Elhub

BRS Reporting for Imbalance Settlement

Versjon 1.7 | 31.03.2017

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1 Scope

This document defines the reporting from Elhub to Imbalance Settlement Responsible (ISR; NBS/eSett Oy). Market Processes, Meter Data Management and the reporting for Elcertificates are described in separate documents.

1.1 References

1. Forskrift om måling, avregning og samordnet opptreden ved kraftomsetning og fakturering av nettjenester av 11. mars 1999 med til en hver tid siste endring, NVE, www.nve.no
2. Rollemodell for det norske kraftmarkedet, www.ediel.no
3. Effektivt sluttbrukermarked for kraft, www.ediel.no
4. BRS Nordic Balance Settlement F
5. NBS Handbook version
6. NBS User Guide

1.2 Change log

Date	Version	Change
02/27/2014	Version 0.1	First draft
03/12/2014	Version 0.2	First draft in English
03/26/2014	Version 0.3	Reduced to BRS-NO-501 and -502
04/24/2014	Version 0.4	Corrections in time series reported to ISR
05/12/2014	Version 0.7	Message references included
05/16/2014	Version 1.0	Changes related to NBS Handbook v1.1
12/10/2014	Version 1.1	No changes
07/08/2015	Version 1.2	Updated References Other minor corrections
05/02/2016	Version 1.5	Updated with freezing data for NBS at D+5 Other minor corrections
31/05/2016	Version 1.6	No changes
31/03/2017	Version 1.7	Replaced process component 41 with process component 8 in BRS-NO-502 Added 'Structure data from NBS' in BRS-NO-501

2 Overview of processes in this document

This document includes processes:

Process	Name
BRS-NO-501	Reporting structure data for Imbalance Settlement
BRS-NO-502	Reporting data for Imbalance Settlement

The description of the processes here are tied to BRS for Nordic Balance Settlement (NBS). This document only describes the main messages to and from NBS and the messages to the other market parties from Elhub. If there at difference on the interface to NBS, the BRS for Nordic Balance Settlement overrides the description in this document. Elhub have basically the same role as DSO in the role of Metered Data Aggregator described by NBS. See references :

[4] BRS Nordic Balance Settlement
[5] NBS Handbook version
[6] NBS User Guide

Division into chapters for each process (BRS)
Subchapter «Overview» gives a short description of the process described in each main chapter, starting point and goal of the process, and illustrates it with an Use Case Diagram. This diagram uses UML-notation and specifies the roles involved and the actual use cases that is used to execute the process. In many cases there is only one use case, but in a few cases it may be necessary to perform several use cases to make the process complete. In some cases, use cases from other processes will be needed to get an overview of the total flow that the process requires.
«Process Flow and Information Exchange» will in most cases merely be one sequence diagram for each use case. Note that the use cases belonging to other processes, but which are linked into a process, are only presented in the original process.
«Starting state» is a brief description of the requirements that must be met for the process to be executed.
«Process Flow» is a verbal presentation of the flowchart with enhanced information related to each step in the chart presented earlier.
«Validation Rules» provides an overview of the parameters that are validated and where the outcome may be that the process be stopped / refused. In addition, also technical errors and syntax errors could lead to rejection. However, in this document only process error is discussed.
«Deadlines» summarizes the deadlines that are central to the current BRS
«References between the Processes and Transactions» links this document to the Elhub BIM document.

3 Business Processes

3.1 General

Grid owners are responsible for metering and quality assurance of the measurement results for all metering points (local metering points and exchange points) on their own grid area, and that these data are confirmed received by Elhub. The basis of financial settlement in electricity sales should be based on these measurements. In cases where there is no reading of the meter within the time limit for a given business process, Elhub will estimate missing values.

Incorrect volume series will initiate a correction process after Elhub received correct data. When the grid owner reports a meter reading for a profiled metering point Elhub calculates basis for a correction settlement also for this type of metering point. The settlement volumes will accumulate to an amount per month for each balance supplier.

In this document, we use the term volume series to take into account that it also can be sent series of quarter resolution, since this is mentioned in the regulation. Period Volume refers to the volume limited by two readings, or estimated meter readings with at least one day apart.

3.2 BRS-NO-501 - Reporting structure data for Imbalance Settlement
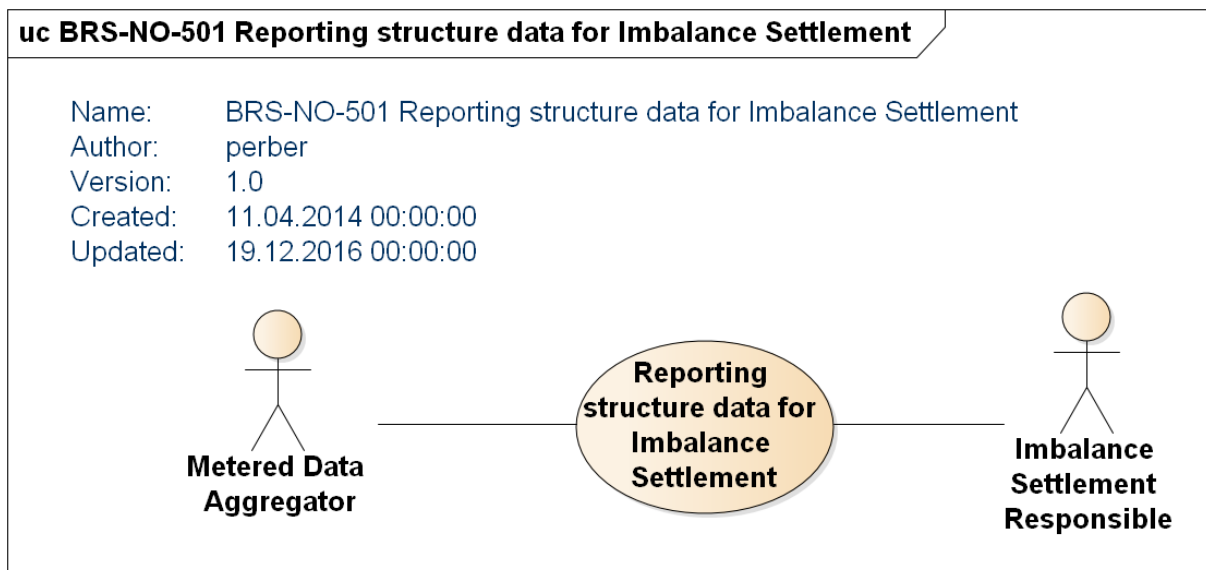
3.2.1 Overview

Figure 1 Use Case: Reporting structure data for Imbalance Settlement

The Imbalance Settlement Responsible (ISR) is responsible for registering the market participants that are active in each MGA, as well as contracts between the Balance Responsible Party and the Balance Supplier. These contracts may include balance responsibility for production and/or consumption. The ISR reports structure data for deliveries within each MGA to Elhub, i.e., which combinations of Balance Suppliers and Balance Responsible Parties that are active in the MGA.

The ISR needs to know which data it will recieve in order to determine if reporting for an MGA is complete. Elhub therefore reports production metering points per MGA and the products delivered per Balance Supplier per MGA. Thee information is reported per MGA and the message only includes changes that has occurred since the previous report.

NBS reports the following to Elhub:

- Balance Suppliers and BRPs active in the MGA.

Elhub reports the following to the ISR:

- Consumption products delivered by Balance Supplier (consumption – hourly/profile, grid losses, imbalance in MGA, pumped hydro, etc.).
- Production Metering Points in MGA.
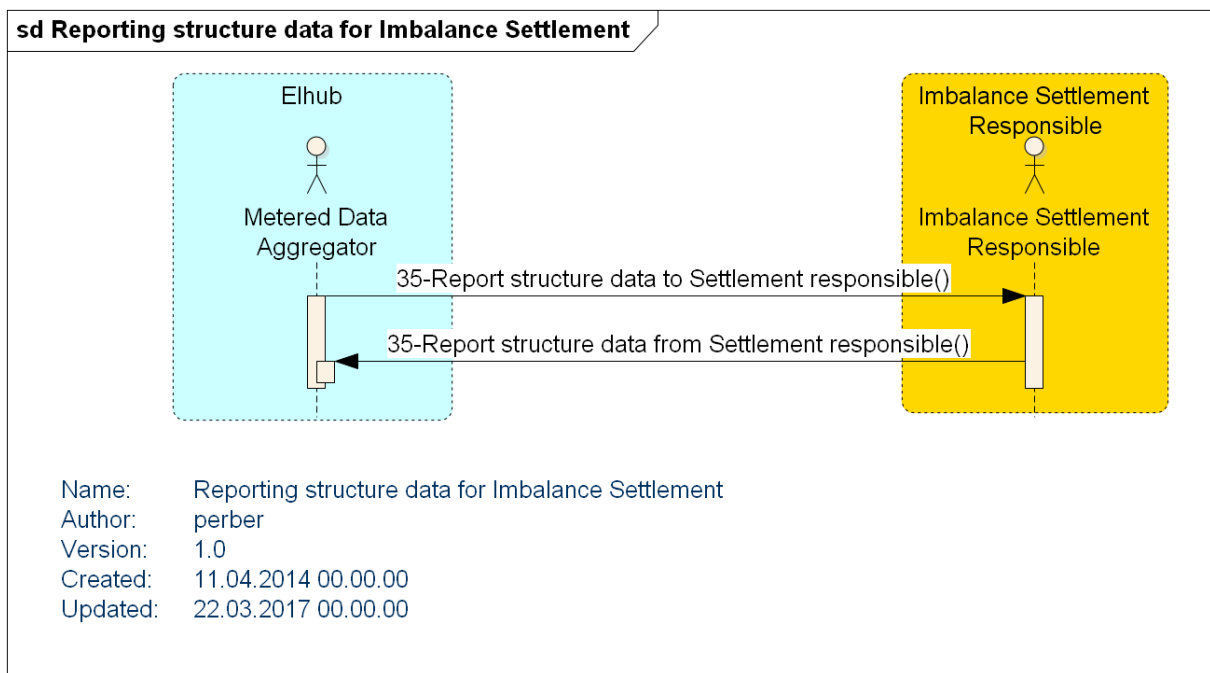
3.2.2 Process Flow and Information Exchange

Figure 2 Sequence: Reporting structure data for Imbalance Settlement

3.2.3 Starting state

This process will be set up to get new changes from ISR and report the structure ISR automatically once a day.

3.2.4 Process Sequences

- Elhub checks for changes related to the active Balance Supplier or Balance Responsible Party coming from ISR.
- Elhub checks if there has been added or made changes to any production unit.
- Elhub checks if there has been added or made changes to any consumption aggregation series.

Changes can involve both new Balance Supplier has entered and that a Balance Supplier has left the MGA. Changes in production units may also involve both new and removed.

The complete set of messages and business logics are found in NBS BRS document.

3.2.5 Validation Rules

In this process there is only Elhub sending messages. No messages will be received for validation.

3.2.6 Deadlines

Description	Sender	Receiver	Deadline
Structure Data for Imbalance Settlement	Elhub	ISR	Daily
Structure Data for Imbalance Settlement	ISR	Elhub	Daily

3.2.7 References between Process and Transactions

The table below presents all messages in the Sequence Diagrams in 3.2.2 with reference to section and message specifications in the document BRS for Master Data document from NBS.

Process component	Parameter	BIM sect	Message	Document type	Reason
Structure data to NBS		5.35	Defined in NBS BRS for Master Data chapter 5.3		
Structure data from NBS		5.35	Defined in NBS BRS for Master Data chapter 5.2		

3.3 BRS-NO-502 - Reporting data for Imbalance Settlement
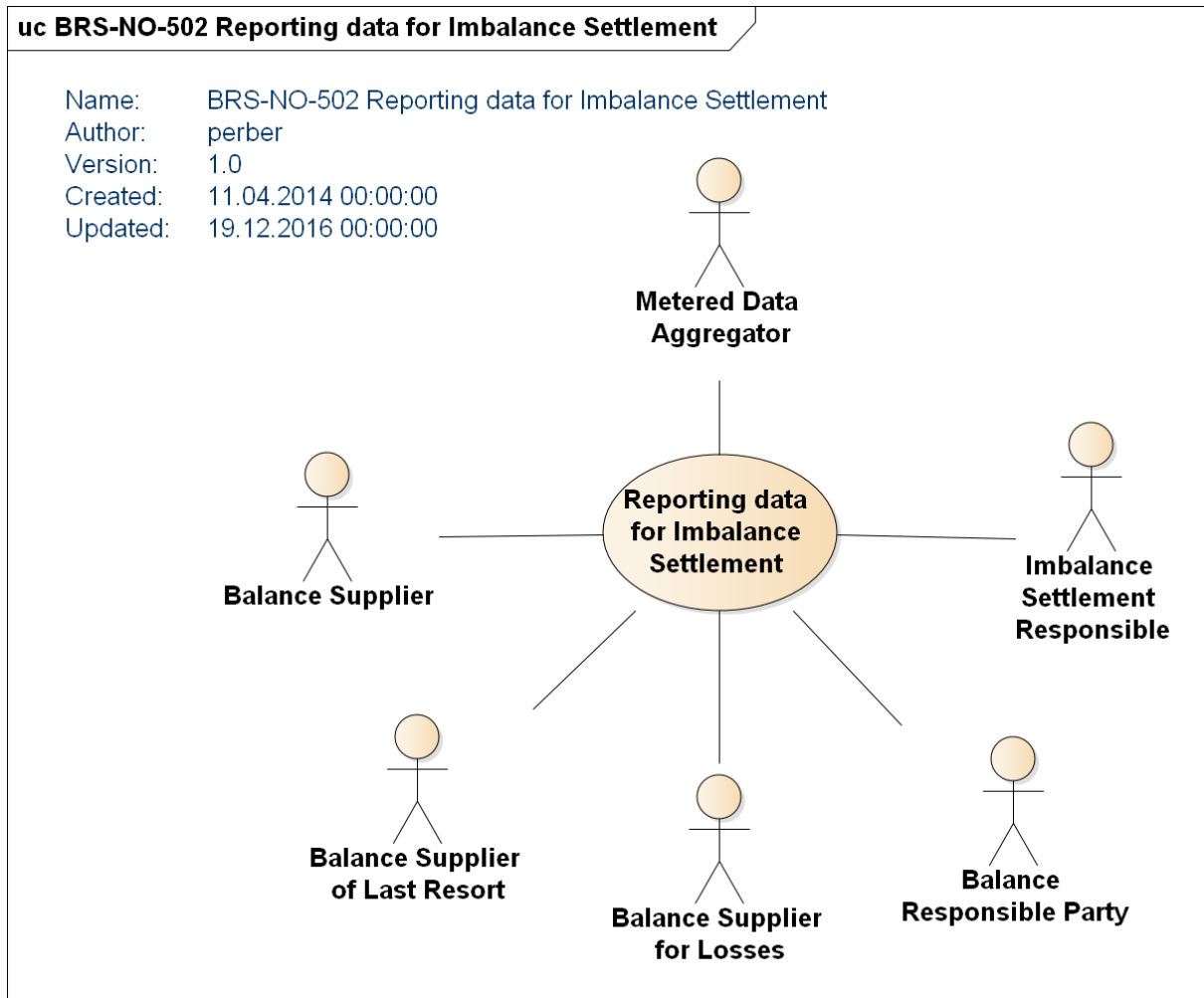
3.3.1 Overview

Figure 3 Use Case: Reporting data for Imbalance Settlement

Imbalance Settlement is run daily and is performed per day. Reporting for the day D is performed on D+2 and D+5 with successively updated values. Elhub will freeze the values and send the final report to the ISR on D+5, but are able to update and rereport the data until D+13 in the case of severe errors.

A preliminary report is sent to the ISR before 10:00 D+2 for D. The final report is reported to ISR 12:00 D+5. The deadline set by the ISR for the final report is 12:00 on D+13.
Elhub reports the following to the ISR for the Imbalance Settlement with hourly resolution:

- Production per Production Unit
- Exchange between neighbouring MGAs
- Aggregated hourly metered consumption per Balance Supplier in each MGA
- Aggregated hourly profiled consumption per Balance Supplier in each MGA
- Hourly Metered Grid Losses in each MGA (including reference to Balance Supplier) *)
- Hourly Profiled Grid Losses in each MGA (including reference to Balance Supplier) *)
- Hourly Metered Consumption in Pumped Hydro (including reference to Balance Supplier)
- Hourly Metered Consumption in Pumped Storage (including reference to Balance Supplier)

*) For MGA with only hourly metered metering points, grid loss is "Metered."
For MGAs with profiled metereing points, grid loss is "Profiled." If consumption in pumped hydro or storage is profiled, this should be reported separately. For more details on reporting to ISR, see NBS Handbook [5] and BRS for NBS [4]. The same report is also made with the relevant parts to Balance Responsible Party, Balance Supplier.

A report is made to Balance Supplier and Balance Responsible Party every day before 10:00 for the previous day (D-1). This report includes all aggregated series related to the Balance Supplier/Balance Responsible Party.

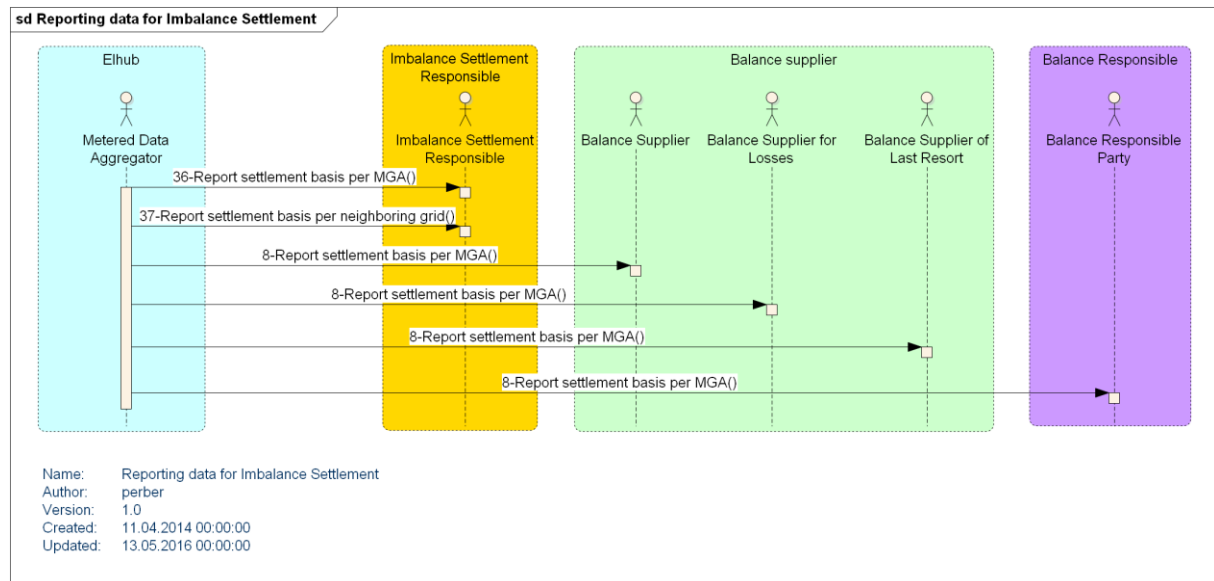### 3.3.2 Process Flow and Information Exchange

Figure 4 Sequence: Reporting data for Imbalance Settlement

3.3.3 Starting state

The process is time triggered and will normally run once per day between 07:00 and 09:00, but D+5 could be delayed until 10:00 – 12:00.

3.3.4 Process Sequences

This refers to BRS for NBS chapter 4.8 in document [4] BRS Nordic Balance Settlement 1.7.A. The process is time triggered. The preliminary report should be finished and reported to the ISR before 10:00 D+2. The final report should be finished and reported to the ISR before 12:00 D+5. Data is only rereported if there are changes to what has been previously reported.
Elhub can perform additional reporting to ISR at any time during the day on demand or time triggered.
Elhub can also start aggregating hourly values at different times.
Elhub performs the following aggregations with hourly resolution:

- Production per Production Unit
- Total exchange between neighbouring MGA
- Aggregated consumption for hourly settled metering points per Balance Supplier in each MGA

The aggregated time series can be sent to the ISR as soon as they are complete.

Elhub calculates the Grid Losses and Adjusted Load Profile (JIP) for the MGA. Elhub calculates Preliminary Volumes per hour for all profiled metering points in the MGA. These will be aggregated per Balance Supplier in each MGA. Grid losses and aggregated profiled consumption per Balance Supplier in each MGA is sent to the ISR.

The following consumption should be reported separately:

- Consumption in Pumped Hydro
- Consumption in Pumped Storage (not connected to specific production unit)

The imbalance settlement process is run daily D+1 - D+5, but data is only reported to the ISR on D+2 and D+5. The last version of each time series used in the report to the ISR is marked in the database to be used in reconcilliation. All time series sent to the ISR are also sent to the respective Balance Responsible Party and Balance Supplier.

3.3.5 Validation Rules

In this process there is only Elhub sending messages. No messages will be received for validation.

3.3.6 Deadlines

Description	Sender	Receiver	Deadline
All final series to ISR	Elhub	ISR	D+13 at 12:00, normally D+5 at 12:00
All preliminary series to ISR	Elhub	ISR	D+2 at 10:00
All preliminary and final series to Balance Supplier/Balance Responsible Party	Elhub	Balance Supplier/Balance Responsible Party	D+1 to D+4 at 10:00 and D+5 at 12:00

3.3.7 References between Process and Transactions

The table below presents all messages in the Sequence Diagrams in 3.3.2, with reference to section and message specifications in the document Elhub BIM Business Information Model.

Process component	Parameter	BIM sect	Message	Document type	Reason
36 – Report settlement basis per MGA		5.36	Defined in NBS BRS chapter 5.2	E31 – Aggregate metered data	E44 = Imbalance settlement
37 – Report settlement basis per neighbouring grid		5.37	Defined in NBS BRS chapter 5.3	E31 – Aggregate metered data	E44 = Imbalance settlement
8 – Report settlement basis per MGA		5.8	20 - NotifyValidatedDataForBillingEnergy	E31 – Aggregate metered data	BRS-NO-502 - Reporting data for Imbalance Settlement