BRS

(Business Requirement Specification)

For

Nordic Balance Settlement

A market model for data exchange between eSett and TSOs/Market Operators

Content

1 Introduction

1.1 Background

The Nordic Balance Settlement (NBS) is run by eSett, while the Nordic Market Expert Group (NMEG) is responsible for the development and maintenance of the Business Requirement Specifications (BRS) and User Guides for the NBS processes.

This document is a Business Requirement Specification (BRS) for the Nordic Balancing System, detailing the document exchanges. The focus of the document is the business aspects of the document exchanges and the basis for the documents to be exchanged are the ENTSO-E Implementation Guides, see [1]. In addition, the Harmonised Electricity Market Role Model from ENTSO-E, ebIX® and EFET, see [3], is used for identifying the relevant roles used in the BRS.

1.2 Nordic Energy Domain Model

A Nordic Energy Market Domain model, giving an overall overview of the structure and processes used in the Nordic Energy market, can be found in [6].

1.3 Project organisation

The project is organised as a project group within the Nordic Market Expert Group.

1.4 Terms and notations used in this BRS

Documents are described by a class diagram showing the full set of attributes in the related xml schema. In addition, the usage of the document is described by one or more tables detailing the usage of each attribute. Optional attributes from the class diagram, not used in the specific data exchange, are omitted from the table.

1.5 References

[1] ENTSO-E implementation guides, see ENTSO-E Electronic Data Interchange (EDI) Library, e.g.:
- ENTSO-E Modelling Methodology (EMM)
- ENTSO-E UCTE SO-SO Process
- ENTSO-E Scheduling System, ESS
- ENTSO-E Settlement Process, ESP
- ENTSO-E Reserve Resource Planning, ERRP
- ENTSO-E Capacity Allocation and Nomination System, ECAN
- ENTSO-E Status Report, ESR
- ENTSO-E Acknowledgement process

[2] ebIX® Business Requirement Specifications, see http://www.ebix.org/

[3] The Harmonised Role Model, ENTSO-E, ebIX® and EFET, see http://www.ebix.org/

[4] UN/CEFACT Unified Modelling Methodology (UMM), see http://umm-dev.org/

[5] Ediel Implementation guides, see http://www.ediel.org/

[6] Nordic Energy Market Domain Model, see http://www.ediel.org/

[7] BRS for Nordic trading system, will be published at http://www.ediel.org/

[8] BRS for Nordic Scheduling and Ancillary Services process, see http://www.ediel.org/

[9] BRS for Nordic Balancing System (for the retail market), see http://www.ediel.org/

[10] Common Nordic XML rules and recommendations, see http://www.ediel.org/

[11] eSett Handbook, see https://www.esett.com/handbook/

[12] BRS for Nordic Balance Settlement, Exchange of Master Data, see http://www.ediel.org/

1.6   Change log

Ver/rel/rev	Changed by	Date	Changes
Draft for 3.0.A	Ove Nesvik	20231208	• Addition of the Process type code "**A59,** Internal trade reporting" to ENTSO-E ESS Schedule Document. The code will be valid one year after eSett have announcement its removal, approximately until the end of 2024. In the transition period eSett will continue using **Z05.**

2.9.A	Ove Nesvik	20231023	• Addition of Reason codes for the 1st repetition of the Reason class in the Ediel ERRP Reserve Allocation Result Document:
			    Z77 aFRR AOF activation
			    Z78 aFRR non-AOF activation
			• Addition of a new Process type code for the Ediel ECAN Publication Document:
			    A51 Automatic frequency restoration reserve

2.8.A	Ove Nesvik	20231005	• Addition of codes for Contract types:
			    A14 First intraday auction contract
			    A15 Second intraday auction contract
			    A16 Third intraday auction contract
			
			• Rename of Balance Supplier to Energy Supplier
			
			• Correction of spelling errors.

2.7.A	Ove Nesvik	20230316	• Addition of new reason codes to the Ediel ERRP Reserve Allocation Result Document:
			
			    Z58 Scheduled activation
			    Z59 Direct activation
			    Z60 Faster activation
			    Z61 Faster deactivation
			    Z62 Slower activation
			    Z63 Period shift activation
			    Z75 aFRR correction
			    Z76 mFRR correction
			
			• Rename Market Balance Area (MBA) to Bidding Zone (BZ)
			
			• Correction of spelling errors.

2.6.A	Ove Nesvik	20221114	• Addition of Process Type "**A02** Intraday incremental" to ESS Schedule document, Day-ahead/Intraday trade and ESS Schedule document, Day-ahead/Intraday flow
2.5.A	Ove Nesvik	20210917	• Addition of down direction Ediel ERRP Reserve Allocation Result Document. • Rename of Reason Code:

	From:	To:

Ver/rel/rev	Changed by	Date	Changes			
			Z42	Frequency Containment Reserve, Normal operation, day minus one (FCR-N, D-1)	**Z42**	Frequency Containment Reserve, Normal operation, day minus one (FCR-N, ~~D-1~~ late)
			Z43	Frequency Containment Reserve, Normal operation, day minus two (FCR-N, D-2)	**Z43**	Frequency Containment Reserve, Normal operation, day minus one (FCR-N, ~~D-1~~ early)
			Z44	Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, D-1, correction)	**Z44**	Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, ~~D-1,~~ late correction)
			Z45	Frequency Containment Reserve, Normal operation, day minus two, correction (FCR-N, D-2, correction)	**Z45**	Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, ~~D-1~~ early correction)
			Z46	Frequency Containment Reserve, Disturbance, day minus one (FCR-D, D-1)	**Z46**	Frequency Containment Reserve, Disturbance, day minus one (FCR-D, ~~D-1~~ late)
			Z47	Frequency Containment Reserve, Disturbance, day minus two (FCR-D, D-2)	**Z47**	Frequency Containment Reserve, Disturbance, day minus one (FCR-D, ~~D-1~~ early)
			Z48	Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, D-1, correction)	**Z48**	Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, ~~D-1~~ late correction)
			Z49	Frequency Containment Reserve, Disturbance, day minus two, correction (FCR-D, D-2, correction)	**Z49**	Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, ~~D-1~~ early correction)
2.4.H	Ove Nesvik	20210702	• Addition of Business Types **B67** and **B68** to ENTSO-E ESS Schedule document, Day-ahead/Intraday flow document.			
2.4.G	Ove Nesvik	20210512	• Addition of BSP (**A46**) as receiver and ISR (**A05**) as sender of "Ediel ERRP Reserve Allocation Result Document". • Update of sequence diagram in chapter 2.3, i.e. addition of "Ediel ERRP Reserve Allocation Result Document" from ISR to BSP in new arrows 18 and 21. • Addition of definition of BSP in chapter 3.1. • Update of roles and domains in chapter 3 to the latest version of the Harmonised Role Model.			
2.4.F	Ove Nesvik	20210415	• Addition of BSP for "Ediel ERRP Reserve Allocation Result Document" (Tendering Party) and the related dependency matrix (table 9).			

Ver/rel/rev	Changed by	Date	Changes
2.4.E	Ove Nesvik	20210218	• Addition of new Direction code **A03** for Process Type **A28**, Business type **A11**, Document Type **A81** and Reason code **Z49** in Ediel ERRP Reserve Allocation Result Document

2.4.D	Ove Nesvik	20210121	• Addition of new Process Type to ESS Schedule document (both "Day-ahead/Intraday trade" and "Day-ahead/Intraday flow") and ECAN Publication Document:
			     Z15 External trade ("Trade outside the Capacity Calculation Region" used for the North Sea Link cable).
			
			 • Addition of new Business Type to ESS Schedule document ("Day-ahead/Intraday trade") and ECAN Publication Document:
			     A06 External trade without explicit capacity (used for the North Sea Link cable).
			
			 • Addition of clarifying text.

2.4.C	Ove Nesvik	20210105	• Addition of new Reason Code **Z56** in Ediel ERRP Reserve Allocation Result Document. • Textual clarifications in related dependency matrix.
2.4.B	Ove Nesvik	20191219	• Update of dependency matrix for Ediel ERRP Reserve Allocation Result Document: o Denmark will use Reason Codes **Z30**, **Z31** and **Z35.**

2.4.A	Ove Nesvik	20191213	• Update of Ediel ERRP Reserve Allocation Result Document:
			     o Addition of new Document Type Code **A81**
			     o Addition of new Measure Unit Quantity **KWT** (kW) and **MAW** (MW)
			     o Addition of new Direction Code **A03**
			     o Addition of Reason codes **Z42** to **Z49**
			 • Correction of spelling errors and textual clarifications

2.3.A	Ove Nesvik	20190128	• Addition of quarterly resolution for all time series documents (**PT15M**) o Addition of new Business Types (**Z74** and **Z75**) in the Ediel ECAN Publication Document
2.2.A	Ove Nesvik	20190110	• FCR-N and FCR-D are moved from Business Type codes to Reason codes in the Ediel ERRP Reserve Allocation Result Document.
2.1.B	Ove Nesvik	20181129	• Clarification of national code usage in table 9.

2.1.A	Ove Nesvik	20181015	• Addition of new Business Types in Ediel ERRP Reserve Allocation Result Document**:**
			     o **Z03** Frequency Containment Reserves, Normal (**FCR-N)**
			     o **Z06** Frequency Containment Reserves, Disturbance (**FCR-D)**
			 • A textbox "Added for the Nordic countries" has been removed from the class diagram for the Ediel ERRP Reserve Allocation Result Document.
			 • The Reason class is made required in the attribute table for the Ediel ERRP Reserve Allocation Result Document.

Ver/rel/rev	Changed by	Date	Changes
			• NEG is renamed Ediel.
2.0.D	Ove Nesvik	20170704	• Addition of business rules for NEG ERRP Reserve Allocation Result Document (paragraph 5.3.2) • Replaced Elspot with Day-ahead • Replaced Elbas with Intraday

2.0.C	Ove Nesvik	20170505	• Removed Nord Pool logo on the front page
			• Update of sequence diagram in Figure 4, including:
			   ○ Removal of arrow 7, 8 and 9; Documented in BRS for Schedules
			   ○ Removal of arrow 10 (not used)
			   ○ Removal of arrow 4 and 5; documented in BRS for Trade
			   ○ Removal of arrow 7, 8 and 9; documented in BRS for Schedules
			• Update of Figure 11:
			   ○ Removal of "Flow [In Sweden]"
			• Update of Figure 13:
			   ○ Removal of "Flow [Only in Sweden]"
			• Addition of clarifying text related to Business Type B24 and B25; reporting of sales and purchases is seen from the Imbalance Settlement Responsible (not the BRP).

2.0.B	Ove Nesvik	20170213	• Updated logos on the front page • Replaced Nord Pool and NPS with Market Operator • Replaced Elspot with Day-ahead • Replaced Elbas with Intraday • Updated NTC and NEG member list • Renamed Svenska Kraftnät to Svenska kraftnät • Removed arrow 6 and 7 in the sequence diagram for NBS Metering and settlement phase, and added a note to new arrow 7 and 8 "only used in Sweden" • Corrected the usage of time zones for settlement structure in chapter 5.7.2.1
2.0.A	Ove Nesvik	20161121	The status of the document is changed from "For test implementation" to "For implementation".
1.6.C	Ove Nesvik	20161014	Error correction: The sequence of the elements in the "Schedule Document" part of the paragraph "5.1.3 Attribute usage: ENTSO-E ESS Schedule document, Elspot/Elbas trade" is changed, so that "Domain" is before "Subject Party".
1.6.B	Ove Nesvik	20160905	NEG ERRP Reserve Allocation Result Document: • Process Type is set to [1]

Ver/rel/rev	Changed by	Date	Changes
			• The related dependency matrix is extended with a Process Type

1.6.A	Ove Nesvik	20160531	• ENTSO-E ESS Schedule document, Elspot/Elbas trade:
			  o Addition of clarifying text for Capacity Agreement Identification
			  o Removal of "Portfolio ID"
			  o Addition of Subject Party in the header level (currently not used)
			  o Addition of Trader (optional) in the In Party.
			  o Removal of Out Area (same as In area)
			  o Removal of Out Party (Market Operator)
			  o The term "Trader ID" is renamed to "Retailer ID" for InParty.
			• NEG ECAN Publication Document
			  o Changed cardinality for Price to [0..1]
			  o Removed Business Type "**A87,** Balancing energy price"
			• Chapter 5.1.4 "Attribute usage: ENTSO-E ESS Schedule document, Elspot/Elbas flow":
			  o Flows will be always reported with positive values
			• NEG ERRP Reserve Allocation Result Document:
			  o Addition of clarifying text regarding usage of Settlement Amount
			  o Tendering party for Reason Code **Z38** is corrected to be BRP (only used in Finland)
			  o Reserve Object is corrected to N/A for Reason Code **Z22**
			  o Addition of clarifying text regarding updates and usage of Settlement Amount
			  o Correction of spelling errors
			• Addition of a new chapter 7 Technical Business Rules

1.5.C	Ove Nesvik	20151027	• Addition of clarifying text and error corrections
1.5.B	Ove Nesvik	20151002	• Correction of Reason codes in NEG ERRP Reserve Allocation Result Document • Correction of spelling errors, such as: o Correction to "2-13 calendar days" in Figure 5
1.5.A	Ove Nesvik	20150923	• Measure Unit Energy Price is removed from "NEG ERRP Reserve Allocation Result Document" • Removal of arrow 8 (Confirmation of BRPs and Traders trade in Elspot and Elbas) from figure 4 (Sequence diagram: The NBS scheduling phase) • Removal of NEG addition of Curve Type in Planned resource schedule document (no consequence for NBS messaging) • Addition of clarifying text and error corrections
1.4.B	Ove Nesvik	20150421	• Addition of clarifying text
1.4.A	Ove Nesvik	20150123	• Update of description of content of areas, parties and quantity in ESS Schedule document for bilateral trade • Update of references

Ver/rel/rev	Changed by	Date	Changes
			• The term "master data" is used instead of "structure information" where applicable. • NBS is renamed to Imbalance Settlement Responsible (ISR) or eSett, when used as a role.
1.3.B	Ove Nesvik	20141205	• Update the harmonised roles in chapter 3, i.e. addition of Metering Point Administrator

1.3.A	Ove Nesvik	20141017	• Document status is changed to "For test implementation"
			• Alignment of chapter "2, Overview of the Nordic energy market domain" with [9]
			• NEG ERRP Reserve Allocation Result Document:
			  o Addition of reason codes:
			    Z29 FCR
			    Z30 aFRR
			    Z31 mFRR, Balancing Power
			    Z32 mFRR, Countertrades
			    Z33 mFRR, Peak Load Reserve Regulation
			    Z34 mFRR, Quarter regulation
			    Z35 mFRR, Special Regulation
			    Z36 Hour Change Regulation
			    Z37 Power Transaction
			    Z38 TSO Internal Countertrades
			    Z39 Day Ahead Production Adjustment
			  o Reason (Reserve allocation result Time Series Level) is changed from optional [0..1] to Required [1]
			• Addition of Portfolio ID in ENTSO-E ESS Schedule document, Elspot/Elbas trade
			• Textual clarifications
			• Updated Business Type codes:
			    Z55 -> B20 Balance up regulation price
			    Z56 -> B21 Balance down regulation price
			    Z57 -> B22 Main direction
			    Z58 -> B23 Consumption imbalance price
			    Z59 -> B24 Production sales imbalance price
			    Z60 -> B25 Production purchase imbalance price
			    Z61 -> B26 Average balance price between MBAs
			(Renamed to "MBAs prices between Market Balance Areas")

1.2.C	Ove Nesvik	20140422	• Textual corrections (clarifications)
1.2.B	Ove Nesvik	20140418	• Textual corrections (clarifications)

1.2.A	Ove Nesvik	20140411	• Addition of new Business types in EPD document:
			    Z55 Balance up regulation price
			    Z56 Balance down regulation price
			    Z57 Main direction
			    Z58 Consumption imbalance price
			    Z59 Production sales imbalance price
			    Z60 Production purchase imbalance price
			    Z61 Middle balance price between MBAs
			• Addition of Direction in the Interval class in the EPD document

Ver/rel/rev	Changed by	Date	Changes
			• Correction of relations in "**Figure 7**: Outline of the Harmonised role model within the scope of NBS settlement system" • Addition of NBS acknowledgement principles • Restriction of *Resolution Duration* to always cower one hour • Addition of *Unit type* MWh • Restriction of *Energy Quantity* to max Watt resolution
1.1.D	Ove Nesvik	20140117	• Addition of clarifying text and error corrections
1.1.C	Ove Nesvik	20131201	• Time frame for exchange of data for imbalance settlement will is corrected to *2 - 13 days* • Addition of a new arrow 23, Confirmation of production plans, in the sequence diagram for the Scheduling phase • Updated acknowledgement process in chapter 5 • Addition of clarifying text and corrections of spelling errors
1.1.B	Ove Nesvik	20131108	• Corrections of spelling errors

1.1.A	Ove Nesvik	20131108	• Update of links to other documents in the sequence diagrams.
			• Error corrections, such as:
			   o Rename of **ebIX®,** Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible to **NEG**, Confirmation of Aggregated Data per Neighbouring Grid For Settlement Responsible
			   o Rename of code E?? to Z08

1.0.A	Ove Nesvik	20130906	• First approved version for review and comments

2 Overview of the Nordic energy market domain

2.1   Settlement in the overall context (Domain model)

The *Domain model* describes the main business process areas needed to have a well-functioning energy market. The model is important for having a common and agreed understanding on how the energy market works as a basis for development of common methods for exchange of information.
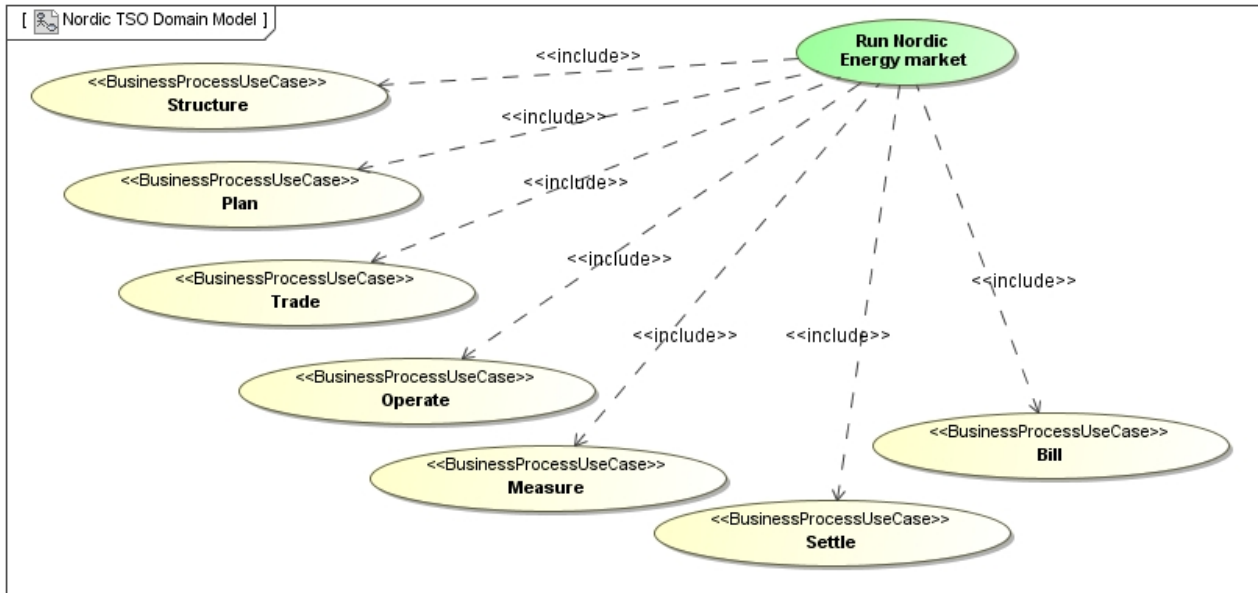
Figure 1: UseCase diagram: ebIX® Energy Market Domain Model

The domain model of the energy market covers all stages from the structuring of the market until the settlement and billing of consumption and transport of energy, with a focus on the exchange of information:

- Exchange of master data including the Change of Supplier processes
- Planning of production, consumption, exchange and transport
- Trade on different markets, including ancillary services, bilateral trade, etc.
- Operation
- Measuring of production, consumption, exchange and transport
- Settlement
- Billing

The Nordic Settlement System process includes parts of the process areas Trade and Plan.

For a more elaborated description of the processes included in the domain model, see [6].

2.2   Breakdown of the settlement phase

In the rest of this document, the processes related to the Nordic Balancing System, with a focus on the *Business area* (UseCase) *Settle*, is further elaborated.

The core imbalance settlement activity takes place once the operational phase is completed. However, there are some preceding processes run before operation, such as exchange of Load profile Shares (LPS) and exchange of traded volumes, both at the power exchange and bilaterally. The imbalance settlement is composed of three basic activities:

- The first activity receives all the schedules agreed and regulation data that has been required for balancing the area.
- The second activity recuperates the measured values of the delivered products, for each continuous metered Metering Point and settles the imbalance in the balance regulation market.
- The final activity reconciles the values for the profile-metered Metering Points, identifies the imbalances and establishes the imbalance settlement amounts, thus requiring pricing information.
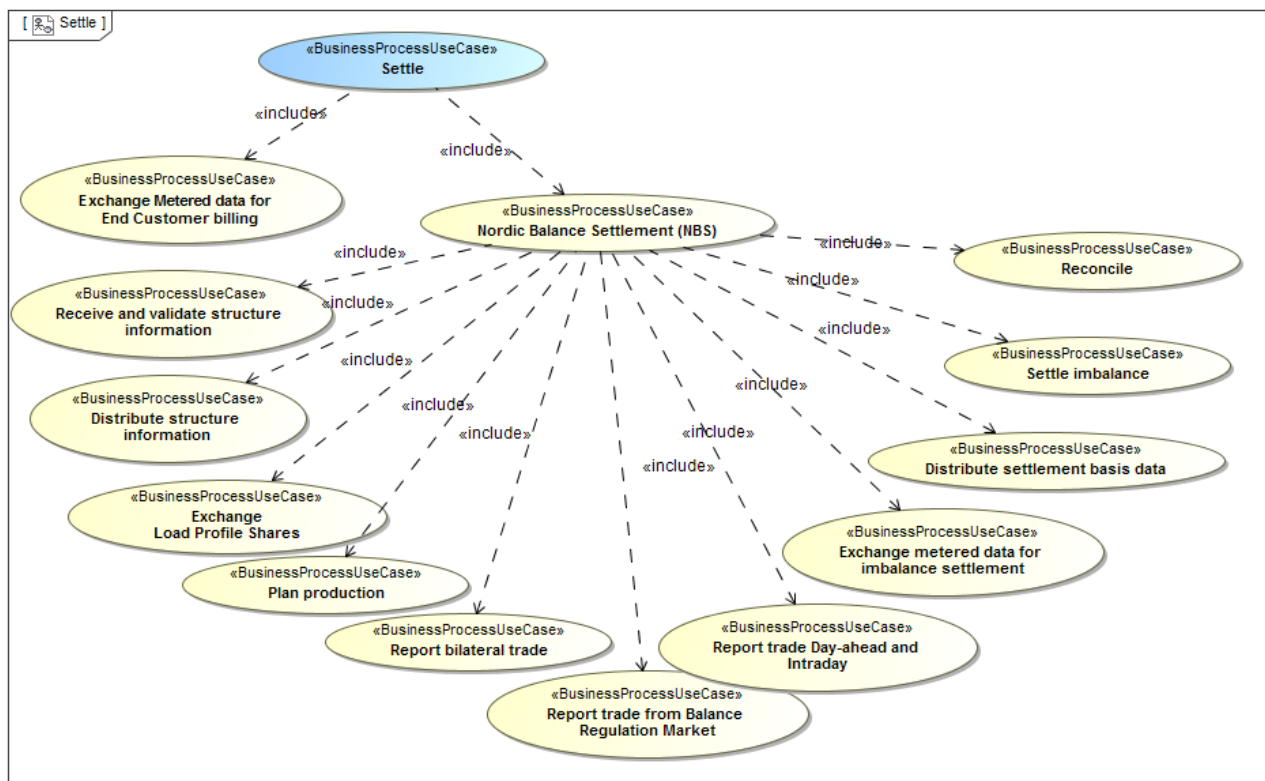
Figure 2: UseCase diagram: Breakdown of the settlement phase

The settlement phase, outlined in Figure 2, describes the principal UseCases of the Nordic Balance Settlement system.

The roles that take part in the imbalance settlement process are:

- *Balance Responsible Party*, who receives the settlement information on both Metering Point- and aggregated level for invoicing of the Energy Suppliers.
- *Energy Supplier*, who receives the settlement information on a Metering Point level for invoicing of the Parties connected to grid (Consumers and Producers).
- *Billing Agent*, who invoices the Balance Responsible Parties.
- *Market Operator (Power exchange)*, who supplies the Imbalance Settlement Responsible with the result of the trade on the day-ahead and intraday markets.

- *Imbalance Settlement Responsible*, who establishes the imbalance (quantities and amounts).
- *Metered Data Aggregator*, who provides aggregated metered information. The Metered Data Aggregator may have Local Metered Data Aggregators that provide initial aggregated input for consolidation and validation before being sent to the Imbalance Settlement Responsible.
- *Reconciliation Accountable*, who is paying for the imbalances from the reconciliation process.
- *Reconciliation Responsible*, who is calculating the reconciliation settlement (second settlement).
- *System Operator*, who provides the finalised schedule information and regulation data.
- *Trader,* who buys and sells electricity, either on an electricity exchange or by bilateral contracts. Opposite to a Trade Responsible Party, a trader does not necessarily have to be a Balance Responsible Party. A Trader must however have a contract with a Balance Responsible Party, which provides financial security and identifies balance responsibility with the Imbalance Settlement Responsible of the Bidding Zone, entitling the party to operate in the market.

The basic data that is required for imbalance settlement includes the following:

- Finalised schedules that originate at the last stage of the ENTSO-E Scheduling process and could be day ahead or intraday schedules.
- Aggregated metered values for each Balance Responsible Party and area (Metering Grid Area or Bidding Zone). These consist of values for each schedule interval (60 minutes) for the complete accounting settlement period.
- Regulation data, such as ancillary services. These are established by the System Operator and consist of time series information used in the imbalance settlement.
- Settlement pricing information.

The DSO will send metered data the day after the delivery day, acting in the role of *Metered Data Responsible* and *Metered Data Aggregator*, to the *Imbalance Settlement Responsible*. The *Imbalance Settlement Responsible* is then in position to conduct the balance settlement.

The *System Operator* sends activated reserves (volume and amounts) to the *Imbalance Settlement Responsible*.

The *Imbalance Settlement Responsible* will conduct a limited QA of received metered data and calculate the imbalance settlement using Nordic harmonised rules. Data will thereafter be made available for the *Balance Responsible Parties*, either through messages or through a web-application, on an aggregated level.
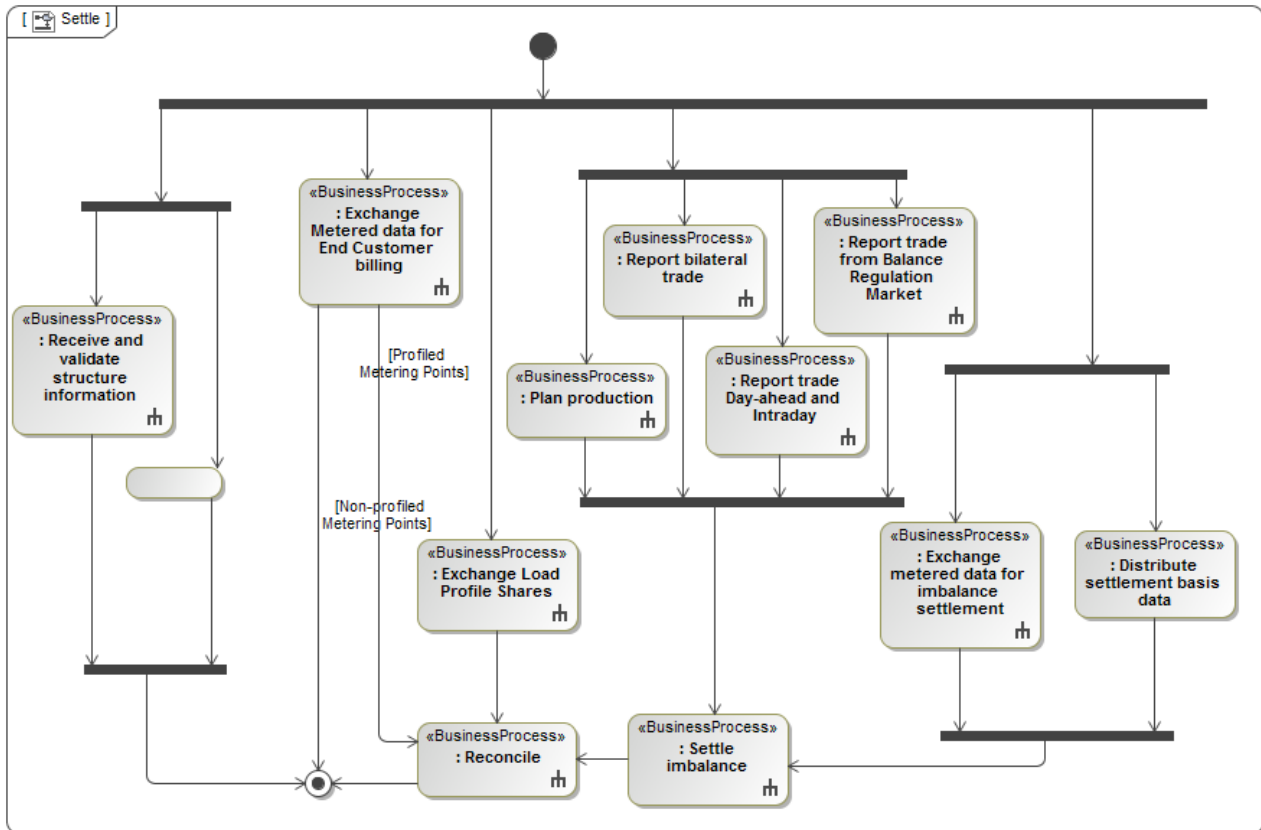
Figure 3 Activity diagram: The Nordic Settlement process

2.3   Overview of information exchange for the NBS scheduling phase
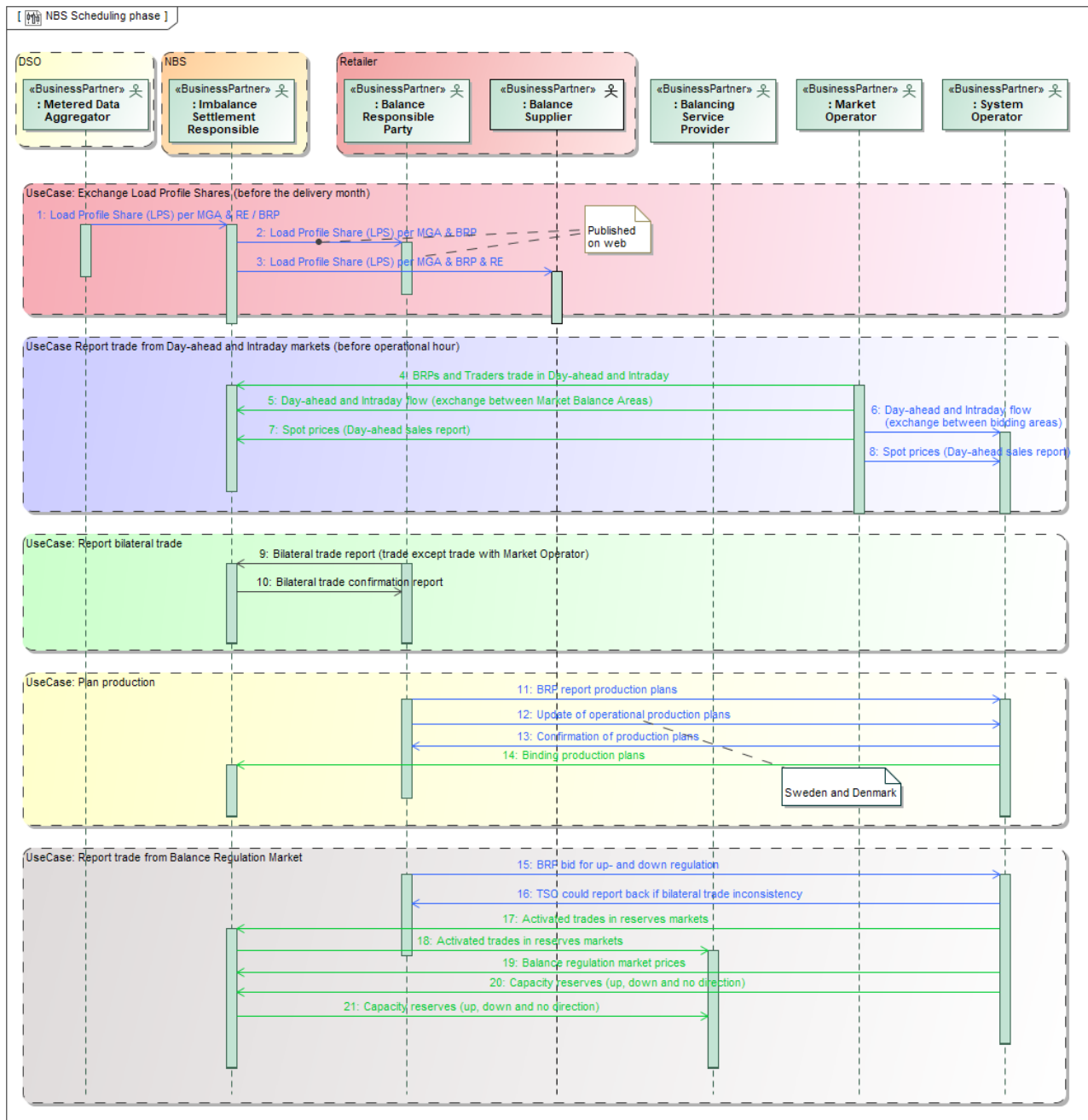
Figure 4 Sequence diagram: The NBS scheduling phase[1]

Comments to the diagram:

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[1] Basically, eSett allows all market participants to request in xml format (NEG (based on ENTSO-E ECAN) Publication Document) any price data that is available and displayed in the settlement system for users. So, the sender is eSett ("A05" – Imbalance Settlement Responsible) and receiver is any of the following:

- "A12" – Retailer (Energy Supplier)
- "A08" – Balance Responsible Party (BRP)
- "A09" – Distribution System Operator (Grid Operator)
- "A04" – Transmission System Operator (TSO)
- "A46" – Balancing Service Provider (BSP)

Nordic settlement system for data exchange between eSett and TSOs/Market Operators

- Only documents exchanged between eSett, and TSOs and Market Operators, i.e., only documents (arrows) with green colour, is further elaborated in this document.

NBS document	Roles	Identified object(s)	Documentation
Before the delivery month			
1. Load Profile Share (LPS) per MGA & RE / BRP			Not handled in the first version of a common Nordic Balance Settlement.
2. Load Profile Share (LPS) per MGA & BRP			Only published on web
3. Load Profile Share (LPS) per MGA & RE			Only published on web
Before gate closure			
4. BRPs and Traders trade in Day-ahead and Intraday	MO → ISR	BZ, BRP or Trader (RE)	ENTSO-E ESS Schedule Document [1] **For details see:** 5.1
5. Day-ahead and Intraday flow (exchange between Bidding Zones)	MO → ISR	BZ 1, BZ 2	ENTSO-E ESS Schedule Document [1] **For details see:** 5.1
6. Day-ahead and Intraday flow (exchange between Bidding Zones)			ENTSO-E ESS Schedule Document [1] **For details see:** BRS for Nordic Scheduling Process [8]
7. Spot prices (Day-ahead sales report)	MO → ISR	BZ	ENTSO-E ECAN Publication Document [1] **For details see:** 5.4
8. Spot prices (Day-ahead sales report)			ENTSO-E ECAN Publication Document [1] **For details see:** BRS for Nordic Trading System [7]
9. Bilateral trade report (trade except MO trade)	BRP → ISR	MGA 1, MGA 2, Trader 1, Trader 2	ENTSO-E ESS Schedule Document [1] **For details see:** BRS for Nordic Balance Settlement [9]
10. Bilateral trade confirmation report	ISR → BRP	MGA 1, MGA 2, Trader 1, Trader 2	ENTSO-E ESS Confirmation Report [1] **For details see:** BRS for Nordic Balance Settlement [9]
11. BRP report production plans			ENTSO-E ERRP Planned Resource schedule [1] **For details see:** BRS for Nordic Scheduling Process [8]
12. Update of operational production plans			ENTSO-E ERRP Planned Resource schedule [1] **For details see:** BRS for Nordic Scheduling Process [8]
13. Confirmation of production plans			ENTSO-E ERRP Resource schedule confirmation report [1] **For details see:** BRS for Nordic Scheduling Process [8]
14. Binding production plans	SO → ISR	BZ, RO, BRP, RE	ENTSO-E ERRP Planned resource schedule [1] **For details see:** 5.2
15. BRP bid for up- and down regulation			ENTSO-E ERRP Reserve Bid Document for Reserve Tenders [1] **For details see:** BRS for Nordic Trading System [7]

NBS document	Roles	Identified object(s)	Documentation
16. TSO could report back if bilateral trade inconsistency			ENTSO-E ESS Confirmation Report [1] **For details see:** BRS for Nordic Scheduling Process [8]
Short time after gate closure			
17. Activated trades in reserves markets A) Reserves Up B) Reserves Down C) Supportive power Sold D) Supportive power Bought	SO → ISR	A) and B): BZ, BRP, RO C) and D): BZ 1, BZ 2, TSO	Ediel ERRP Reserve Allocation Result Document [1] **For details see:** 5.3
18. Activated trades in reserves markets E) Reserves Up F) Reserves Down G) Supportive power Sold H) Supportive power Bought	ISR → BSP	A) and B): BZ, BRP, RO C) and D): BZ 1, BZ 2, TSO	Ediel ERRP Reserve Allocation Result Document [1] **For details see:** 5.3
19. Balance regulation market prices	SO → ISR	BZ	ENTSO-E ECAN Publication Document [1] **For details see:** 5.4
20. Capacity reserves (up, down and no direction)	SO → ISR	BZ	Ediel ERRP Reserve Allocation Result Document [1] **For details see:** 5.3
21. Capacity reserves (up, down and no direction)	ISR → BSP	BZ	Ediel ERRP Reserve Allocation Result Document [1] **For details see:** 5.3

Table 1: NBS scheduling phase documents

2.4   Overview of information exchange for the NBS metering and settlement phase
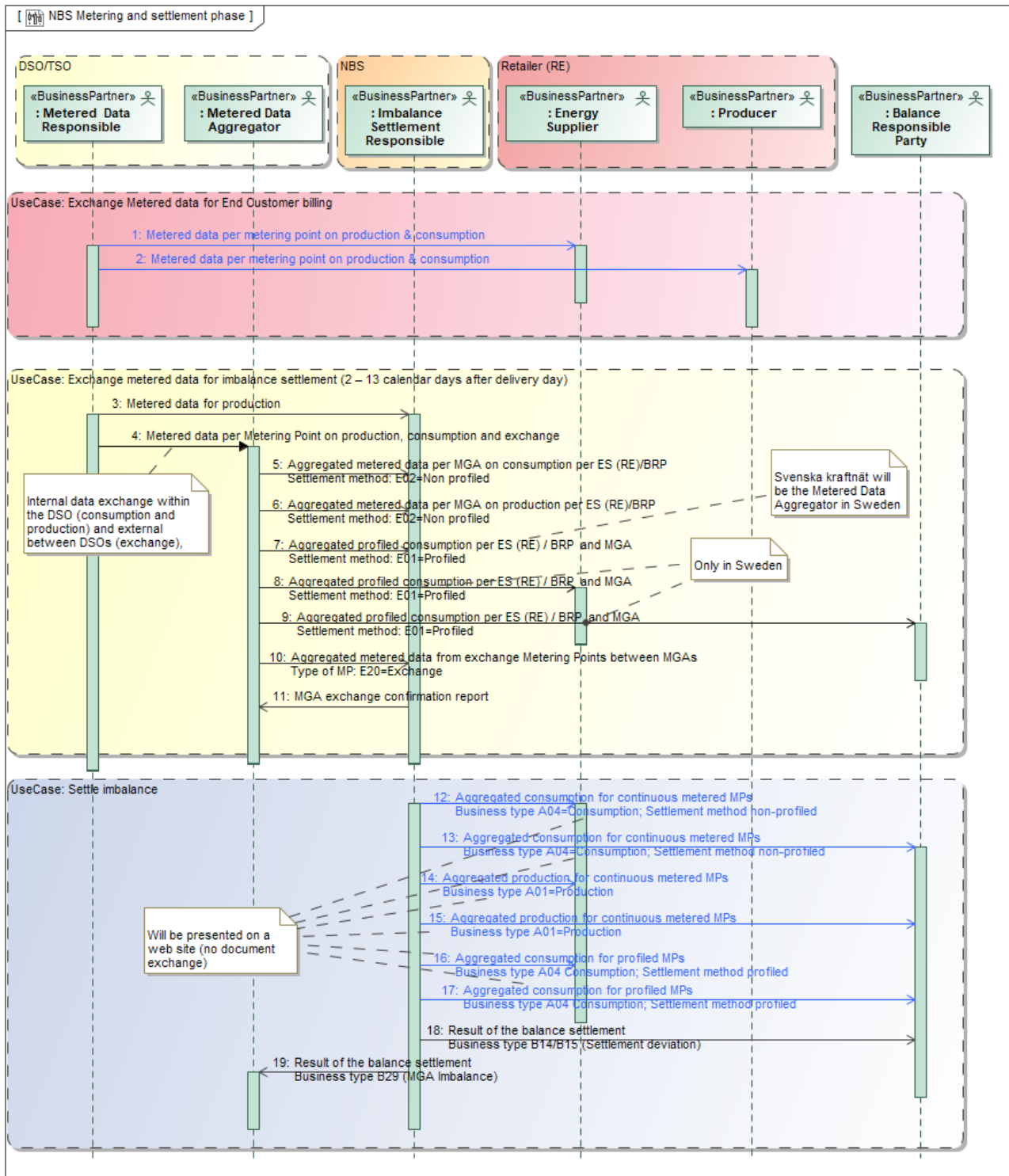
Figure 5 Sequence diagram: The NBS metering and settlement phase

Comments to the diagram:

- Documents (arrow) **1**; Metered data per metering point on production & consumption, is used for settlement between the Energy Supplier and the Party Connected To Grid (Consumers and Producers).
- The documents (arrow) **3**, production, will always be reported using positive values.
- The documents (arrow) **13** to **18** will be pubished on a web-site
- None of the documents (arrows) shown above are further elaborated in this document.

NBS document	Roles	Identified object(s)	Documentation
- **Reporting metered data 2 – 13 days after delivery day**			
1. Metered data per metering point on production & consumption	DSO → ES		ebIX® EMD model measure for billing, Validated Data for Billing Energy (E66, E88) [2] **For details see:** BRS for Nordic Settlement System [9]
2. Metered data per metering point on production & consumption	DSO → Producer		ebIX® EMD model measure for billing, Validated Data for Billing Energy (E66, E88) [2] **For details see:** BRS for Nordic Settlement System [9]
3. Metered data for production	DSO → ISR	MP (RO)	ebIX® EMD model measure for Imbalance Settlement, Validated Data for Settlement for Aggregator (E66, E44 (Settlement)) [2] **For details see:** BRS for Nordic Settlement System [9]
4. Metered data per metering point on production, consumption and exchange	DSO → DSO	MGA1 and MGA2	ebIX® EMD model measure for Imbalance Settlement, Validated Data for Settlement for Aggregator (E66, E44 (Settlement)) [2] Internal data exchange within the DSO (consumption and production) are not further elaborated. **For details see:** BRS for Nordic Settlement System [9] **Note:** This message is not within the scope of ISR
5. Aggregated ES (RE) / BPR metered data per MGA on consumption Settlement method: E02=Non profiled	DSO → ISR	MGA, BRP, BS	ebIX® EMD model measure for imbalance settlement, Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44) [2] **For details see:** BRS for Nordic Settlement System [9]
6. Aggregated metered data per MGA on production per ES (RE)/BRP Settlement method: E02=Non profiled	DSO → ISR	MGA, BRP, BS	ebIX® EMD model measure for imbalance settlement, Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44) [2] **For details see:** BRS for Nordic Settlement System [9]
7. Aggregated profiled consumption per ES (RE) / BRP and MGA Settlement method: E01=Profiled	DSO → ISR	MGA, BRP, BS	ebIX® EMD model measure for imbalance settlement, Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44) [2] **For details see:** BRS for Nordic Settlement System [9] **Note:** This message is not within the scope of eSett
8. Aggregated profiled consumption per ES (RE) / BRP and MGA Settlement method: E01=Profiled	DSO → ES	MGA, BRP, BS	ebIX® EMD model measure for imbalance settlement, Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44) [2] **For details see:** BRS for Nordic Settlement System [9] **Note:** This message is not within the scope of eSett

	NBS document	Roles	Identified object(s)	Documentation
9.	Aggregated profiled consumption per ES (RE) / BRP and MGA Settlement method: E01=Profiled	DSO → BRP	MGA, BRP, BS	ebIX® EMD model measure for imbalance settlement, Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44) [2] **For details see:** BRS for Nordic Settlement System [9] **Note:** This message is not within the scope of eSett
10.	Aggregated metered data from exchange Metering Points between MGAs Type of MP: E20=Exchange	DSO → ISR	MGA 1, MGA 2, Responsible MGA	ebIX® EMD model measure for imbalance settlement, Aggregated Data per Neighbouring Grid For Settlement Responsible (E31, E44) [2] **For details see:** BRS for Nordic Settlement System [9]
11.	MGA exchange confirmation report	ISR → DSO	MGA 1, MGA 2, Responsible MGA	Ediel Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44) [2] **For details see:** BRS for Nordic Settlement System [9]
12.	Aggregated consumption for continuous metered MPs	ISR → ES		Will be published on a web site. Not documented.
13.	Aggregated consumption for continuous metered MPs	ISR → BRP		Will be presented on a web site (no document exchange)
14.	Aggregated production for continuous metered MPs	ISR → ES		Will be presented on a web site (no document exchange)
15.	Aggregated production for continuous metered MPs	ISR → BRP		Will be presented on a web site (no document exchange)
16.	Aggregated consumption for profiled MPs	ISR → BRP		Will be published on a web site. Not documented.
17.	Aggregated consumption for profiled MPs	ISR → BRP		Will be presented on a web site (no document exchange)
	After the Balance settlement			
18.	Result of the balance settlement. Business type B14/B15 (Settlement deviation)	ISR → BRP	BZ, BRP	ENTSO-E ESP Energy account report (EAR) **For details see:** BRS for Nordic Settlement System [9]

NBS document	Roles	Identified object(s)	Documentation
19. Result of the balance settlement - MGA Imbalance. Business type B29 (MGA Imbalance)	ISR → MDA	MGA, BRP	ENTSO-E ESP Energy account report (EAR) **For details see:** BRS for Nordic Settlement System [9]

Table 2: NBS metering and settlement phase documents

2.5   Overview of information exchange for the NBS reconciliation phase
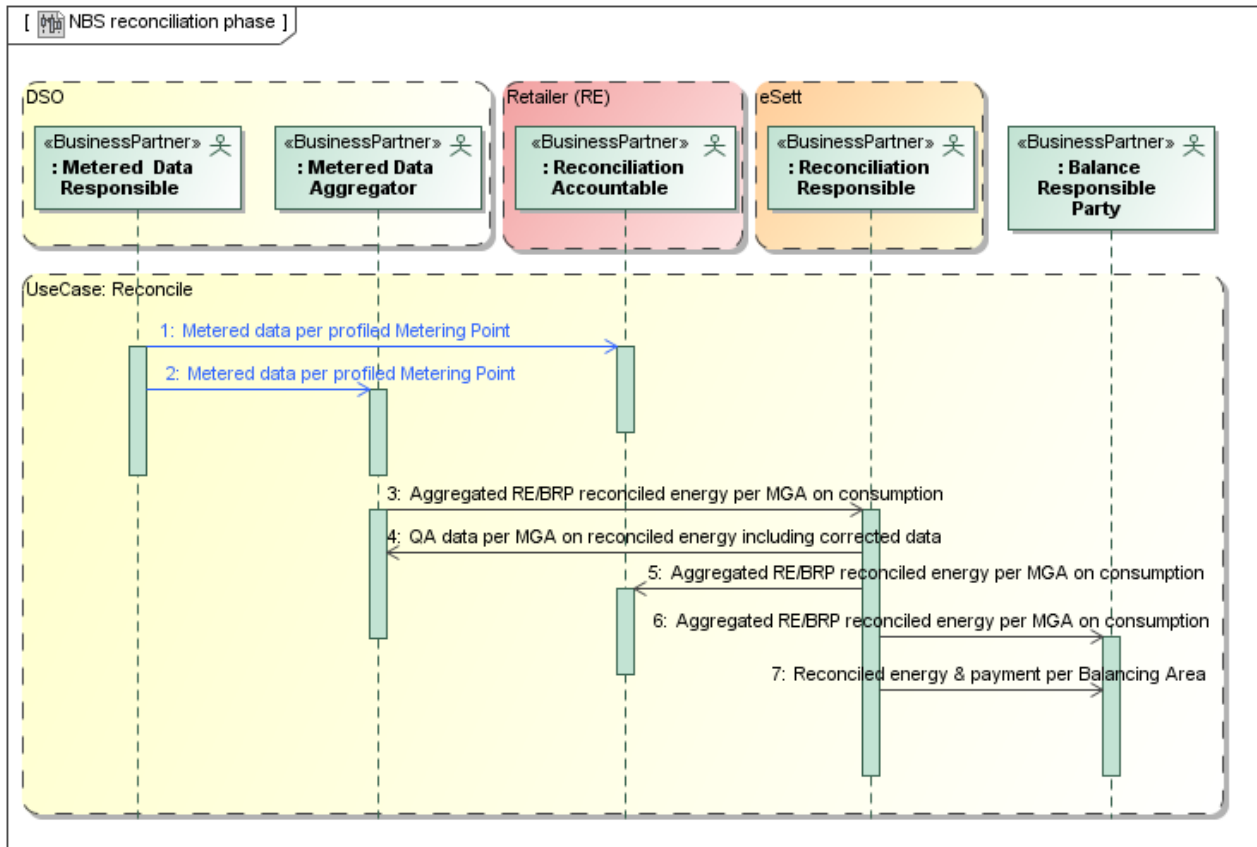
Figure 6 Sequence diagram: The NBS reconciliation phase

Comments to the diagram:

- None of these documents (arrows) are currently elaborated in detail:
  - Documents (arrows) with blue colour will be elaborated by the NordREG project "Common harmonised Nordic retail market - Message format, content and interface"
  - The documents (arrow) 3 to 7 will not be handled in the first version of a common Nordic Balance Settlement, i.e. currently not further elaborated in this document

NBS document	IG and document
Reporting of metered data of Profiled Metering Points	
1. Metered data per profiled Metering Point	ebIX® EMD Validated Data for Reconciliation (E66 / E43 (Reconciliation)) [2] **For details see:** BRS for Nordic Settlement System [9]
2. Metered data per profiled Metering Point	Internal dataflow within the DSO. Not documented.
Reporting reconciliation settlement	
3. Aggregated RE/BRP reconciled energy per MGA on consumption	Not handled in the first version of a common Nordic Balance Settlement.
4. QA data per MGA on reconciled energy including corrected data	Not handled in the first version of a common Nordic Balance Settlement.
5. Aggregated RE/BRP reconciled energy per MGA on consumption	Not handled in the first version of a common Nordic Balance Settlement.
6. Aggregated RE/BRP reconciled energy per MGA on consumption	Not handled in the first version of a common Nordic Balance Settlement.
7. Reconciled energy & payment per Balancing Area	Not handled in the first version of a common Nordic Balance Settlement.

Table 3: NBS reconciliation phase documents

3 Harmonised roles used in Nordic settlement system

In **Figure** 7 the relevant parts of the ebIX®, EFET and ENTSO-E Harmonised role model are outlined.
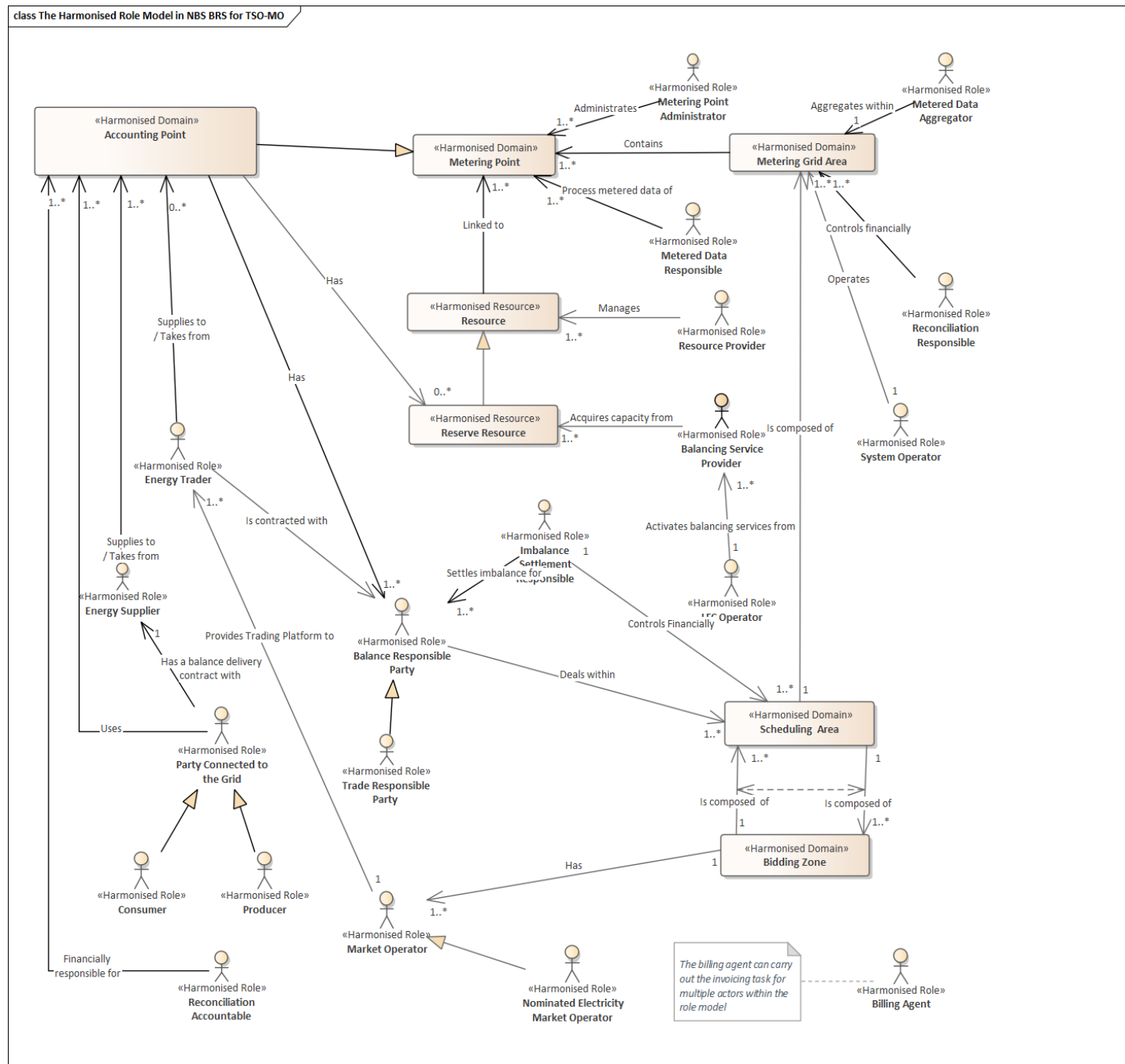

Figure 7: Outline of the Harmonised role model within the scope of NBS settlement system

3.1   Definitions (from the ebIX®, EFET and ENTSO-E Harmonised role model):

3.1.1   Roles

Balance Responsible Party: A Balance Responsible Party is responsible for its imbalances, meaning the difference between the energy volume physically injected to or withdrawn from the system and the final nominated energy volume, including any imbalance adjustment within a given imbalance settlement period.

Note:
Based on Electricity Balancing - Art.2 Definitions.

Additional information:
Responsibility for imbalances (Balance responsibility) requires a contract proving financial security with the Imbalance Settlement Responsible of the Scheduling Area entitling the party to operate in the market.

Balancing Service Provider: A party with reserve-providing units or reserve-providing groups able to provide balancing services to one or more LFC Operators.

Additional information:
Based on Electricity Balancing - Art.2 Definitions.

Billing Agent: The party responsible for invoicing a concerned party.

Consumer: A party that consumes electricity.

Additional information:
This is a Type of Party Connected to the Grid.

Energy Supplier: An Energy Supplier supplies electricity to or takes electricity from a Party Connected to the Grid at an Accounting Point.

Additional information:

An Accounting Point can only have one Energy Supplier.

When additional suppliers are needed, the Energy Supplier delivers/takes the difference between established (e.g. measured or calculated) production/consumption and the (accumulated) contracts with other suppliers.

Energy Trader: A party that is selling or buying energy.

Imbalance Settlement Responsible: A party that is responsible for settlement of the difference between the contracted quantities with physical delivery and the established quantities of energy products for the Balance Responsible Parties in a Scheduling Area.

Note:

The Imbalance Settlement Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.

LFC Operator: Responsible for the load frequency control for its LFC Area or LFC Block.

Additional information:

This role is typically performed by a TSO.

Market Operator: A market operator is a party that provides a service whereby the offers to sell electricity are matched with bids to buy electricity.

Additional Information:

This usually is an energy/power exchange or platform.

The definition is based on Regulation on the internal market for electricity (EU) 2019/943.

Metered Data Aggregator: A party responsible for the establishment and qualification of measured data from the Metered Data Responsible. This data is aggregated according to a defined set of market rules.

Metered Data Responsible: A party responsible for the establishment and validation of measured data based on the collected data received from the Metered Data Collector. The party is responsible for the history of metered data for a Metering Point.

Metering Point Administrator: A party responsible for administrating and making available the Metering Point characteristics, including registering the parties linked to the Metering Point.

Nominated Electricity Market Operator: An entity designated by the competent authority to perform tasks related to single day-ahead or single intraday coupling.

Source: Commission Regulation (EU) 2015/1222 (CACM).

Additional Information:
A NEMO performs MCO (Market Coupling Operator) and CCP (Central Counter Party) functions.

A NEMO runs a power exchange related to day-ahead or intraday market.

A NEMO is a type of Market Operator.

Party Connected to the Grid: A party that contracts for the right to consume or produce electricity at an Accounting Point.

Producer: A party that generates electricity.

Additional information:
This is a type of Party Connected to the Grid.

The definition is based on Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU, Article 2 (Definitions).

Reconciliation Accountable: A party that is financially accountable for the reconciled volume of energy products for a profiled Accounting Point.

Reconciliation Responsible: A party that is responsible for reconciling, within a Metering Grid Area, the volumes used in the imbalance settlement process for profiled Accounting Points and the actual metered quantities.

Note:
The Reconciliation Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.

Resource Provider: A role that manages a resource and provides production/consumption schedules for it, if required.

System Operator: A party responsible for operating, ensuring the maintenance of and, if necessary, developing the system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution or transmission of electricity.

	Additional information:
	The definition is based on [DIRECTIVE 2009/72/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, Article 2 (Definitions)]().
Trade Responsible Party:	A party who can be brought to rights, legally and financially, for any imbalance between energy nominated and consumed for all associated Accounting Points.
	Note:
	A power exchange without any privileged responsibilities acts as a Trade Responsible Party.
	Additional information:
	This is a type of Balance Responsible Party.

Note: The NordREG role *National Point of Information (NPI)* is represented as the role *Metered Data Aggregator* in the BRS.

3.1.2   Domains

Accounting Point:	A domain under balance responsibility where Energy Supplier change can take place and for which commercial business processes are defined.
	Additional information:
	This is a type of Metering Point.
Bidding Zone:	The largest geographical area within which market participants are able to exchange energy without capacity allocation.
	Source: [Commission Regulation (EU) 543/2013.]()
Metering Grid Area:	A Metering Grid Area is a physical area where consumption, production and exchange can be measured. It is delimited by the placement of meters for continuous measurement for input to, and withdrawal from the area.
	Additional information:
	It can be used to establish volumes that cannot be measured such as network losses.
Metering Point:	An entity where energy products are measured or computed.
Reserve Resource:	A resource technically pre-qualified using a uniform set of standards to supply reserve capabilities to a System Operator and is associated with one or more tele-measuring devices.
	Additional information:
	This is a type of Resource.
Resource:	A market representation of an asset or a group of assets related to the energy industry.
	Additional information:
	A Resource represents for example grid assets, consumption assets or production assets, such as generating units, consumption units, energy storage units or virtual power plants.
Scheduling Area:	An area within which the TSOs' obligations regarding scheduling apply due to operational or organisational needs.

This area consists of one or more Metering Grid Areas with common market rules for which the settlement responsible party carries out an imbalance settlement and which has the same price for imbalance.

Source: System Operation Guideline, Commission Regulation (EU) 2017/1485.

Additional information:
This covers both Imbalance Area and Imbalance Price Area from the Electricity Balancing Guideline (2017/2195).

4 Process areas within Nordic settlement system

4.1 Process area: Receive and validate Master Data

See separate BRS [12].

4.2 Process area: Master Data

See separate BRS [12].

4.3 Process area: Exchange Load Profile Shares
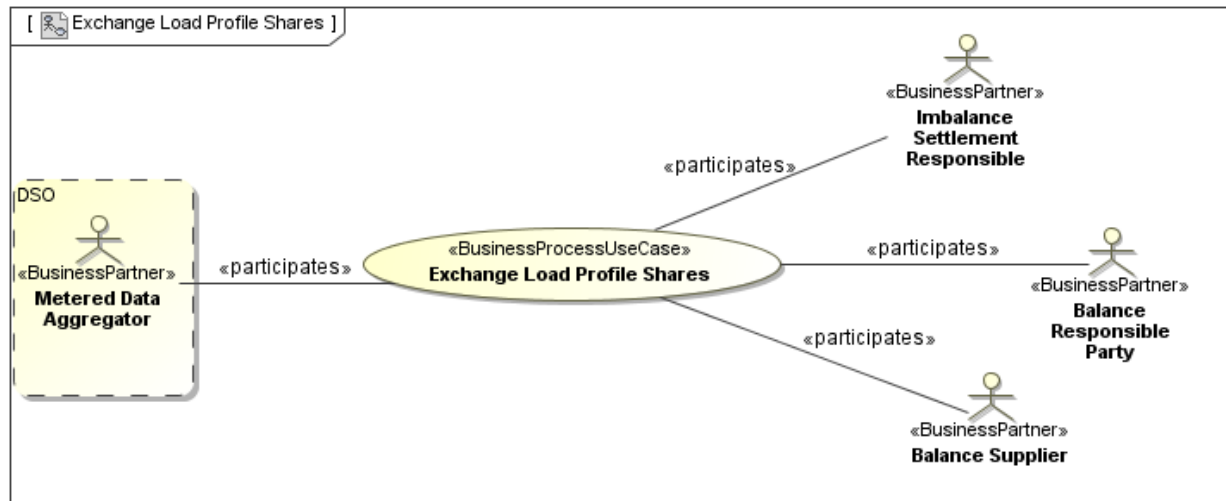
Figure 8: UseCase: Exchange Load Profile Shares

The Load Profile Shares (LPS) per Metering Grid Area (MGA) and Energy Supplier / Balance Responsible Party must be reported by the Metered Data Aggregator to the Imbalance Settlement Responsible according to market rules. The Imbalance Settlement Responsible will thereafter publish LPS on a website.

The Metered Data Aggregator is responsible for the data quality of the LPS.
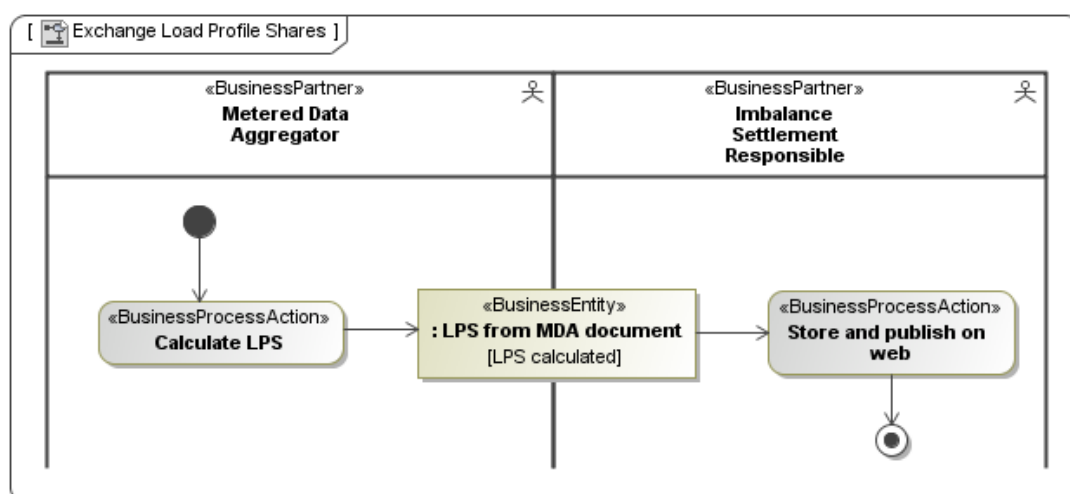
Figure 9: Activity diagram: Exchange Load Profile Shares

4.4　Process area: Report trade from Day-ahead and Intraday
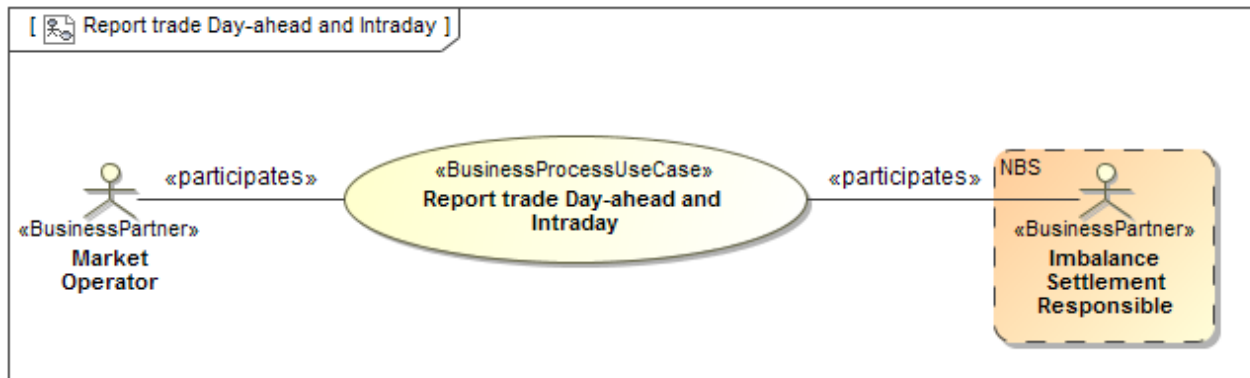
Figure 10: UseCase: Report trade from Day-ahead and Intraday

On the *Day-ahead market*, power contracts are traded daily for physical delivery in the next day's 24-hour period. The price calculation is based on the balance between bids and offers from all market participants – finding the intersection point between the market's supply curve and demand curve. This trading method is referred to as equilibrium point trading, auction trading, or simultaneous price setting. The price mechanism in *Day-ahead market* adjusts the flow of power across the interconnectors, and on certain connections within the Norwegian and Swedish grids, to the available trading capacity given by the Nordic Transmission System Operators. Thus, *Day-ahead market* is a common power market for the Nordic countries, with an implicit capacity auction on the interconnectors between the *Bidding Zones*.

All participants who meet the requirements set by the Market Operator are given access to the *Day-ahead market*. However, Day-ahead market participants must have a balancing agreement with the respective Transmission System Operator or through a third party.

The intraday market is a tool for Trade Responsible Parties to adjust their balance during intraday. The parties on the intraday market are Producers, Consumers and Traders.

Figure 11: Activity diagram: Report trade from Day-ahead and Intraday
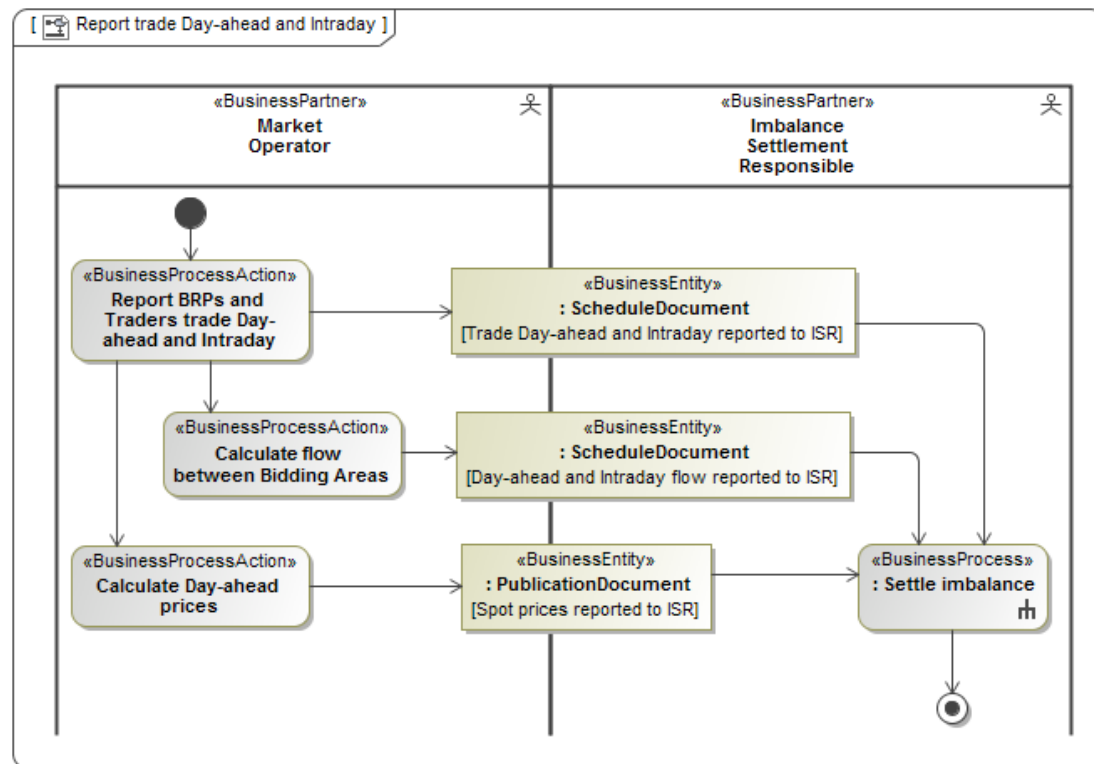
Comment to the diagram:
- Only actions and documents related to eSett is shown.

4.5 Process area: Report bilateral trade
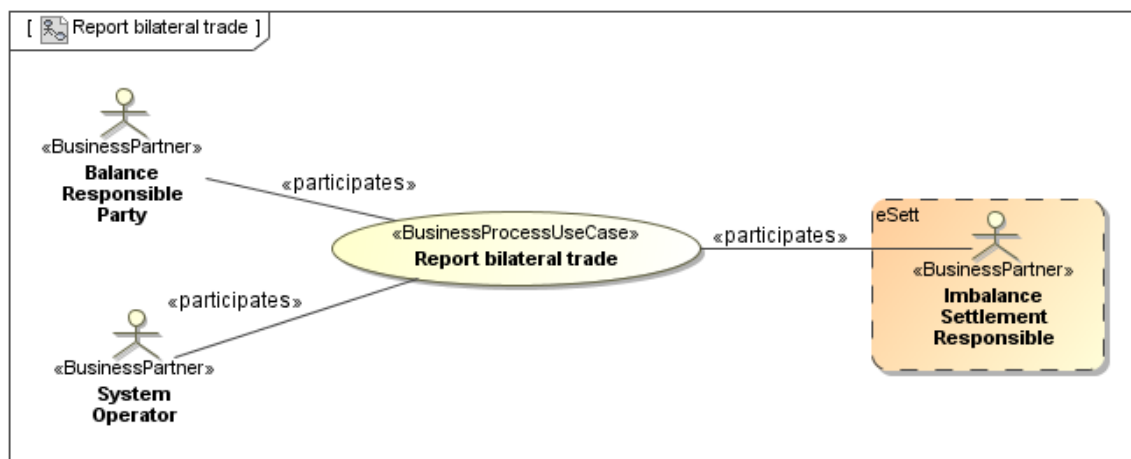
Figure 12: UseCase: Report bilateral trade
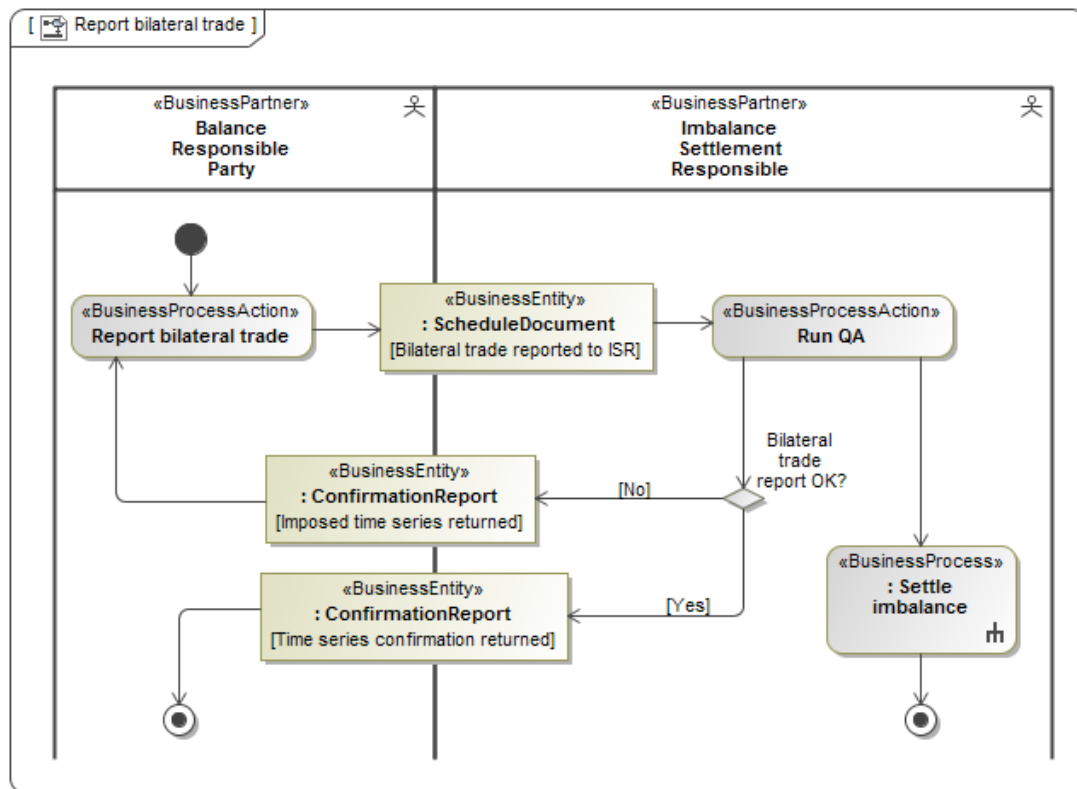
Figure 13: Activity diagram: Report bilateral trade

4.5.1   The NBS confirmation process

The matching validation is carried out for every *ESS schedule time series* received, independent of what is received from the counterparty, based on the following rules:

- When eSett receives a valid *ESS Schedule Time Series* within a *Schedule Document* without having received an *ESS Schedule Time Series* from the counterparty, *Confirmation Reports* are returned to both the originator and the counterparty:
    - A Time Series Confirmation to the originator of the ESS Schedule Time Series
    - An *Imposed Time Series* to the counterparty. The counterparty does not need to act (i.e., send an *ESS Schedule Time Series*) if he finds that the *Imposed Time Series* is correct.
- If eSett receives a matching *ESS Schedule Time Series* within a *Schedule Document* from the counterparty, eSett sends a *Confirmation Report* with a *Time Series Confirmation* to both the originator and the counterparty.
- If eSett receives an *ESS Schedule Time Series* within a *Schedule Document* that does not match the corresponding *ESS Schedule Time Series* from the counterparty, *Confirmation Reports* are returned to both the originator and the counterparty:
    - A Time Series Confirmation if there are no changes to the received ESS Schedule Time Series
    - An Imposed Time Series if there are changes to the received ESS Schedule Time Series

4.6 Process area: Plan production
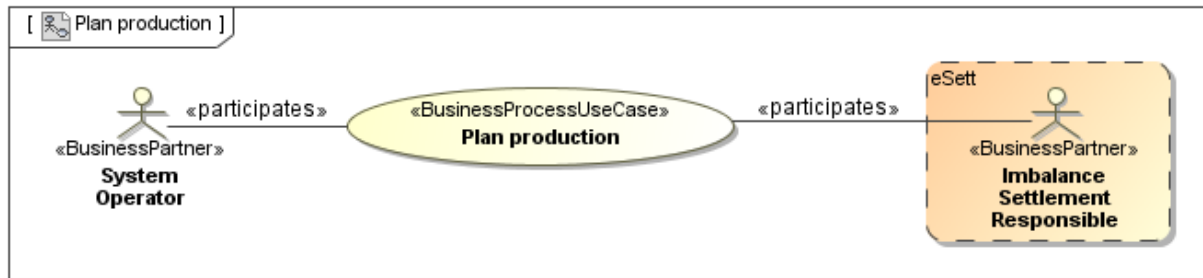
Figure 14: UseCase: Plan production
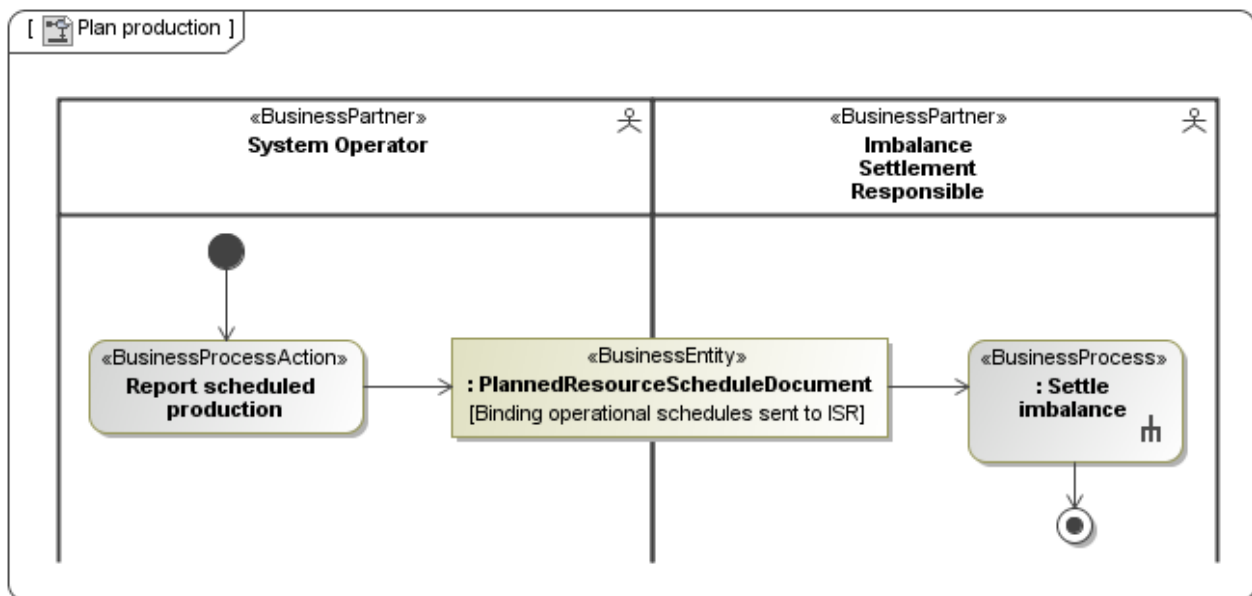
Figure 15: Activity diagram: Plan production

4.7 Process area: Report trade from Balance Regulation Market

The trade on the balance regulation market is documented in [7], BRS for the Nordic trading system. The Activated Trade in Reserves Market is reported from the *System Operator* to the *Imbalance Settlement Responsible* as the interface between the *Nordic trading system* and the *Nordic Balancing System*.
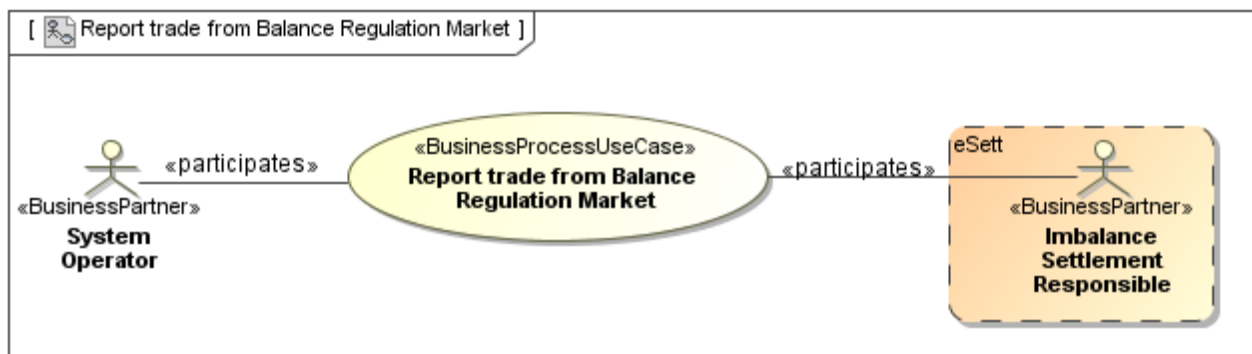
Figure 16: UseCase: Report trade from Balance Regulation Market
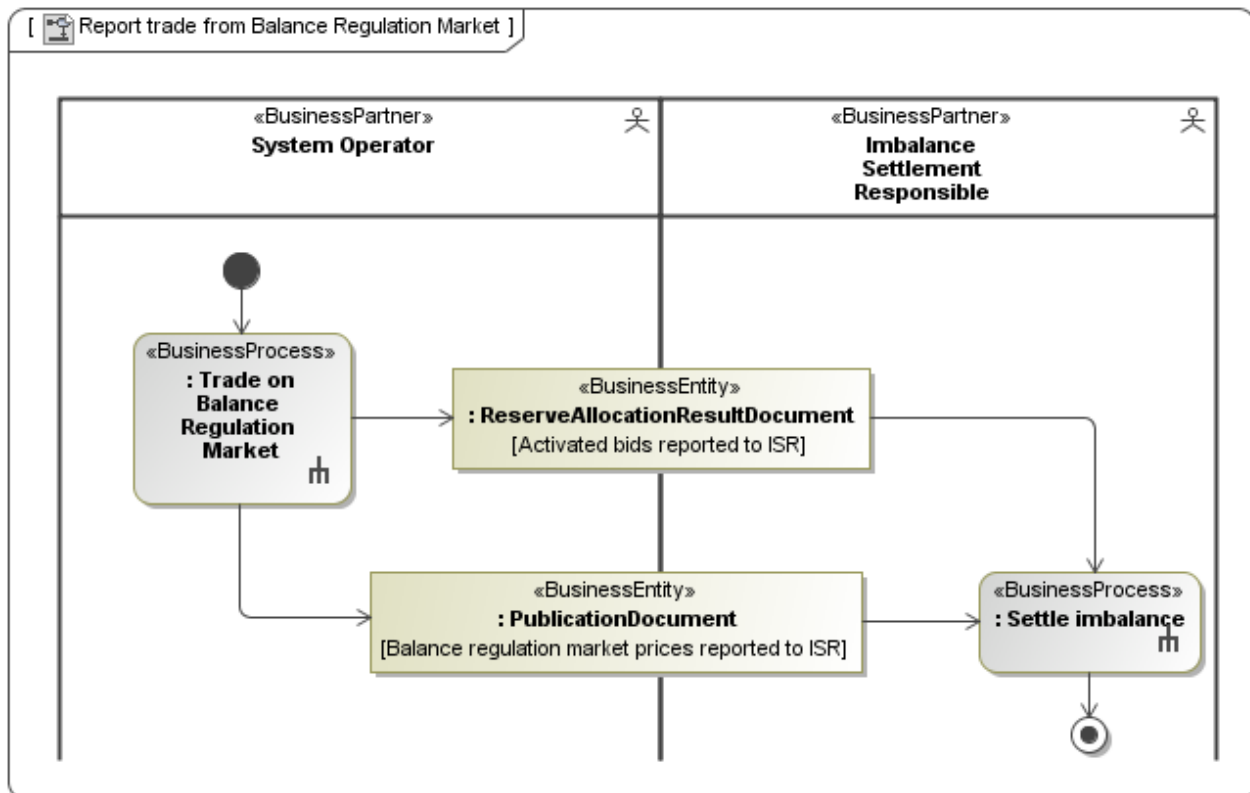
Figure 17: Activity diagram: Report trade from Balance Regulation Market

4.8 Process area: Exchange metered data for imbalance settlement
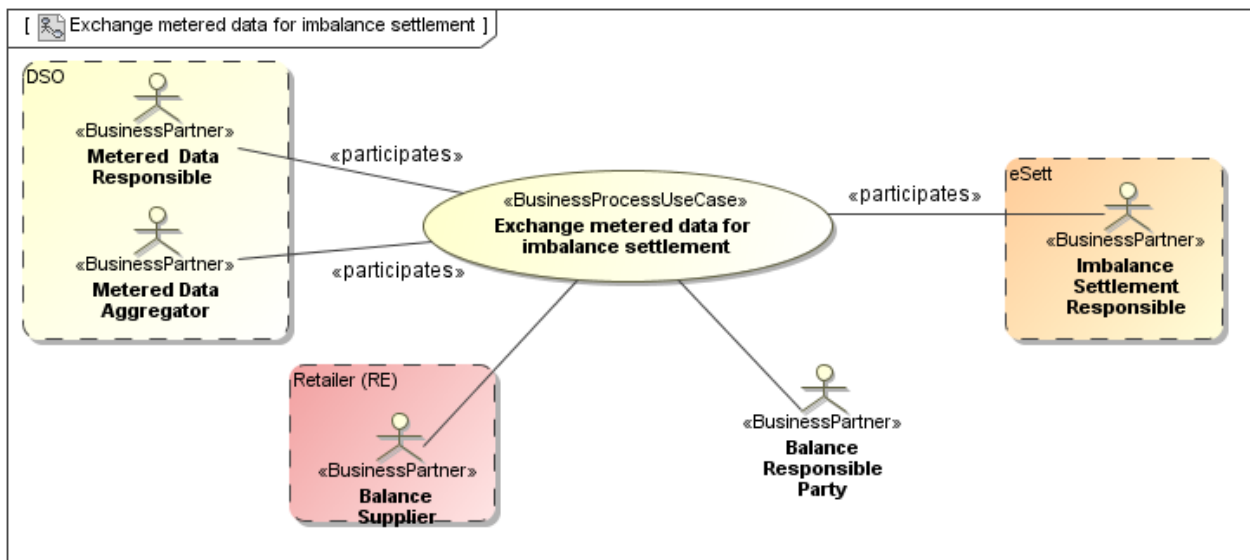
Figure 18: UseCase: Exchange metered data for imbalance settlement

The Metered Data Responsible (DSO) is reporting aggegated metered data to the Imbalance Settlement Responsible:

- Aggregated metered data from exchange Metering Points between MGAs
- Aggregated metered consumption per Energy Supplier, Balance Responsible Party and MGA

- Aggregated metered production per Production Unit, Producer (RE), Balance Responsible Party and MGA
- Aggregated preliminary profiled consumption per Energy Supplier, Balance Responsible Party and MGA

The metered data will be made available at the Imbalance Settlement Responsible database for Balance Responsible Parties and Energy Suppliers as aggregated volumes per Energy Supplier and Balance Responsible Party.

Missing daily collected metered data in a single metering point will be estimated before aggregation.

The Imbalance Settlement Responsible makes available quality assurance data per Metering Grid Area (e.g., balance per Metering Grid Area) to the Metered Data Aggregator (DSO).
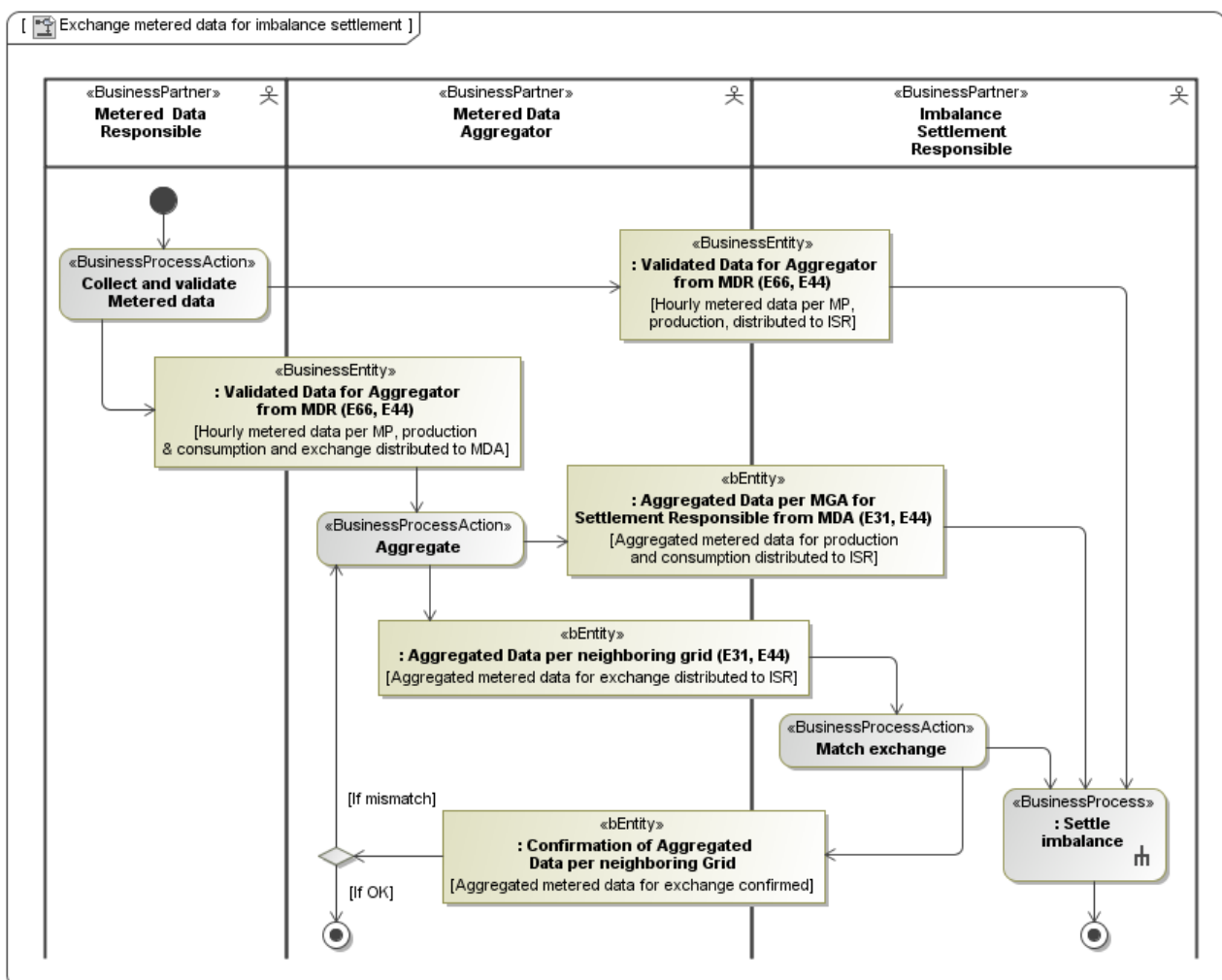
Figure 19: Activity diagram: Exchange metered data for imbalance settlement

4.9   Process area: Distribute settlement basis data

Not handled in the first version of a common Nordic Balance Settlement.

4.10 Process area: Settle imbalance
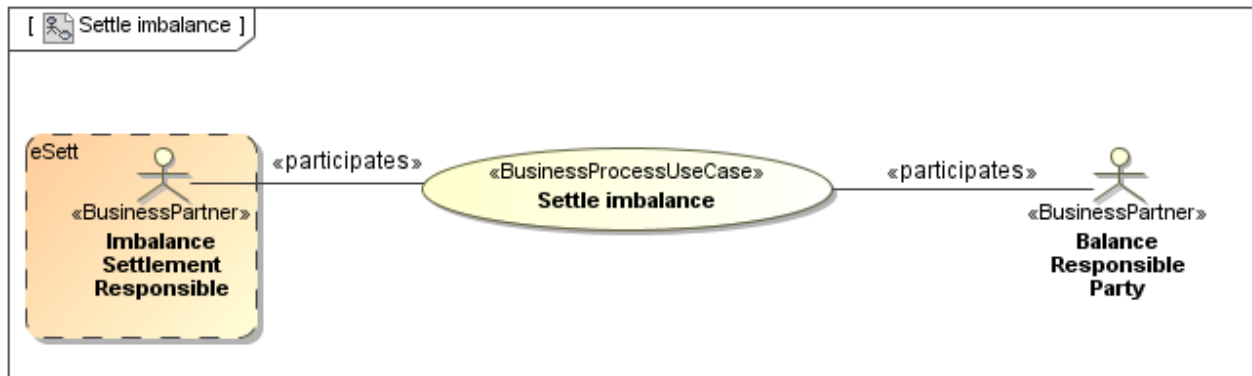
Figure 20: UseCase: Settle imbalance

The Imbalance Settlement Responsible provides the result of the imbalance settlement to the Balance Responsible Parties.
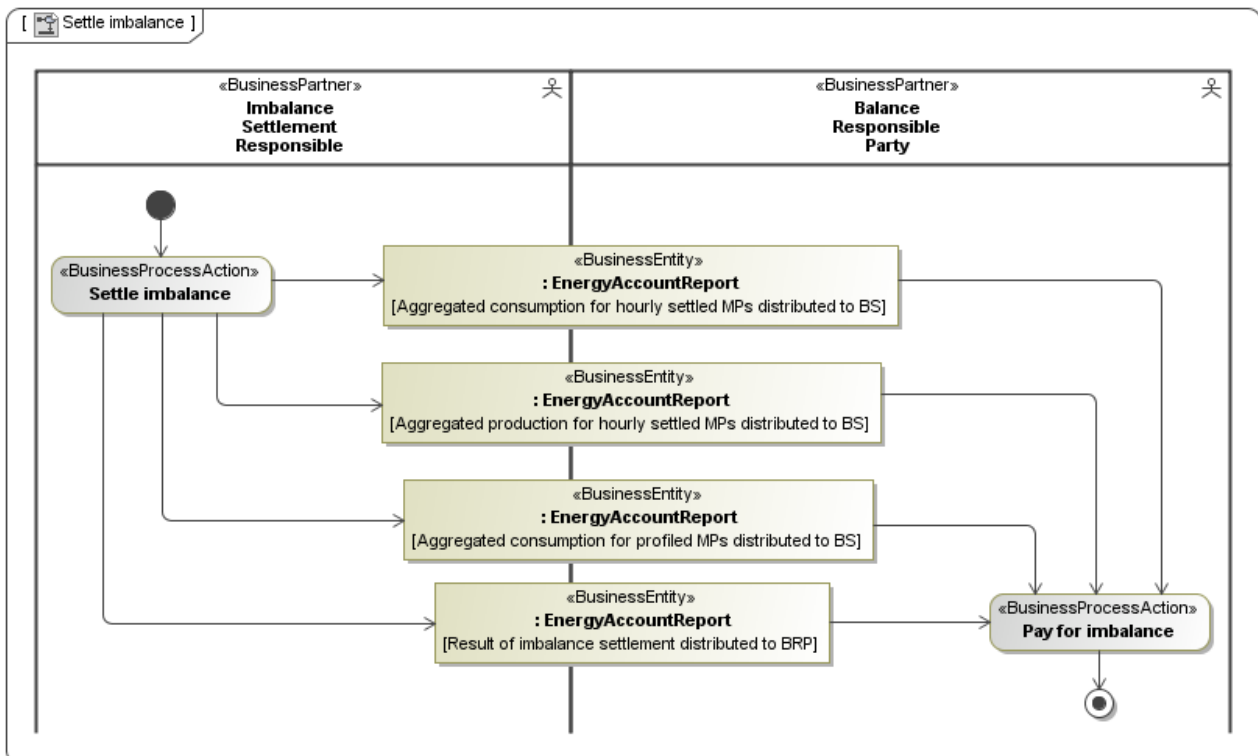
Figure 21: Activity diagram: Settle imbalance

4.11 Process area: Reconcile

Not handled in the first version of NBS.

5 Business Data View

This chapter describes class diagrams, showing the content of the business documents defined in the previous defined UML diagrams. The class diagram shows the important information needed to identify the document header, time series and observations to be exchanged, such as:

- The reported object, such as Metering point, Resource object (Station group or Regulation object), In area and Out area
- The level of aggregation, such as per Energy Supplier and Balance responsible party
- The characteristics needed to express the nature of the time series, such as *Business type* and *Product.*

Technical elements related to the communication channel (SMTP, WS…) and syntax (EDIFACT, XML….) are skipped.

5.1 ENTSO-E ESS Schedule document

The *ENTSO-E ESS Schedule document* is documented in the *ENTSO-E Scheduling System (ESS) Implementation Guide*, see [1].

5.1.1 Class diagram: ENTSO-E ESS Schedule document
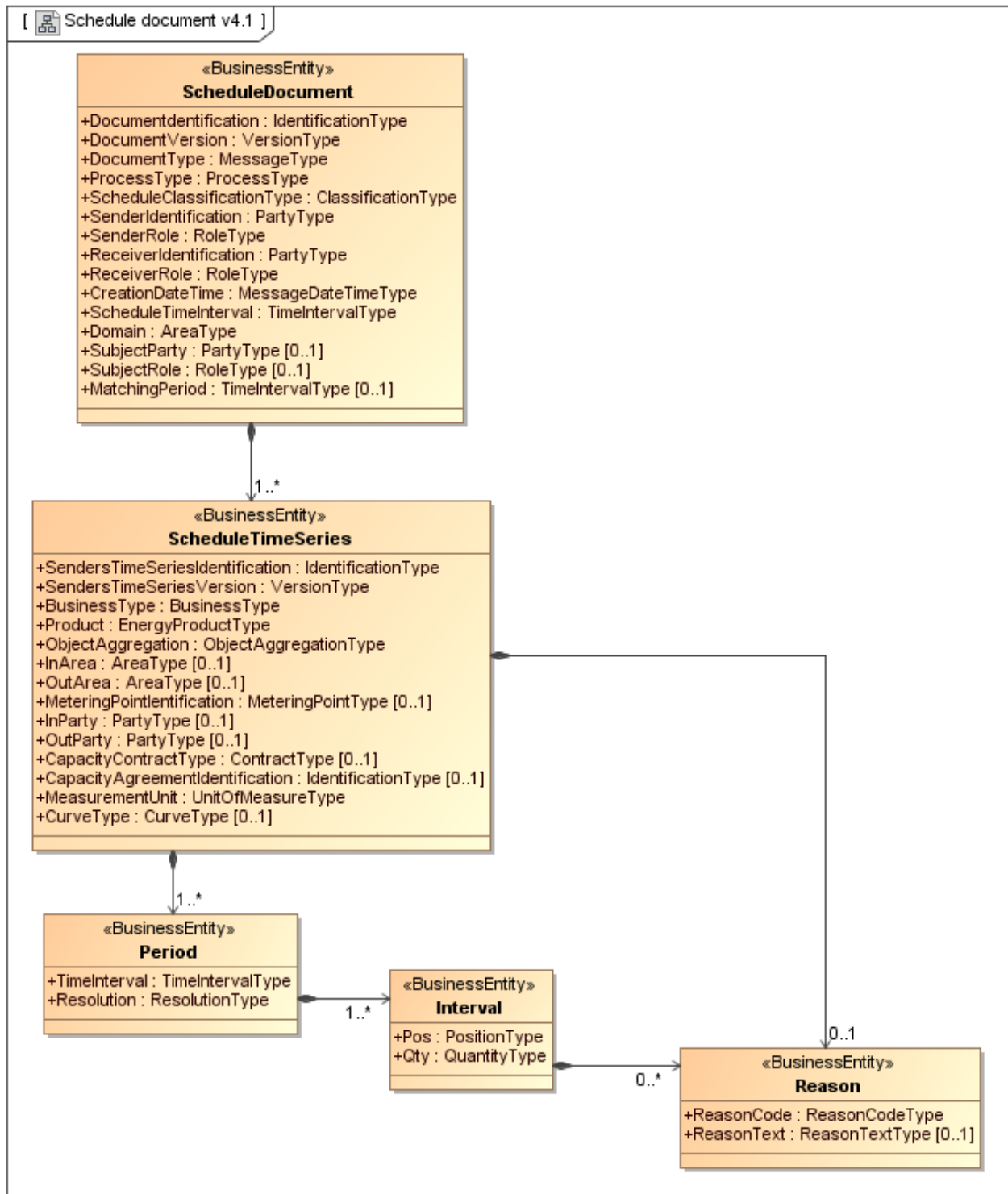
Figure 22: Class diagram: ENTSO-E ESS Schedule document

The document is used in the following exchanges:
- **Table 1:** NBS scheduling phase documents:
    - 4, BRPs and Traders trade in Day-ahead and Intraday
    - 5, Day-ahead and Intraday flow (exchange between Bidding Zones)

5.1.2   Attribute usage: ENTSO-E ESS Schedule document, Bilateral trade

ESS Attribute	Cl.	Content	Descriptions and comments
Schedule Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	Version	Fixed 1
Document Type	[1]	**A01**	**A01** Balance responsible schedule
Process Type	[1]	**A59** or **Z05**	**A59** Internal trade reporting **Z05** Bilateral trade[2]
Schedule Classification Type	[1]	**A02**	**A02** Summary type
Sender Identification	[1]	**SO** or **BRP** ID	Unique identification of the sender
Sender role	[1]	**A04** or **A08**	**A04** System Operator **A08** Balance Responsible Party
Receiver Identification	[1]	**ISR** ID	Unique identification of the Receiver
Receiver role	[1]	**A05**	**A05** Imbalance Settlement Responsible
Creation Date Time	[1]	Creation date/time	The date and time that the message was prepared for transmission by the application of the sender.
Schedule Time Interval	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered by the message containing the schedule.
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
Schedule Time Series	[1..*]		
Senders Time Series Identification	[1]	Time series ID	Unique identification of the Time Series (unique over time for the sender in question)
Senders Time Series Version	[1]	Version	Fixed 1
Business Type	[1]	**A08**	**A08** Net internal trade (Within a Bidding Zone) (Net internal trade - where the direction from out party (seller) to in party (buyer) is positive and the opposite direction is negative (with minus signs)).
Product	[1]	**8716867000030**	**8716867000030** Active energy
Object Aggregation	[1]	**A01**	**A01** Area
In Area	[1]	**BZ** ID	The Bidding Zone where the trade has taken place.

---

[2] The code "**Z05** Bilateral trade" will be valid one year after eSett have announcement its removal, approximately until the end of 2024. In the transition period eSett will continue using **Z05**.

ESS Attribute	Cl.	Content	Descriptions and comments
Out Area	[1]	**BZ** ID	The same Bidding Zone as defined in In Area, i.e. where the trade has taken place.
In Party	[1]	**BRP** 1 ID	The Balance Responsible Party acting as the buyer in the bilateral trade.
Out Party	[1]	**BRP** 2 ID	The Balance Responsible Party acting as the seller in the bilateral trade.
Capacity Agreement Identification	[0..1]	Bilateral Trade ID	An ID only used when reporting trade on a Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone. The Bilateral Trade ID will be unique in combination with In Party, Out Party and BZ. **Note:** Currently not used
Measurement Unit	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
Period	[1..*]		
Time Interval	[1]	Start and end date time	The start and end date and time of the time interval of the period in question.
Resolution	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position
Qty	[1]	Quantity	Quantity The direction from out party (seller) to in party (buyer) is positive, while the opposite direction is negative (with minus signs)) The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh

Table 4: Attribute usage: ENTSO-E ESS Schedule document, Bilateral trade

5.1.3 Attribute usage: ENTSO-E ESS Schedule document, Day-ahead/Intraday trade

ESS Attribute	Cl.	Content	Descriptions and comments
Schedule Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	Version	Fixed 1
Document Type	[1]	**A01**	**A01** Balance responsible schedule
Process Type	[1]	**A01** **A02** **A19** **Z15**	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **Z15** External trade (Trade outside the Capacity Calculation Region)
Schedule Classification Type	[1]	**A02**	**A02** Summary type
Sender Identification	[1]	**MO** or **SO** ID	Unique identification of the sender
Sender Role	[1]	**A04** **A11**	**A04** System Operator **A11** Market Operator
Receiver Identification	[1]	**ISR** ID	Unique identification of the Receiver
Receiver Role	[1]	**A05**	**A05** Imbalance Settlement Responsible
Creation Date Time	[1]	Creation date/time	The date and time that the message was prepared for transmission by the application of the sender.
Schedule Time Interval	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered by the message containing the schedule.
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e., **10Y1001A1001A91G** (Nordic market area)
Subject Party	[1]	**BRP** ID	Unique identification of the BRP in question
Subject Role	[1]	**A08**	**A08** Balance Responsible Party
Schedule Time Series	[1..*]		
Senders Time Series Identification	[1]	Time series ID	Unique identification of the Time Series (unique over time for the sender in question)
Senders Time Series Version	[1]	Version	Fixed 1
Business Type	[1]	**A06** or **A08**	**A06** External trade without explicit capacity (used for the North Sea Link cable). **A08** Net internal trade (Within a Bidding Zone) (Net internal trade - where the direction from out party (seller) to in party (buyer) is positive and the opposite direction is negative (with minus signs). Business Type **A06** is used together with Process Type **Z15**. Business Type **A08** is used together with Process Type **A01**, **A02** and **A19**.
Product	[1]	8716867000030	**8716867000030** Active energy
Object Aggregation	[1]	A01	**A01** Area

ESS Attribute	Cl.	Content	Descriptions and comments
In Area	[1]	BZBZ ID	Bidding Zone
In Party	[0..1]	Retailer ID	The unique identification of the Retailer (Company) in question
Measurement Unit	[1]	KWH or MWH	KWH kWh MWH MWh
Period	[1..*]		
Time Interval	[1]	Start and end date time	The start and end date and time of the time interval of the period in question.
Resolution	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position
Qty	[1]	Quantity	Quantity The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh The direction from out party (seller) to in party (buyer) is positive, while the opposite direction is negative (with minus signs))

Table 5: Attribute usage: ENTSO-E ESS Schedule document, Day-ahead and Intraday trade

5.1.4 Attribute usage: ENTSO-E ESS Schedule document, Day-ahead/Intraday flow

ESS Attribute	Cl.	Content	Descriptions and comments
Schedule Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	Version	Fixed 1
Document Type	[1]	**A55**	**A55** Summarised Market Schedule (A compilation of all external schedules concerning two Bidding Zones of all balance responsible parties)
Process Type	[1]	**A01** **A02** **A19** **Z15**	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **Z15** External trade (Trade outside the Capacity Calculation Region)
Schedule Classification Type	[1]	**A02**	**A02** Summary type
Sender Identification	[1]	**MO** ID	Unique identification of the Market operator (sender)
Sender role	[1]	**A11**	**A11** Market Operator
Receiver Identification	[1]	**ISR** ID	Unique identification of the Imbalance Settlement Responsible (receiver)
Receiver role	[1]	**A05**	**A05** Imbalance Settlement Responsible
Creation Date Time	[1]	Creation date/time	The date and time that the message was prepared for transmission by the application of the sender.
Schedule Time Interval	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered by the message containing the schedule.
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e., **10Y1001A1001A91G** (Nordic market area)
Schedule Time Series	[1..*]		
Senders Time Series Identification	[1]	Time series ID	Unique identification of the Time Series (unique over time for the sender in question)
Senders Time Series Version	[1]	Version	Fixed 1
Business Type	[1]	**A66**	**A66** Energy flow **B67** DC flow with losses - DC flow with losses refers to the values at the importing end of the DC line **B68** DC flow without losses - DC flow without losses refers to the values at the exporting end of the DC line.
Product	[1]	**8716867000030**	**8716867000030** Active energy
Object Aggregation	[1]	**A01**	**A01** Area
In Area	[1]	**BZ** 1 ID	One Bidding Zone
Out Area	[1]	**BZ** 2 ID	The other Bidding Zone
Measurement Unit	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh

ESS Attribute	Cl.	Content	Descriptions and comments
Period	[1..*]		
Time Interval	[1]	Start and end date time	The start and end date and time of the time interval of the period in question.
Resolution	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position
Qty	[1]	Quantity	Quantity Flows will always be reported with positive values. For each connection, flows will be reported as two time series, one for each direction. Positive values for flow from Out Area to In Area and zero in the corresponding position in the other time series. The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh

Table 6: Attribute usage: ENTSO-E ESS Schedule document, Day-ahead/intraday flow

5.2 ENTSO-E ERRP Planned resource schedule

The *ENTSO-E ERRP Planned resource schedule* is documented in the *ENTSO-E Reserve Resource Process (ERRP) Implementation Guide*, see [1].

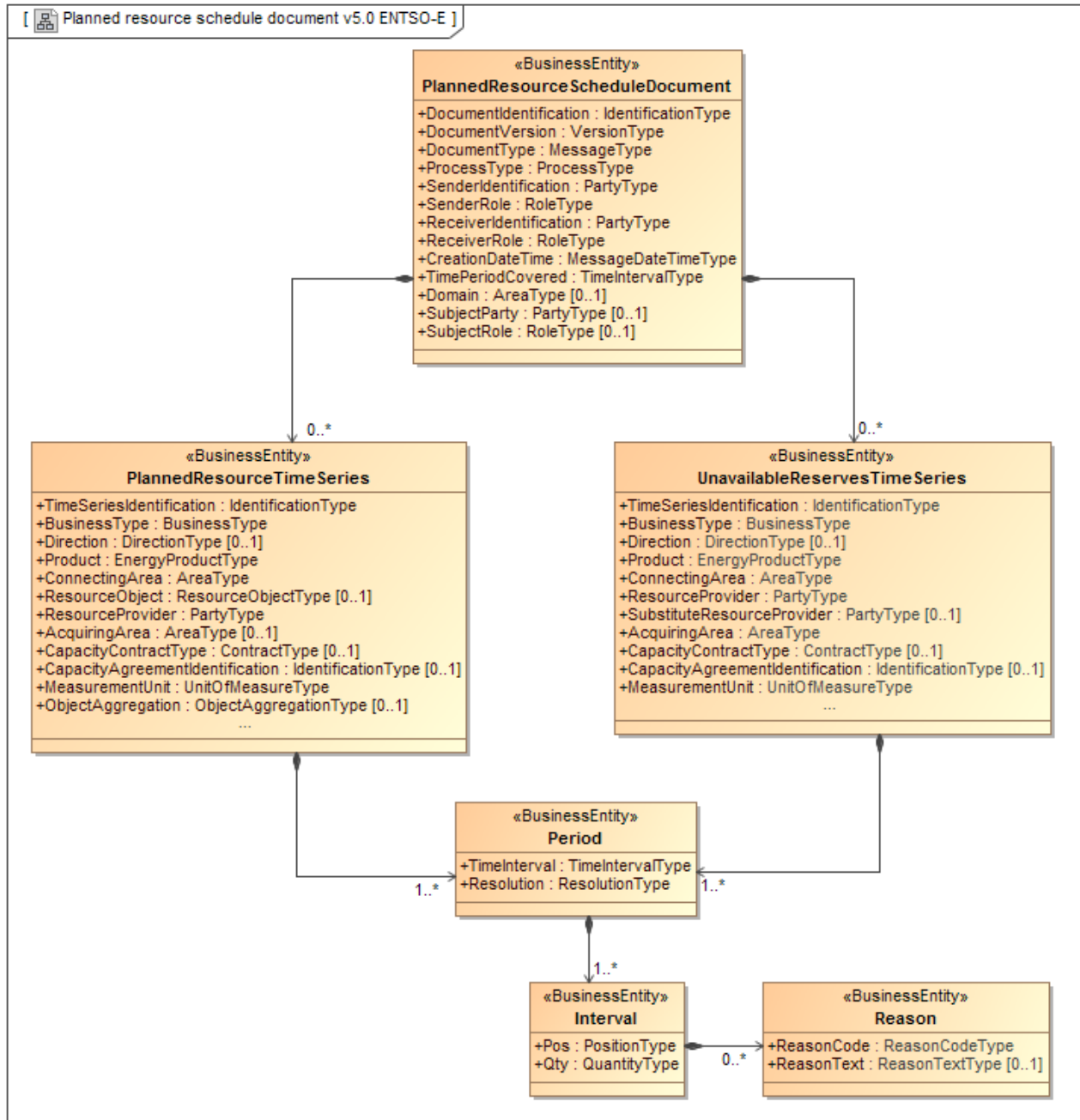### 5.2.1 Class diagram: ENTSO-E ERRP Planned resource schedule

Figure 23: Class diagram: ENTSO-E ERRP Planned resource schedule

The document is used in the following exchanges:
- **Table 1:** NBS scheduling phase documents:
    - 14, Binding production plans

5.2.2   Attribute usage: ENTSO-E ERRP Planned resource schedule

ERRP Planned Resource Schedule Attribute	Cl.	Content	Descriptions and comments
Planned Resource Schedule Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	"1"	Fixed 1
Document Type	[1]	**A14**	**A14** Resource Provider Resource Schedule
Process Type	[1]	**A17**	**A17** Schedule day - The process concerns the day ahead, intraday and eventually ex-post scheduling in a single document. The schedule will be transferred within the total position including historic information (The trade balance of a party at a given time)
Sender Identification	[1]	**SO** ID	Unique identification of the System Operator, sending the schedule
Sender role	[1]	**A04**	**A04** System Operator
Receiver Identification	[1]	**ISR** ID	Unique identification of the Imbalance Settlement Responsible, receiving the schedule
Receiver role	[1]	**A05**	**A05** Imbalance Settlement Responsible
Creation Date Time	[1]	Creation date/time	The date and time that the document was prepared for transmission by the application of the sender.
Time Period Covered	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered by the document.
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e., **10Y1001A1001A91G** (Nordic market area)
Subject Party	[0..1]	**RE** ID	The Retailer (RE) is only used in Finland
Subject Role	[0..1]	**A12**	**A12** Energy Supplier (Retailer), only used in Finland
Planned Resource Schedule Time Series	[1..*]		
Time Series Identification	[1]	Time series ID	Unique identification of the Time Series (unique over time for the sender in question)
Business Type	[1]	Business Type	**A01** Production **A04** Consumption (general consumption) **Z52** Small scale production
Product	[1]	**8716867000030**	**8716867000030** Active energy
Connecting Area	[1]	**BZ** ID	Unique identification of the Bidding Zone
Resource Object	[1]	**RO** ID	The Resource Object of the production plans
Resource Provider	[1]	**BRP** ID	The Resource Provider (BRP) of the production plans
Measurement Unit	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh

ERRP Planned Resource Schedule Attribute	Cl.	Content	Descriptions and comments
Object Aggregation	[1]	**A06**	**A06** Resource Object
Period	[1..*]		
Time Interval	[1]	Start and end date time	The start and end date and time of the time interval of the period in question.
Resolution	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position
Qty	[1]	Quantity	Quantity The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh

Table 7: Attribute usage: ENTSO-E ERRP Planned resource schedule

5.3 Ediel ERRP Reserve Allocation Result Document

The *ENTSO-E ERRP Reserve Allocation Result Document* is documented in the *ENTSO-E Reserve Resource Process (ERRP) Implementation Guide*, see [1].

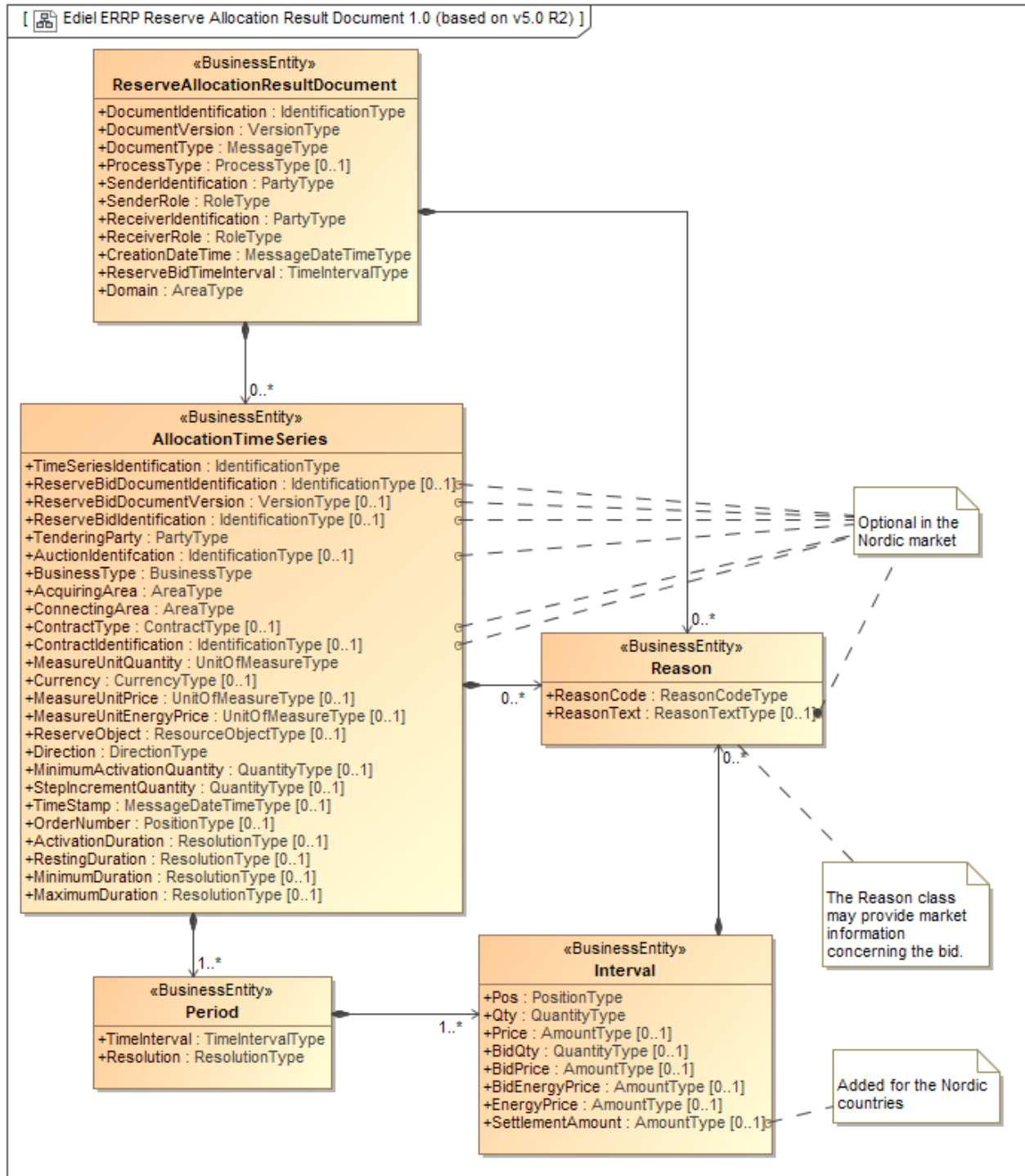### 5.3.1 Class diagram: Ediel ERRP Reserve Allocation Result Document

Figure 24: Class diagram: Ediel ERRP Reserve Allocation Result Document

The document is used in the following exchanges:
- **Table 1:** NBS scheduling phase documents:
  - 18, Activated trades in reserves markets:
    - Reserves Up
    - Reserves Down
    - Supportive power Sold
    - Supportive power Bought
  - 21, Capacity reserves (up, down and no direction):
    - Capacities up
    - Capacities down
    - Capacity, no direction

5.3.2 Business rules:

- All valid regulations for a period and Process Type (primary, secondary or tertiary regulations) must be sent in one document.
- If updates are sent, all valid regulations for the relevant period must be sent in the update-document (i.e. all still valid time series from the predecessor). An update-document shall always cover the same period as its predecessor. The latest received message will always replace the previous one.
- All regulations not part of the latest update-document shall be deleted.

5.3.3 Attribute usage: Ediel ERRP Reserve Allocation Result Document

Ediel ERRP Reserve Allo-cation Result Document Attribute	Cl.	Content	Descriptions and comments
Reserve Allocation Result Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	"1"	Fixed 1
Document Type	[1]	**A38** or **A81**	**A38** Reserve Allocation Result **A81** Contracted reserves
Process Type	[1]	Process Type	**A28** Primary reserve process **A29** Secondary reserve process **A30** Tertiary reserve process
Sender Identification	[1]	**SO** ID	Unique identification of the System Operator, sending the document
Sender role	[1]	**A04**	**A04** System Operator **A05** Imbalance Settlement Responsible
Receiver Identification	[1]	**ISR** ID	Unique identification of the Imbalance Settlement Responsible, receiving the schedule
Receiver role	[1]	**A05** or **A46**	**A05** Imbalance Settlement Responsible **A46** Balancing Service Provider (BSP)
Creation Date Time	[1]	Creation date/time	The date and time that the document was prepared for transmission by the application of the sender.

Ediel ERRP Reserve Allocation Result Document Attribute	Cl.	Content	Descriptions and comments
Reserve Bid Time Interval	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered by the document.
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
Allocation Time Series	[0..*]		
Time Series Identification	[1]	Time series ID	Unique identification of the Time Series (unique over time for the sender in question)
Tendering Party	[1]	**BRP**, **BSP** or **TSO** ID	See dependency matrix below
Business Type	[1]	Business Type	**A10** Tertiary control **A11** Primary control **A12** Secondary control
Acquiring Area	[1]	**BZ** ID	Unique identification of the Bidding Zone (BZ) where the energy is purchased. This will be the same BZ as the Connecting Area, except for supportive power (incl. transit) where the resource is connected in another BZ.
Connecting Area	[1]	**BZ** ID	Unique identification of the Bidding Zone (BZ) where the resource is connected.
Measure Unit Quantity	[1]	Measure Unit	**KWH** kWh (kilowatt hour) **MWH** MWh (megawatt hour) **KWT** kW (kilowatt) **MAW** MW (megawatt)
Currency	[1]	Currency	ISO three-digit currency code, e.g.: **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona
Reserve Object	[0..1]	**RO** ID	See dependency matrix below
Direction	[1]	Direction	**A01** Up **A02** Down **A03** UP and DOWN (symmetrical) For supportive power (incl. transit) the Direction is related to Up- or Down-regulation in the Connecting Area. When reporting Capacity Reserves (Document Type = **A81**) and Reason Code from **Z42** to **Z45**, the direction **A03** (UP and DOWN (symmetrical)) shall be used.
Reason (Allocation Result Time Series Level)	[1]		**1st REPETITION**
Reason Code	[1]	Reason Code	**Z22** Supportive power **Z26** Transit triangle **Z27** Transit redispatch **Z28** Transit SB Loop Long

Ediel ERRP Reserve Allo-cation Result Document Attribute	Cl.	Content	Descriptions and comments
			Z29 FCR (Frequency Containment Reserve (FCR) is an automatic and momentarily regulation, to adjust the physical balance in the power system)
			Z30 aFRR (Frequency Restoration Reserve - Automatic (aFRR) is an automatic reserve, activated continuously by the frequency)
			Z31[3] mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves (mFRR), Balancing Power)
			Z34 mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves (mFRR), Quarter regulation when TSO need transfer of production (usually start 15 min earlier))
			Z35[4] mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves (mFRR), Special Regulation where regelation does not affect the regulation price)
			Z36 Hour Change Regulation (to reduce problems encountered at the turn of the hour in the Nordic countries or in Finland, Fingrid reserves the right to transfer the planned changes to begin 15 minutes before or after the planned moment)
			Z37 Power Transaction (Fixed price transaction used for specific purposes outside of ordinary regulation)
			Z38 TSO Internal Countertrades (The time series concern TSO Internal Countertrades)
			Z39 Day Ahead Production Adjustment **(**Energy (production) moved from one hour to another to avoid major changes between hours)
			Z40 Frequency Containment Reserve, Normal operation (FCR-N).
			Z41 Frequency Containment Reserve, Disturbance (FCR-D).
			Z42 Frequency Containment Reserve, Normal operation, day minus one (FCR-N, late)
			Z43 Frequency Containment Reserve, Normal operation, day minus one (FCR-N, early)
			Z44 Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, late correction)
			Z45 Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, early correction)
			Z46 Frequency Containment Reserve, Disturbance, day minus one (FCR-D, late)
			Z47 Frequency Containment Reserve, Disturbance, day minus one (FCR-D, early)
			Z48 Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, late correction)
			Z49 Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, early correction)
			Z56 Fast Frequency Reserve (FFR)

[3] Balancing power (**Z31**) can be direct activation (**Z59**) in case forecasted need for Balancing Power is not correct.

[4] In many cases Special/system Regulations (**Z35**) can be scheduled since they are known early. In those cases, the activation is scheduled activation (**Z58**). If the special/system regulation need comes suddenly, then the activation will be direct activation (**Z59**)

Ediel ERRP Reserve Allocation Result Document Attribute	Cl.	Content	Descriptions and comments
			Z63 Period shift activation **Z76** mFRR, correction **Z75** aFRR, correction **Z77** aFRR AOF activation **Z78** aFRR non-AOF activation
Reason (Allocation Result Time Series Level)	[0..1]		**2ND REPETITION** *Dependency:* Shall be used if the following reason codes is specified in the first repetition of the Reason class: **Z31** mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves (mFRR), Balancing Power) **Z35** mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves (mFRR), Special Regulation where regelation does not affect the regulation price)
Reason Code	[1]	Reason Code	**Z58** Scheduled activation **Z59** Direct activation **Z60** Faster activation **Z61** Faster deactivation **Z62** Slower activation
Period	[1..*]		
Time Interval	[1]	Start and end date time	The start and end date and time of the time interval of the period in question.
Resolution	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position
Qty	[1]	Quantity	Quantity The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh
Settlement Amount	[1]	Amount	Rules for the supportive power (incl. transit) – Reason Codes Z22, Z26, Z27 and Z28 • The Acquiring Area is always related to the Buyer and the Connecting Area is always related to the Seller.

Ediel ERRP Reserve Allo-cation Result Document Attribute	Cl.	Content	Descriptions and comments
			• Positive values are used when the energy direction is from the Connecting Area to the Acquiring Area, i.e., up-regulation. • Negative values are used when the energy direction is from the Acquiring Area to the Connecting Area, i.e., down-regulation. Rules for other Reason Codes: • Settlement Amount is always Quantity multiplied with price. • The table below shows the sign convention to be used: _(see table below)_ • When positive prices, up-regulation means negative Settlement Amount while down-regulation means positive Settlement Amount. Opposite sign occurs when prices are negative.

	Price	Sign when sending from TSO to eSett
Up regulation (A01)	Positive	Negative
Up regulation (A01)	Negative	Positive
Down regulation (A02)	Positive	Positive
Down regulation (A02)	Negative	Negative

Table 8: Attribute usage: Ediel ERRP Reserve Allocation Result Document

5.3.4 Dependency matrix: Ediel ERRP Reserve Allocation Result Document

Process type	Business type	Doc. Type	Direc-tion	Reason Code, 1st repetition	Reason Code, 2nd repetition	Tendering Party	Reserve Object	Used in			
								DK	FI	NO	SE
A30 (Tertiary reserve process)	**A10** (Tertiary control)	**A38**	**A01** or **A02**	**Z22** Supportive power	N/A	**TSO**	N/A		✓		
				Z26 Transit triangle	N/A	**TSO**	N/A			✓	
				Z27 Transit redispatch	N/A	**TSO**	N/A			✓	
				Z28 Transit SB Loop Long	N/A	**TSO**	N/A			✓	
				Z31 mFRR, Balancing Power (**NO**: Ordinary regulation)	**Z58** Scheduled activation **Z59** Direct activation **Z60** Faster activation **Z61** Faster deactivation **Z62** Slower activation	**BRP**	✓	✓	✓	✓	✓
				Z34 mFRR, Quarter regulation	N/A	**BRP**	✓			✓	
				Z35 mFRR, Special Regulation (**NO**: Specially regulation)	**Z58** Scheduled activation **Z59** Direct activation **Z60** Faster activation **Z61** Faster deactivation **Z62** Slower activation	**BRP**	✓	✓	✓	✓	
				Z36 Hour Change Regulation (**NO:** Move of production	N/A	**BRP**	✓		✓	✓	
				Z37 Power Transaction	N/A	**BRP**	✓		✓		
				Z38 TSO Internal Countertrades (Only used in Finland)	N/A	**BRP**	✓		✓		
				Z39 Day Ahead Production Adjustment (**NO:** Production smoothing)	N/A	**BRP**	✓		✓	✓	✓
				Z63 Period shift activation	N/A	**BRP**	✓			✓	
				Z77 aFRR AOF activation	N/A	**BSP**	✓	✓	✓	✓	✓
				Z78 aFRR non-AOF activation	N/A	**BSP**	✓	✓	✓	✓	✓

Nordic settlement system for data exchange between eSett and TSOs/Market Operators

Process type	Business type	Doc. Type	Direc-tion	Reason Code, 1st repetition		Reason Code, 2nd repetition	Tendering Party	Reserve Object	Used in			
									DK	FI	NO	SE
		A81	A01 or A02	Z31	mFRR, Balancing Power (**NO**: Ordinary regulation)	N/A	**BRP or BSP**	N/A	✓			✓
				Z35	mFRR, Special Regulation (**NO:** Specially regulation)	N/A	**BRP or BSP**	N/A	✓			✓
				Z76	mFRR, correction	N/A	BRP or BSP	N/A				✓
A28 (Primary reserve process)	**A11** (Primary control)	A38	A01 or A02	Z29	FCR	N/A	BRP	✓		✓	✓	✓
		A38	A01 or A02	Z40	Frequency Containment Reserves, Normal (**FCR-N**)	N/A			✓			✓
		A38	A01 or A02	Z41	Frequency Containment Reserves, Disturbance (**FCR-D**)	N/A						✓
A28 (Primary Reserve process)	**A11** (Primary control)	A81	A01, A02 or A03	Z29	FCR	N/A	**BRP or BSP**	N/A	✓			✓
			A03	Z42	FCR-N, late	N/A			✓			✓
				Z43	FCR-N, early	N/A			✓			✓
				Z44	FCR-N, late correction	N/A			✓			✓
				Z45	FCR-N, early correction	N/A			✓			✓
			A01 or A02	Z46	FCR-D, late	N/A			✓			✓
				Z47	FCR-D, early	N/A			✓			✓
				Z48	FCR-D, late correction	N/A			✓			✓
				Z49	FCR-D, early correction	N/A			✓			✓
			A01 or A02	Z56	FFR	N/A			✓			✓
A29 (Secondary reserve process)	**A12** (Secondary control)	A38	A01 or A02	Z30	aFRR	N/A	**BRP**	✓	✓	✓	✓	✓
A29 (Secondary		A81	A01 or A02	Z30	aFRR	N/A	**BRP or BSP**	N/A	✓			✓

Process type	Business type	Doc. Type	Direc-tion	Reason Code, 1st repetition	Reason Code, 2nd repetition	Tendering Party	Reserve Object	Used in			
								DK	FI	NO	SE
reserve process)	**A12** (Secondary control)			**Z75** aFRR, correction	N/A	**BRP or BSP**	**N/A**				✓

Table 9: Dependency matrix: Ediel ERRP Reserve Allocation Result Document

5.4 Ediel ECAN Publication Document

The *Publication document* is used for summaries from all markets within the Nordic trading system. The document is based on the *Publication Document* from the ENTSO-E ECAN IG, see [1].
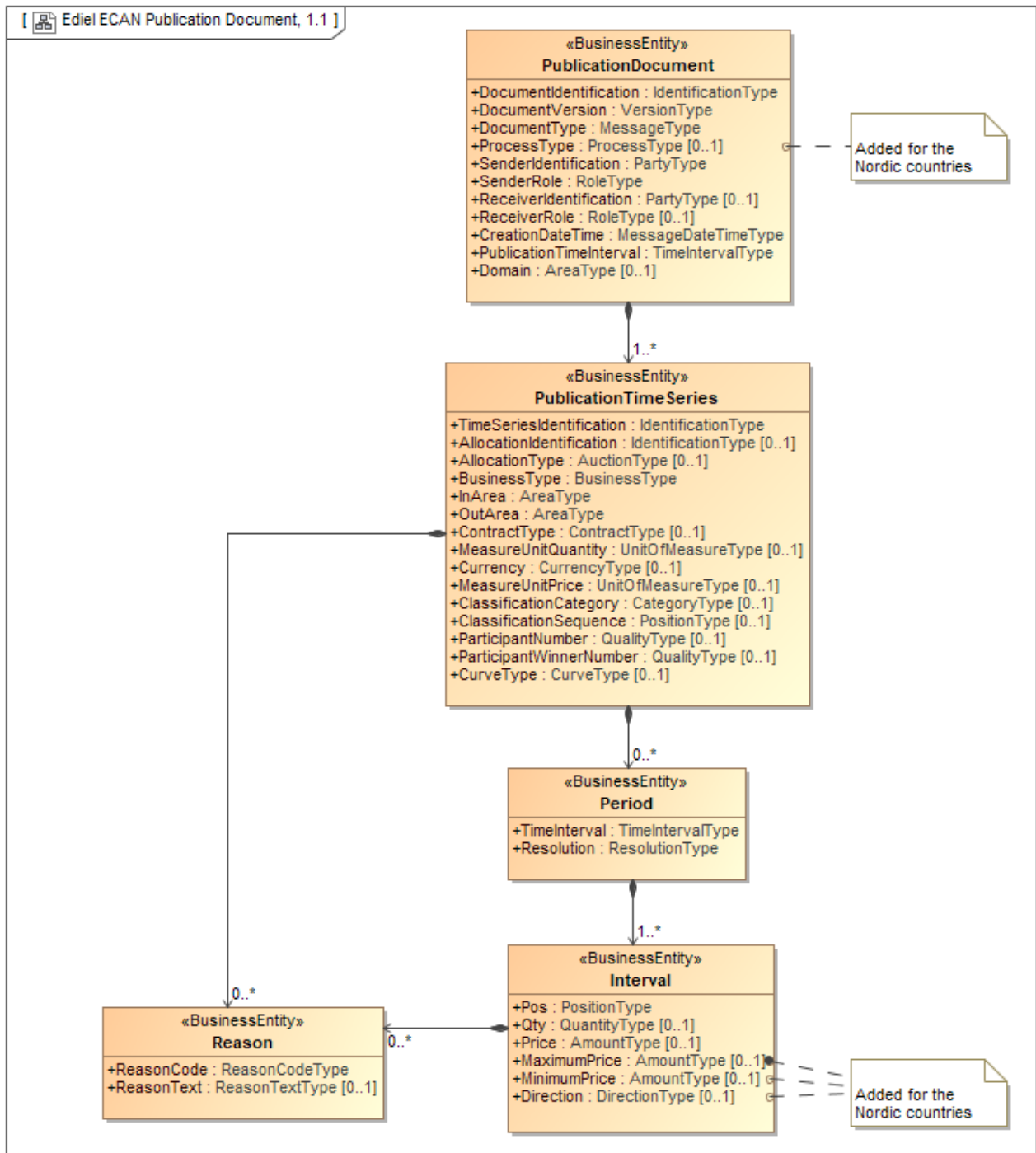
5.4.1 Class diagram: Ediel ECAN Publication document

Figure 25: Class diagram: Ediel ECAN Publication Document

Nordic settlement system for data exchange between eSett and TSOs/Market Operators

The document is used in the following exchanges:
- **Table 1:** NBS scheduling phase documents:
  - 7, Spot prices (Day-ahead sales report)
  - 19, Balance regulation market prices

5.4.2   Attribute usage: Ediel ECAN Publication Document

Ediel ECAN Publication Document Attribute	Cl.	Content	Descriptions and comments
Allocation Result Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	"1"	Fixed 1
Document Type	[1]	**A44**	**A44** Price document
Process Type	[1]	Process Type	**A01** Day-ahead **A30** Tertiary reserves process **A51** Automatic frequency restoration reserve **Z15** External trade (Trade outside the Capacity Calculation Region)
Sender Identification	[1]	**SO** or **MO** ID	Identification of the party who is sending the document
Sender role	[1]	Sender Role	**A04** System Operator **A11** Market Operator
Receiver Identification	[1]	**ISR** ID	Identification of the Imbalance Settlement Responsible, who is receiving the document
Receiver role	[1]	**A05**	**A05** Imbalance Settlement Responsible
Creation Date Time	[1]	Creation date/time	The date and time that the message was prepared for transmission by the application of the sender.
Publication Time Interval	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered by the document.
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e., **10Y1001A1001A91G** (Nordic market area)
Publication Time Series	[1..*]		
Time Series Identification	[1]	Time series ID	Unique identification of the Time Series (unique over time for the sender in question)
Business Type	[1]	Business Type	**A06** External trade without explicit capacity (used for the North Sea Link cable). **A62** Spot price **B20** Balance up regulation price **B21** Balance down regulation price **B22** Main direction (no price) **B23** Consumption imbalance price **B24** Production sales imbalance price **B25** Production purchase imbalance price **B26** BZs prices between Bidding Zones (inter-TSO exchange) **Z74** Imbalance sales price

Ediel ECAN Publication Document Attribute	Cl.	Content	Descriptions and comments
			Z75 Imbalance purchase price **Note regarding Business Type B24 and B25:** The view for reporting of sales and purchases is seen from the Imbalance Settlement Responsible (not the BRP). Business Type **A06** is used together with Process Type **Z15.**
In Area	[1]	**BZ** ID	Relevant Bidding Zone (BZ) for the market
Out Area	[1]	**BZ** ID	Same as In Area for all Business Types, except "**B26** BZs prices between Bidding Zones", where the second border-BZ is used
ContractType	[0..1]	Contract types	Contract types: **A14** First intraday auction contract **A15** Second intraday auction contract **A16** Third intraday auction contract
Currency	[1]	Currency	ISO three-digit currency code, e.g.: **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona
Measurement Unit Price	[1]	**MWH**	**MWH** MWh
Period	[1..*]		
Time Interval	[1]	Start and end date time	The start and end date and time of the time interval of the period in question.
Resolution	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position
Price	[0..1]	Price	Price
Direction	[0..1]	Direction	**A01** Up **A02** Down **A04** Stable Only used if Business Type is *B22* *Main direction*

Table 10: Attribute usage: Ediel ECAN Publication Document

6 Acknowledgements

NBS will follow the ENTSO-E acknowledgment process [1]:

- A document is controlled within the system environment at two levels:

    1. It is first controlled at system level to detect syntax errors (XML parsing errors, file-processing errors, etc.).
    2. It is then controlled at the application level to detect any semantic errors (invalid data, wrong process, etc.).

- If there is a problem encountered at the first level, then a technical acknowledgement will be sent to inform the originator of the problem.
- If errors are encountered at the second level, a negative application acknowledgement will be sent to inform the originator of the problem.
- If the application can successfully process the information, then a positive application acknowledgement will be sent to inform the originator that the original document is accepted.
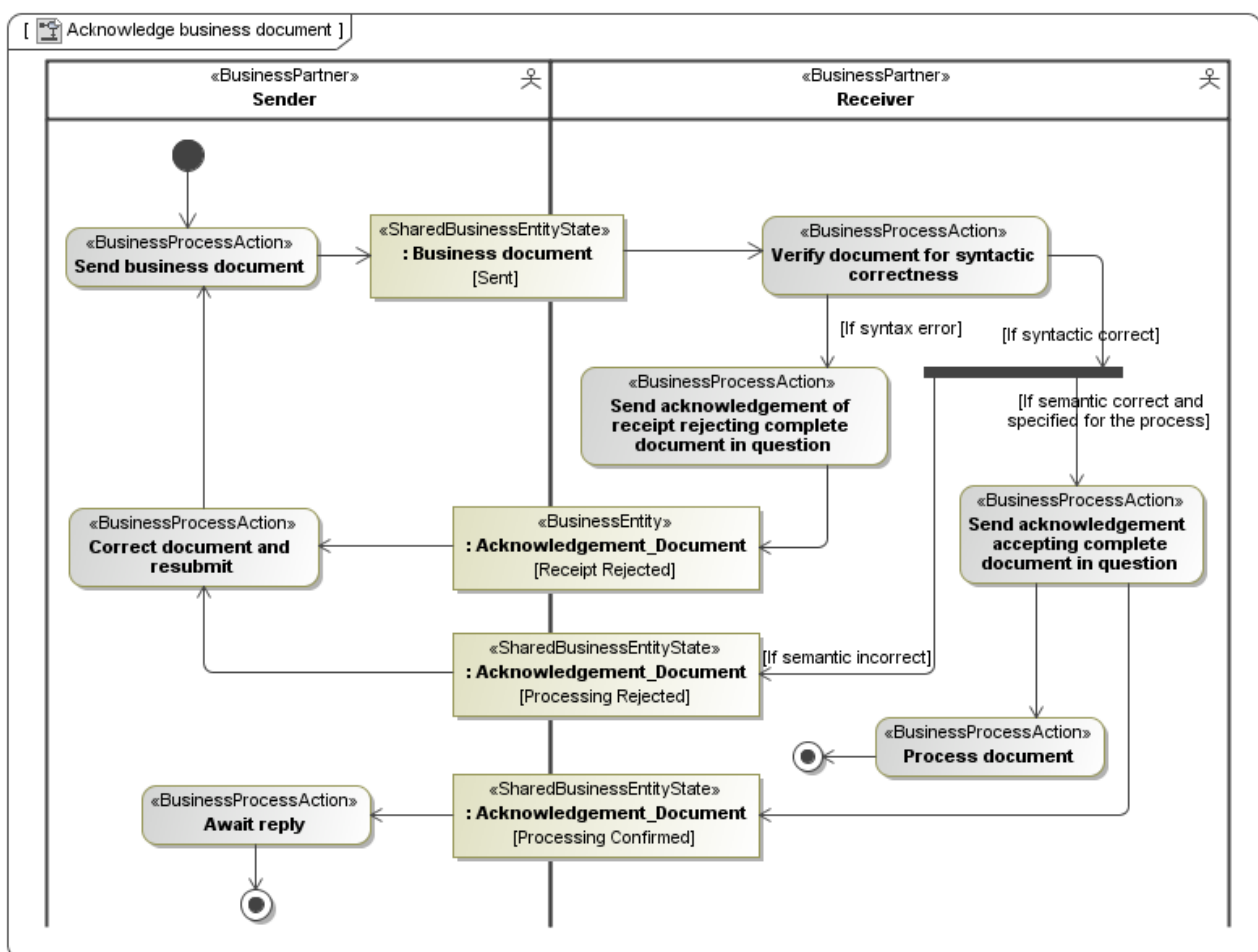

Figure 26: Activity diagram: ENTSO-E Acknowledgement process

Details of the acknowledgment document are found in *Common Nordic XML rules and recommendations* [10].

6.1 NBS requirements for acknowledgements

6.1.1 All or Nothing Principle

The all-or-nothing principle will be used for acknowledgements from eSett. This means that documents are accepted only if the documents contain no errors. If a document contains at least one error, it will be fully

rejected, and no partial acceptance will be applied. However, if errors are found in a document, the rest of the document will be gone through, and all errors found will be added in the response (if possible).

6.1.2   Positive acknowledgements

eSett will send positive acknowledgements on all received documents. Similarly, eSett require acknowledgements in return for all documents sent to the actors.

7 Technical business rules

7.1   Time Series Identification (Time Series ID)

The *Time Series Identification* shall be a unique ID over time for the originator (sender) of a time series. I.e., every time a time series changed, the originator shall issue a new *Time Series ID*.

Note that this is a Nordic rule that is stricter than what is stated in the ENTSO-E implementation guides, which only requires the Time Series Identification to be unique within the document.

7.2   Usage of Resolution and Position

The resolution of a time series period shall always be one hour or 15 minutes, expressed according to ISO 8601, i.e., **PT1H, PT60M** or **PT15M.**

The time interval defined in the period class shall always be a multiple of its resolution.

The position (ebIX® term: Sequence) must begin with 1 and increment by 1 for each subsequent position forming a series of contiguous numbers covering the complete range of the Period.

Appendix A   Identifying sender and recipient in communication headers

It is assumed that there will be a SOAP envelope or similar that will contain the physical sender ID and recipient ID of an information exchange. The parties identified in this envelope will be the same parties as today are transmitted in the EDIFACT UNB segment. These parties may be the "juridical parties", i.e., the parties responsible for the content of the document, or third parties acting on behalf of the parties responsible for the content of the document.

The document header will contain the "juridical parties", i.e., the parties responsible for the content of the document. For instance, the responsible DSO or Balance Responsible Parties will be explicitly identified in the document header. The parties identified in this document header will be the same parties as today are transmitted in the EDIFACT NAD segments.