imbalance settlement will be made by eSett after the invoice has been created and submitted.

1.1 Imbalance Settlement Calculation

The imbalance volumes are calculated based on received settlement data. The calculation is performed per MBA at BRP level and includes data from the parties in the BRP's balance hierarchy, using relations in the structure information (e.g. BRP's responsibility over REs).

The imbalance is composed of a BRP's trades, consumption, production, MGA imbalance and imbalance adjustment up and down. For example, a balance deviation in the imbalance arises when there is a difference between the consumption, production and electricity purchases (if the BRP consumes or sells more electricity than it produced and purchased), there is a deficit in the imbalance, and the BRP is required to purchase the imbalance power from eSett in order to cover the deficit.

Correspondingly, if the BRP produces or purchases more electricity than it consumed and sold, there is a surplus in the imbalance, and the balance responsible party sells imbalance power to eSett in order to take care of the surplus.

Imbalance is calculated from the input data in the imbalance settlement system delivered by market participants. This data contains metered and profiled consumption per RE per MGA, metered production per production unit, MGA exchange per MGA per adjacent MGA, day-ahead and intraday trades per RE per MBA, bilateral trades per counterpart per MBA and imbalance adjustments (sum of Frequency Containment Reserves (FCR), Frequency Restoration Reserves (FRR) and Replacement Reserves (RR)).

Based on the delivered data the metered and profiled consumption per BRP in MBA, metered production per BRP in MBA, MGA imbalance per BRP in MBA, MGA exchange trade per BRP in MBA, day-ahead, intraday and bilateral trades per BRP in MBA and imbalance adjustment up and down per BRP in MBA are calculated by eSett. Altogether the result is imbalance per BRP in MBA. Calculation of the imbalance is shown in

Figure 1.

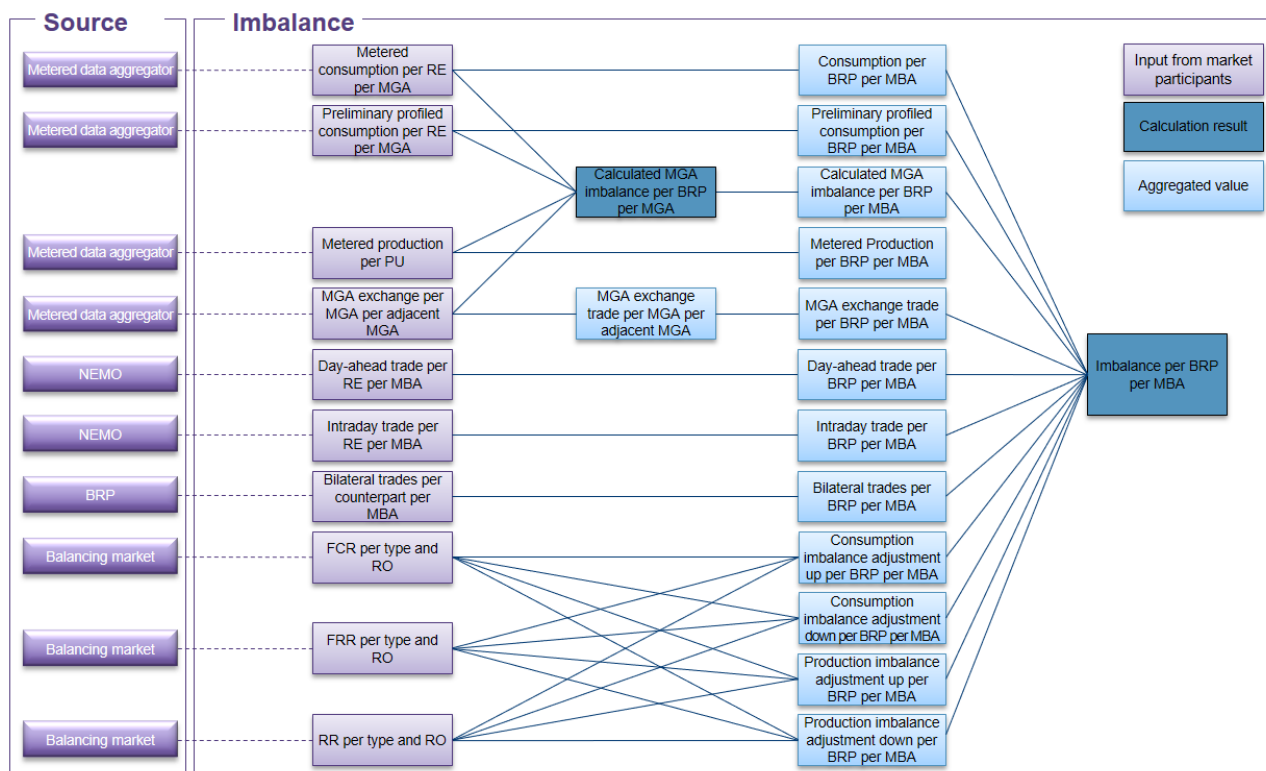


Figure 1 Calculation of imbalance settlement.

1.1.1 National Differences in Settlement

In Sweden the preliminary profiled consumption is delivered to eSett per BRP in MGA instead of retailer in MGA. Svenska kraftnät is responsible for reporting profiled consumption in Sweden.

1.1.2 MGA Imbalance

eSett calculates the MGA imbalance based on reported values from the metered data aggregator. MGA Imbalance will be an input to the imbalance calculation and calculated as follows:

MGA Imbalance = Consumption per RE + Metered production per PU + MGA exchange import per adjacent MGA + MGA exchange export per adjacent MGA

1.2 Example: Calculation of Imbalance Volumes

In this chapter an example of the BRP's imbalance calculation is presented. The example is made from the BRP's perspective (see **Table 1** and **Table 2**).

Imbalance	MWh
Metered consumption	-15
Profiled consumption	-5
Metered production	50

Bilateral trades (purchase)	5
Day-ahead trades (sale)	-25
Intraday trades (purchase)	5
MGA imbalance	-30

Table 1 Imbalance example values.

Imbalance calculation							
Imbalance calculation	Metered + Profiled consumption [MWh]	Metered production [MWh]	Bilateral + Day-ahead + Intraday trades [MWh]	MGA imbalance [MWh]	Imbalance adjustments [MWh]	Imbalance [MWh]	
Delivery period	-20	50	-15	-30	0	-15	

Table 2 Imbalance calculation.

As a result of the BRP's imbalance calculation ($50 + (-15) + (-50)$) there is a -15 MWh deficit in the BRP's imbalance. The BRP buys 15 MWh from eSett.

1.3 Imbalance Settlement with Missing Data

The calculation of imbalances is performed in eSett's imbalance settlement system whether or not all the settlement data has been received. For MECs from which data hasn't been received the value 0 is used in the calculation but empty settlement data is not changed from void to 0 in the database.

If the values have not been received by gate closure the final calculations are performed with the value 0. If the calculation was done without having all settlement data available, the market participant in question is notified about this in the Online Service. The notification includes information on what settlement data was missing.

1.4 Management of Imbalance Errors after Gate Closure

There will be no corrections of the imbalance settlement made by eSett after the invoice of an imbalance settlement period has been created and submitted. An exception is if eSett has committed errors or due to extraordinary circumstances (force majeure or similar). Handling of imbalance errors after invoicing is done bilaterally between the contracting parties.

Subsequent bilateral correction of imbalance settlement is outside of eSett's scope. Handling of bilateral corrections of imbalance settlement will be performed according to national rules.

1.5 Imbalance Settlement in Disturbance Situations

If the imbalance settlement can't be performed due to eSett according to the schedules, the imbalance settlement will be performed and finalised as soon as the disturbance situation has been resolved.