BRS
(Business Requirement Specification)

Nordic Balance Settlement

A market model for data exchange

Business process: Nordic Balance Settlement
Version: 4.6.A
Status: Approved by NMEG
Date: February 2nd, 2026

CONTENT

1 Introduction

1.1 Summary

This document is a Business Requirement Specification (BRS) for the Nordic Balancing System, made by the Nordic Market Expert Group (NMEG). 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.

The BRS is detailing the document exchanges needed to perform the Nordic Balance Settlement, seen from the actors in the Nordic energy market. The focus of the document is the technical aspects of the document exchanges and the basis for the documents to be exchanged are the ENTSO-E and ebIX® Implementation Guides and BRSs, see [1] and [2]. 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.

The first part of the document, chapter 2, 3 and 4, describes the business processes relevant for data exchange within the Nordic Balance Settlement (NBS) process area. In chapter 5, Business Data View, the documents that will be exchanged between NBS and the market actors are described in detail.

1.2 About Nordic Ediel BRSs

The NMEG Ediel Business Requirement Specifications (BRSs) describes business processes where data is exchanged between market participants in the Nordic energy market based on the UN/CEFACT Modelling Methodology (UMM). A BRS is a tool that helps the participants in the Nordic energy market to implement effective and harmonised data-exchange processes. The Ediel BRSs can be seen as a framework designed to improve communication between stakeholders, reduce development time, and minimise errors.

The Nordic Ediel BRSs covers all aspects of a business requirement specification for a specific data-exchange process and purpose, including functional requirements, non-functional requirements (partly), UseCases, and data flows.

NMEG Ediel BRSs will as far as possible be based on already available standards and best practices, such as:

1) ENTSO-E Implementation Guides (IGs) based on IEC 62325-451-n standards
2) ENTSO-E Implementation Guides (IGs) based on IEC 62325-351 standard
3) Other Implementation Guides (IGs) based on IEC 62325-351 standard
4) EU Implementation Regulations
5) Documents from the DSO Entity and the ENTSO-E and DSO Entity Joint Working Group (JWG)
6) Nordic BRSs, IGs, regulations etc.

In addition, the NMEG Ediel BRS will document Nordic extensions and/or restrictions compared with the standards and best practices the BRS is based on.

1.3 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 [5].

1.4 Project organisation

The document is maintained by the Nordic Market Expert Group.

1.5 Terms and notations used in this BRS

Business 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.

1.6 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 Capacity Allocation and Nomination System, ECAN
- 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 https://unece.org/trade/uncefact/umm

[5] Nordic Energy Market Domain Model, see https://ediel.org/common-ediel-documents/

[6] BRS for Nordic trading system, see https://ediel.org/common-ediel-documents/

[7] BRS for Nordic Scheduling and Ancillary Services process, see https://ediel.org/common-ediel-documents/Common Nordic XML rules and recommendations, see https://ediel.org/common-ediel-documents/

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

[9] BRS for Nordic Balance Settlement, Exchange of Master Data, see https://ediel.org/nordic-balance-settlement-nbs/

[10] eSett, Communication Guidelines and Data Packages, see https://www.esett.com/app/uploads/2016/05/Basse-Communication-Guidelines.pdf

1.7 Change log

Ver/rel/rev	Changed by	Date	Changes

4.6.A	Ove Nesvik	20260202	• Update of ENTSO-E ESS Schedule Document for "Day-ahead/Intraday trade" and "Day-ahead/Intraday flow":
			  ○ New process type "**Z17** Intraday auction NSL process"
			  ○ Addition of Dependency matrixes

4.5.A	Ove Nesvik	20251029	• Addition of the Accounting Point class and the flowCommodityOption attribute to the ENTSO-E CIM Activation document, to specify if an activation concerns production or consumption.

4.4.A	Ove Nesvik	20251009	• Added Reason code" **ZA9** Planned ramping adjustment" to the Ediel ERRP Reserve Allocation Result Document in chapter 5.11 • Addition of clarifying text and correction of spelling errors
4.3.A	Ove Nesvik	20250618	• Replace of **Z77** and **Z78** with **Z54** and **Z55** for Ediel Activation Document, to be aligned with Ediel ERRP Reserve Allocation Result Document. • Updated the footnote (replace 2024 by 2025) for ESS schedule document, ESS Confirmation Report and NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - production
4.2.A	Ove Nesvik	20250408	• Reason code "**Z83** Unspecified non-standard bids" is added to the Ediel ERRP Reserve Allocation Result Document • Correction of corrupted links.
4.1.A	Ove Nesvik	20240925	• Addition of new codes to NEG ESP Energy Account Report Document (EAR): Document Type: **A56** Compensation Program Schedule Process Type: **A27** Reserve resource process Receiver role: **A46** Balancing Service Provider (BSP) Business Type: **A23** Balance Management **A95** Frequency containment reserve **A96** Automatic frequency restoration reserve **A97** Manual frequency restoration reserve **C26** Frequency Containment Reserve-Normal (FCR-N) **C27** Frequency Containment Reserve-Disturbance (FCR-D) **Z85** Fast frequency reserve • Update of dependency table for NEG ESP Energy Account Report Document (EAR). • Update of sequence diagram in chapter 2.4 • Update of chapter "4.11 Process area: Settle imbalance"
4.0.B	Ove Nesvik	20240718	Addition of new Contract type code "**Z07** Intraday Auction Combined" to the Ediel ECAN Publication Document
4.0.A	Ove Nesvik	20240701	This BRS is a merger of the two BRS: "NBS BRS" and NBS BRS for TSO-MO". For changes to earlier versions see the NMEG archive, https://ediel.org/this-is-ediel-org-home/archive/archive-nordic-balance-settlement-nbs/

Table 1: Change log

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.
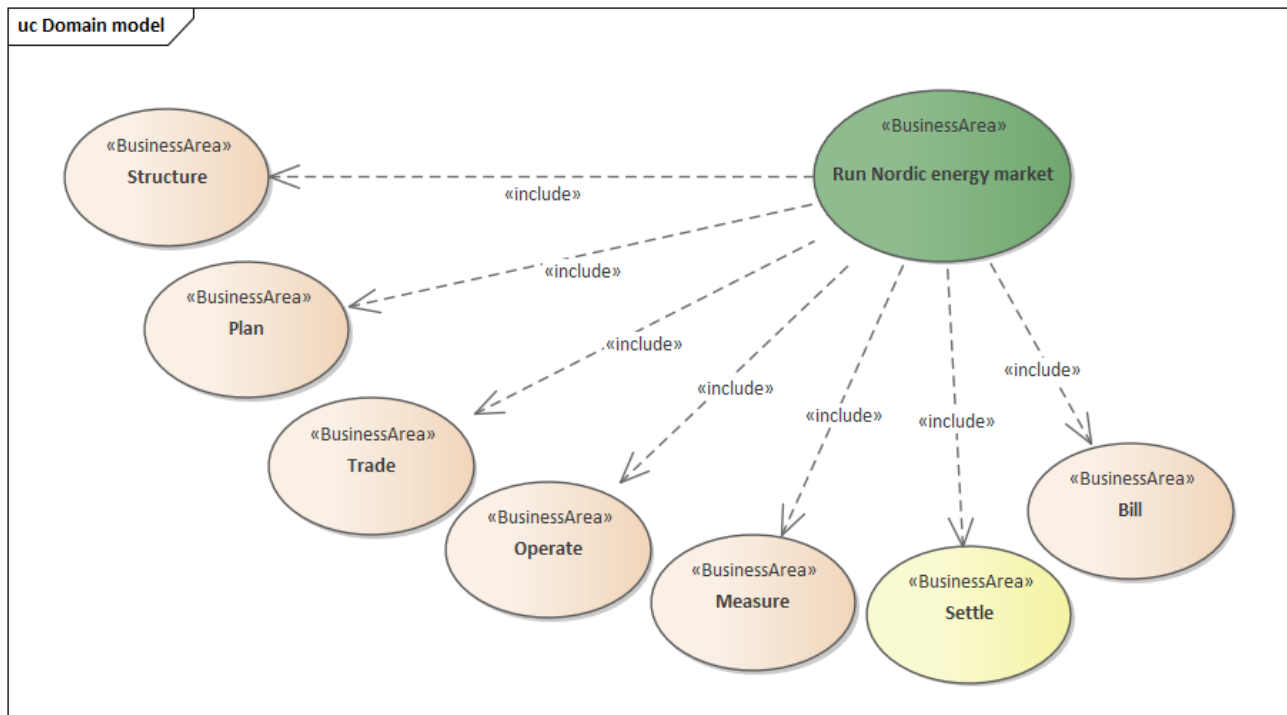
Figure 1: UseCase diagram: Ediel Energy Market Domain Model

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, Plan and Measure.

For a more elaborated description of the processes included in the domain model, see [5].

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 Market Operator 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.
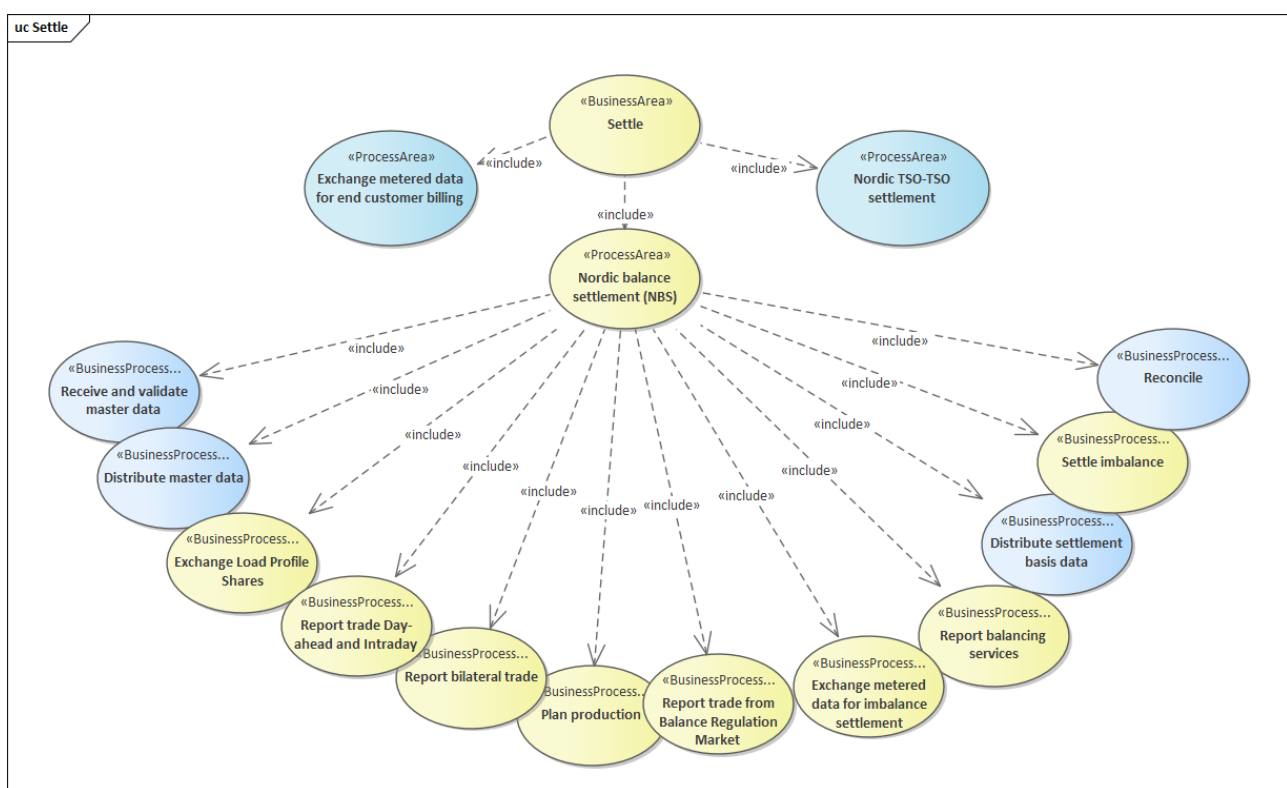
Figure 2: UseCase diagram: Breakdown of the settlement phase

The settlement phase, outlined in Figure 2, describes the principal UseCases of the Nordic Balance Settlement system. The blue UseCases are not further defined in this BRS.

The roles that take part in the imbalance settlement process are (see also chapter 3):

- 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, 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.
- Delivered balancing services from the Balancing Service Providers (BSP).
- Settlement pricing information.

The DSO will send metered data, 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 BSPs, or the TSOs or datahubs on behalf of the DSOs or BSPs, will send delivered balancing services 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.
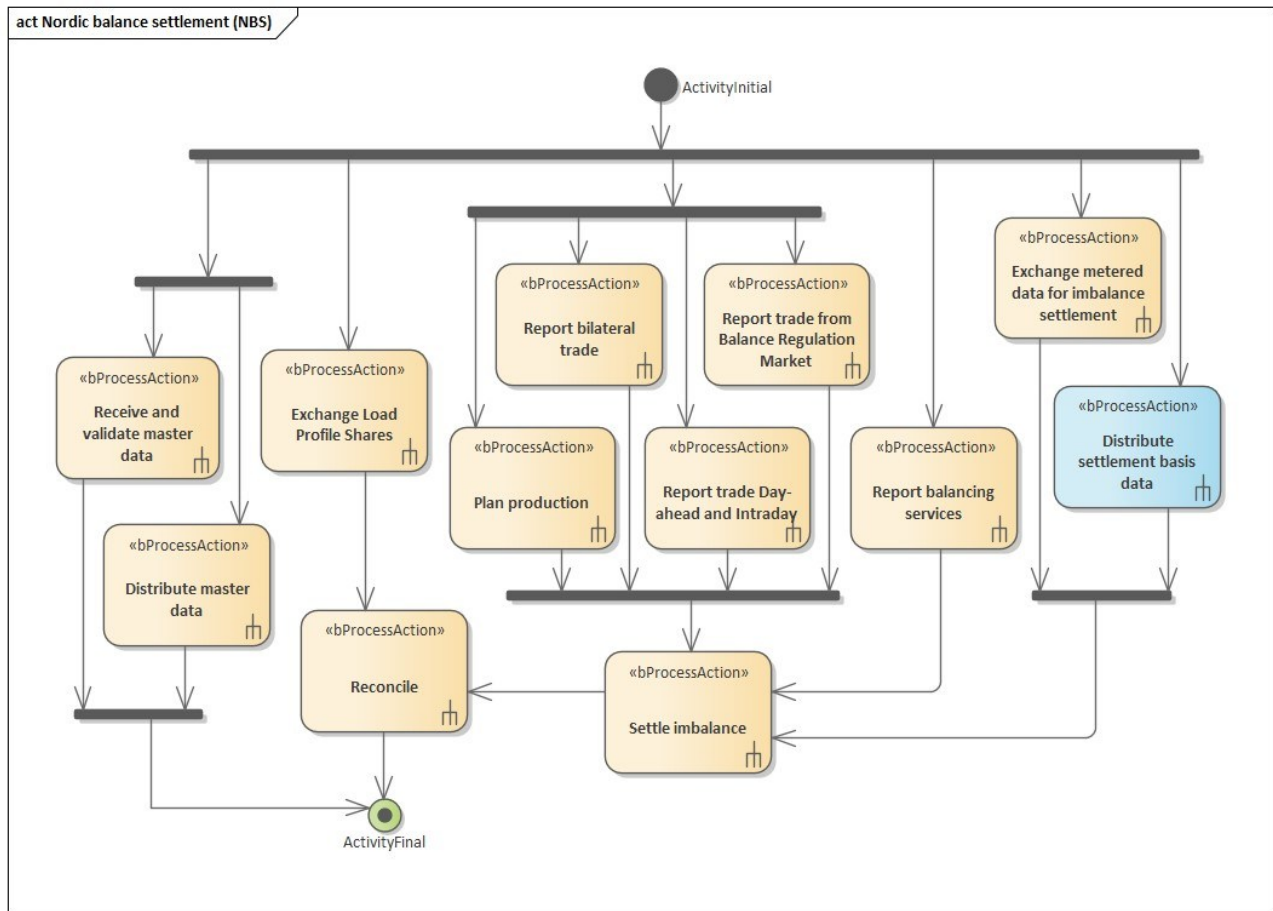
Figure 3 Activity diagram: The Nordic Settlement process

The blue Business Process Actions are not further defined in this BRS.

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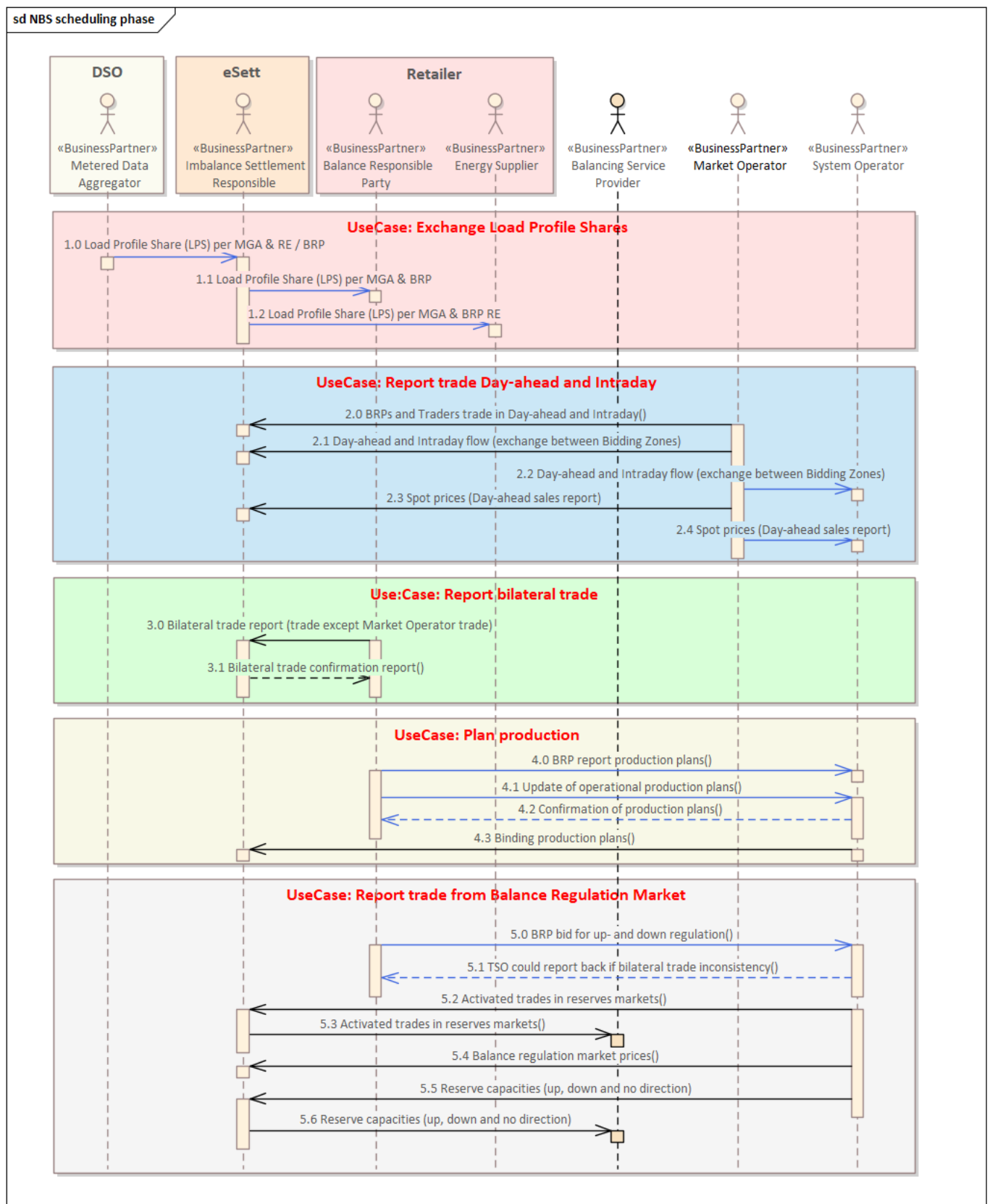
Figure 4 Sequence diagram: The NBS scheduling phase

Comments to the diagram:

- Only documents exchanged between eSett and the Market-players are elaborated in detail in this BRS, i.e. documents (arrows) with black colour. Documents (arrows) with blue colour are, or will be, documented in other BRSs from NMEG [6] and [7].

NBS document	Roles	Identified object(s)	Documentation
Before the delivery month			
1.0 Load Profile Share (LPS) per MGA & RE / BRP			Not handled in the first version of the BRS.
1.1 Load Profile Share (LPS) per MGA & BRP			Only published on web
1.2 Load Profile Share (LPS) per MGA & BRP RE			Only published on web
Before gate closure			
2.0 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:** 5.7
2.1 Day-ahead and Intraday flow (exchange between Bidding Zones)	**MO → ISR**	**BZ 1, BZ 2**	ENTSO-E ESS Schedule Document [1] **For details see:** 5.7
2.2 Day-ahead and Intraday flow (exchange between Bidding Zones)			ENTSO-E ESS Schedule Document [1] **For details see:** BRS for Nordic Scheduling Process [7]
2.3 Spot prices (Day-ahead sales report)	**MO → ISR**	**BZ**	ENTSO-E ECAN Publication Document [1] **For details see:** 5.12
2.4 Spot prices (Day-ahead sales report)			ENTSO-E ECAN Publication Document [1] **For details see:** BRS for Nordic Trading System [6]
3.0 Bilateral trade report (trade except Market Operator trade)	**BRP → ISR**	**BZ**, Trader 1, Trader 2	ENTSO-E ESS Schedule Document [1] **For details see:** 5.7
3.1 Bilateral trade confirmation report	**ISR → BRP**	**BZ**, Trader 1, Trader 2	ENTSO-E ESS Confirmation Report [1] **For details see:** 5.8
4.0 BRP report production plans			ENTSO-E ERRP Planned Resource schedule [1] **For details see:** BRS for Nordic Scheduling Process [7]
4.1 Update of operational production plans			ENTSO-E ERRP Planned Resource schedule [1] **For details see:** BRS for Nordic Scheduling Process [7]
4.2 Confirmation of production plans			ENTSO-E ERRP Resource schedule confirmation report [1] **For details see:** BRS for Nordic Scheduling Process [7]

NBS document	Roles	Identified object(s)	Documentation
4.3 Binding production plans	**SO →** **ISR**	**BZ, R, BRP, RE**	ENTSO-E ERRP Planned resource schedule [1] **For details see:** 5.9
5.0 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 [6]
5.1 TSO could report back if bilateral trade inconsistency			ENTSO-E ESS Confirmation Report [1] **For details see:** BRS for Nordic Scheduling Process [7]
Short time after gate closure			
5.2 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, R** C) and D): **BZ 1, BZ 2**, **TSO**	ENTSO-E ERRP Reserve allocation result document [1] **For details see:** 5.11
5.3 Activated trades in reserves markets A) Reserves Up B) Reserves Down C) Supportive power Sold D) Supportive power Bought	**ISR →** **BSP**	A) and B): **BZ,** **BRP, R** C) and D): **BZ 1, BZ 2, TSO**	ENTSO-E ERRP Reserve allocation result document [1] **For details see:** 5.11
5.4 Balance regulation market prices	**SO →** **ISR**	**BZ**	ENTSO-E ECAN Publication Document [1] **For details see:** 5.12
5.5 Reserve capacities (up, down and no direction)	**SO →** **ISR**	**BZ**	Ediel ERRP Reserve Allocation Result Document [1] **For details see:** 5.11
5.6 Reserve capacities (up, down and no direction)	**ISR →** **BSP**	**BZ**	Ediel ERRP Reserve Allocation Result Document [1] **For details see:** 5.11

Table 2: NBS scheduling phase documents

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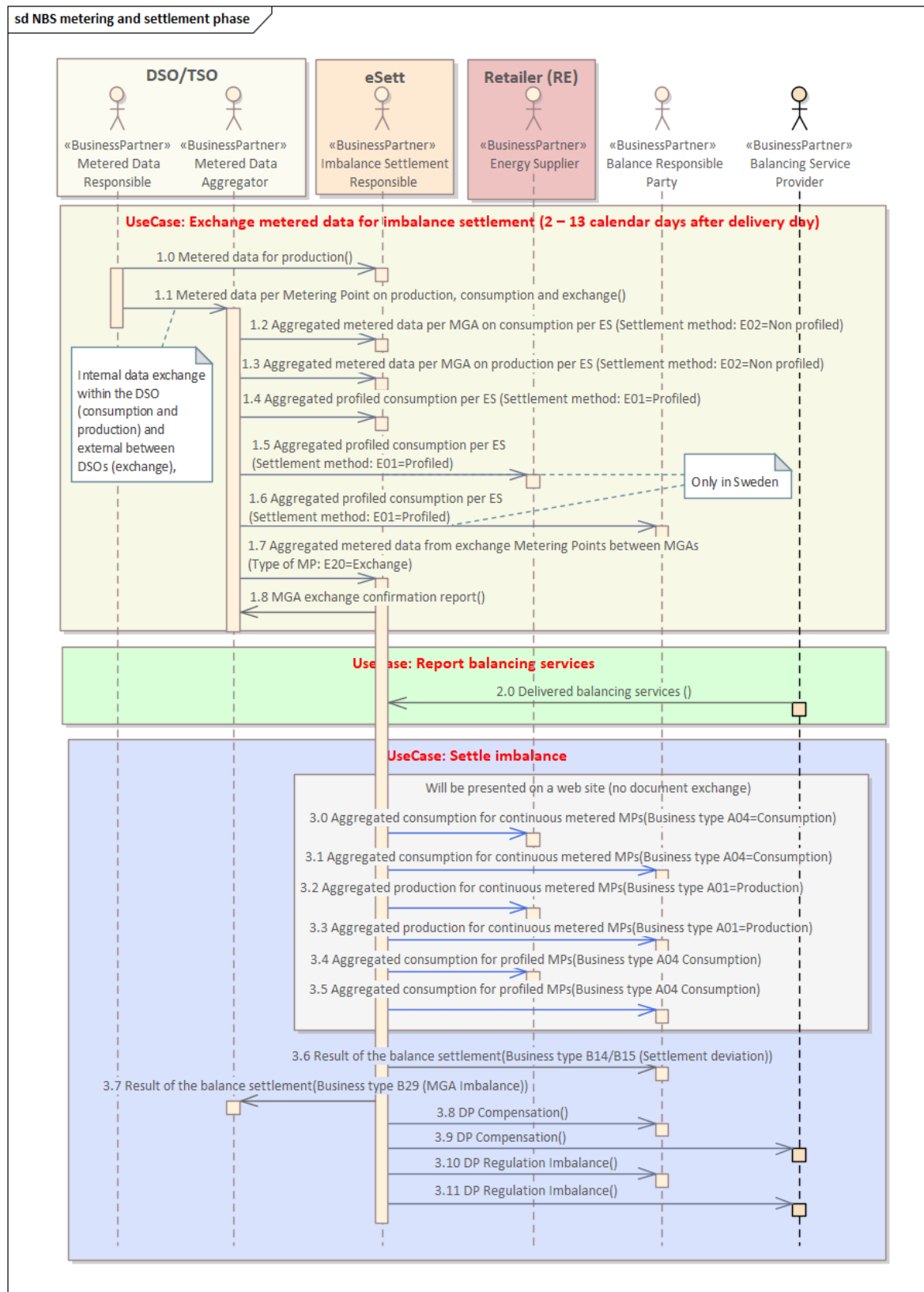
Figure 5 Sequence diagram: The NBS metering and settlement phase

Comments to the diagram:

- The document (arrow) **1.0**, production, will always be reported using positive values.
- Only documents exchanged between eSett, and the Market-players are elaborated in detail in this BRS, i.e. documents (arrows) with black colour. Documents (arrows) with blue colour are or will be documented in other BRSs from NMEG [6] and [7].

- The documents (arrow) **3.0** to **3.5** will be pubished on a web-site, i.e. not further elaborated in this document.

	NBS document	Roles	Identified object(s)	Documentation
Reporting metered data 2 - 13 days after delivery day
1.0	Metered data for production	**DSO → ISR**	**MP** (**R**)	NEG Validated Data for Settlement for Aggregator (E66, E44 (Settlement)), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.1.2
1.1	Metered data per metering point on production, consumption and exchange	**DSO → DSO**	**MGA1** and **MGA2**	NEG Validated Data for Settlement for Aggregator (E66, E44 (Settlement)), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details** regarding internal data exchange within the DSO (consumption and production) see: 5.1.2. **For details** regarding MGA exchange see: 5.1.3 **Note:** This message is not within the scope of eSett
1.2	Aggregated ES (RE) / BRP metered data per MGA on consumption Settlement method: **E02**=Non profiled	**DSO → ISR**	**ES** and **MGA**	NEG Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.2
1.3	Aggregated ES (RE) / BRP metered data per MGA on production Settlement method: **E02**=Non profiled	**DSO → ISR**	**MGA**, **BRP**, **ES**	NEG Aggregated Production per MGA for Imbalance Settlement to Settlement Responsible (E31, E44), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.3
1.4	Profiled consumption per ES (RE) / BRP per MGA Settlement method: **E01**=Profiled	**DSO → ISR**	MGA, **BRP**, **ES**	NEG Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.2
1.5	Profiled consumption per ES (RE) / BRP per MGA Settlement method: **E01**=Profiled	**DSO → ES**	**MGA**, **BRP**, **ES**	NEG Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.2 **Note:** This message is not within the scope of eSett and is only used in Sweden

	NBS document	Roles	Identified object(s)	Documentation
1.6	Profiled consumption per ES (RE) / BRP per MGA Settlement method: **E01**=Profiled	**DSO → BRP**	**MGA, BRP, ES**	NEG Aggregated Data per MGA for Imbalance Settlement to Settlement Responsible (E31, E44), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.2 **Note:** This message is not within the scope of eSett and is proposed removed by the NBS messaging forum
1.7	Aggregated metered data from exchange Metering Points between MGAs Type of MP: **E20**=Exchange	**DSO → ISR**	**MGA 1, MGA 2**, Responsible **MGA**	NEG Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44), based on ebIX® EMD model measure for Imbalance Settlement [2] **For details see:** 5.4
1.8	MGA exchange confirmation report	**ISR → DSO**	**MGA 1, MGA 2**, Responsible **MGA**	NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44) [2] **For details see**: 5.5
2.0	Delivered balancing services[1]	**DSO/TSO → ISR**	**BRP, ES (RE)**, Reserve Resource	ENTSO-E CIM Activation document **For details see: 5.10.3**
3.0	Aggregated consumption for continuous metered MPs			Will be published on a web site. Not documented.
3.1	Aggregated consumption for continuous metered MPs			Will be presented on a web site (no document exchange)
3.2	Aggregated production for continuous metered MPs			Will be presented on a web site (no document exchange)
3.3	Aggregated production for continuous metered MPs			Will be presented on a web site (no document exchange)
3.4	Aggregated consumption for profiled MPs			Will be published on a web site. Not documented.
3.5	Aggregated consumption for profiled MPs			Will be presented on a web site (no document exchange)

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[1] Based on national rules, it is ether the DSO/TSO or the BSP that is reporting the delivered balancing services.

NBS document	Roles	Identified object(s)	Documentation
After the Balance settlement			
3.6 Result of the balance settlement Business type **A17**, **B14** and **B15** (Settlement deviation)	**ISR → BRP**	**BZ**, **BRP**	NEG ESP Energy account report (EAR) **For details see:** 5.6
3.7 Result of the balance settlement – MGA Imbalance Business type B29 (MGA Imbalance)	**ISR → MDA**	**MGA**, **BRP**	NEG ESP Energy account report (EAR) **For details see:** 5.6
3.8 DP Compensation	**ISR → BRP**	**MGA**, **BRP**	NEG ESP Energy account report (EAR) **For details see:** 5.6
3.9 DP Compensation	**ISR → BSP**	**MGA**, **BRP**	NEG ESP Energy account report (EAR) **For details see:** 5.6
3.10 DP Regulation Imbalance	**ISR → BRP**	**BZ**, **BRP**	NEG ESP Energy account report (EAR) **For details see:** 5.6
3.11 DP Regulation Imbalance	**ISR → BSP**	**BZ**, **BRP**	NEG ESP Energy account report (EAR) **For details see:** 5.6

Table 3: NBS metering and settlement phase documents

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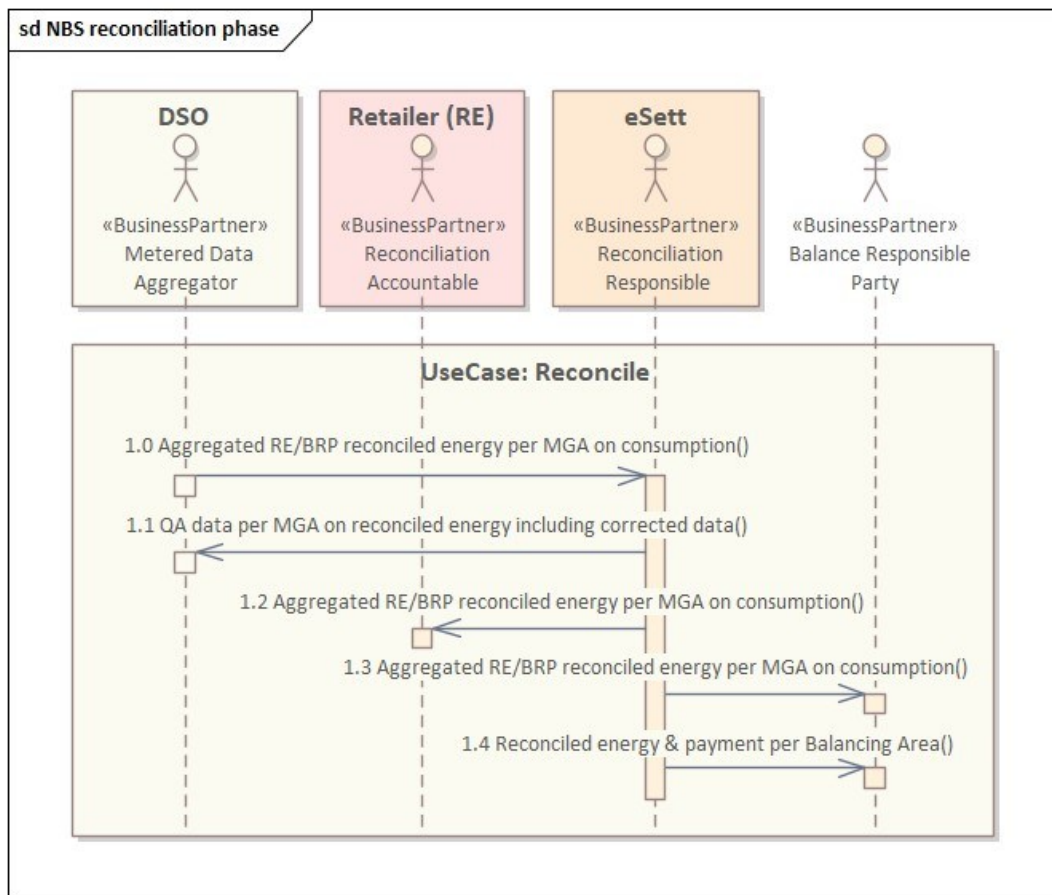
Figure 6 Sequence diagram: The NBS reconciliation phase

NBS document	IG and document
Reporting of metered data of Profiled Metering Points	
1.0 Aggregated RE/BRP reconciled energy per MGA on consumption	Not handled in the first version of a common NBS.
1.1 QA data per MGA on reconciled energy including corrected data	Not handled in the first version of a common NBS.
1.2 Aggregated RE/BRP reconciled energy per MGA on consumption	Not handled in the first version of a common NBS.
1.3 Aggregated RE/BRP reconciled energy per MGA on consumption	Not handled in the first version of a common NBS.
1.4 Reconciled energy & payment per Balancing Area	Not handled in the first version of a common NBS.

Table 4: 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 Electricity Market Role Model (HEMRM) are outlined.
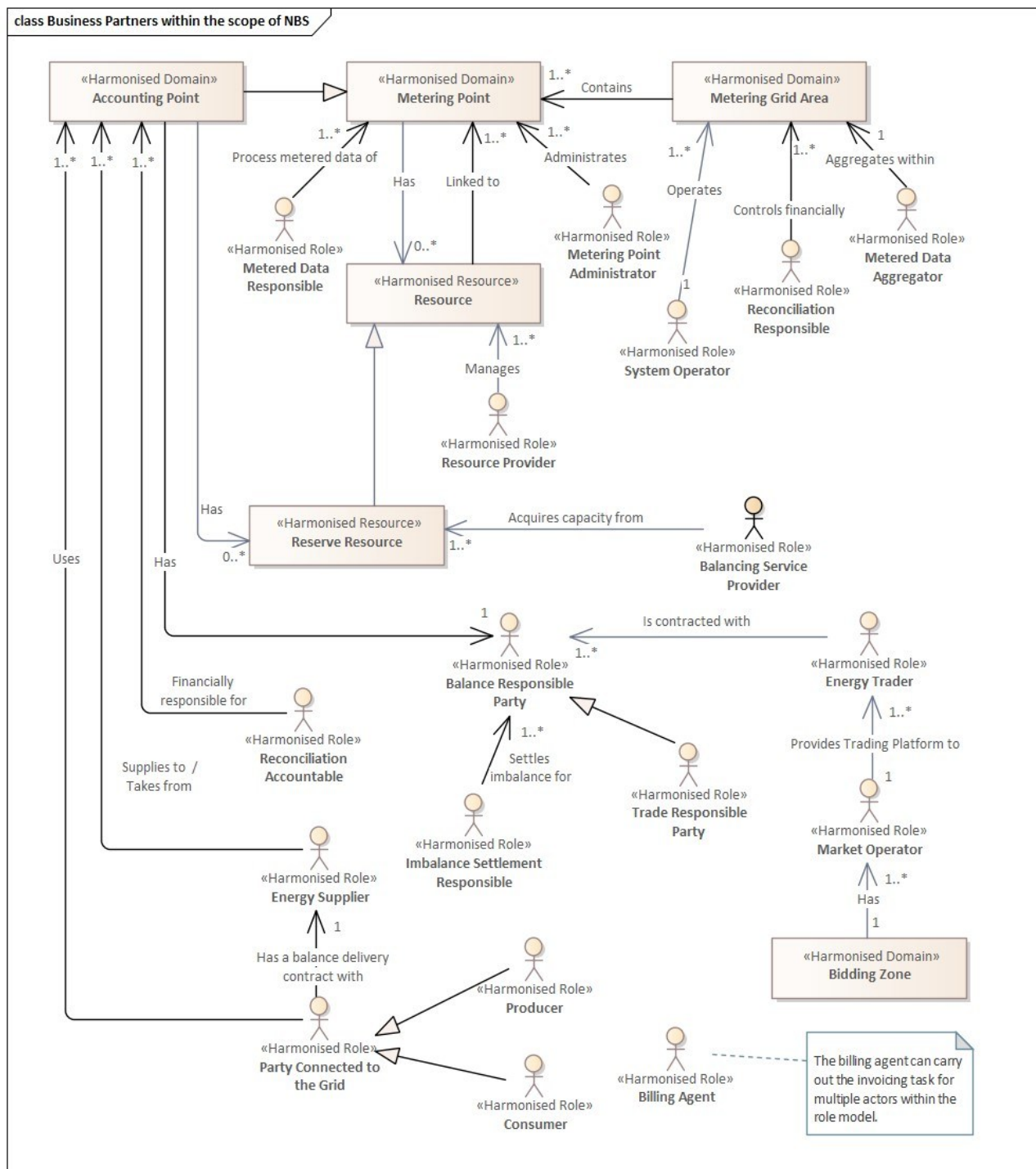
Figure 7: Outline of the Harmonised role model within the scope of NBS system

3.1 Definitions (from the ebIX®, EFET and ENTSO-E Harmonised Electricity Market Role Model):

3.1.1 Roles

Balance Responsible Party: A party financially accountable for its imbalances.

Based on: Consolidated text: Commission Regulation (EU) 2017/2195 - Art.2 Definitions.

Additional information:
A 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.

Imbalance means an energy volume calculated for a Balance Responsible Party and representing the difference between the allocated volume attributed to that Balance Responsible Party and the final position of that Balance Responsible Party, including any imbalance adjustment applied to that Balance Responsible Party, within a given imbalance settlement period.

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.

Balancing Service Provider: A party providing energy balancing services to the energy or capacity market.

Additional information:
Balancing services can be balancing energy and/or balancing capacity.

This is a type of Flexibility Service Provider.

Based on: Consolidated text: Commission Regulation (EU) 2017/2195 - Art.2 Definitions and Consolidated text: Regulation (EU) 2019/943.

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

Additional information:
An Accounting Point can have only one Energy Supplier.

When additional suppliers (with firm (block) energy contracts) are involved, the Energy Supplier delivers/takes the difference between contracted and established (e.g. measured or calculated) production/consumption.

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.

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

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

Based on: Consolidated text: Regulation (EU) 2019/943.

Additional information:
This activity can be conducted in the forward, days-ahead and/or intraday timeframes, and can be combined with transmission capacity allocation in the context of market coupling.

This is usually an energy/power exchange or platform.

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.

Party Connected to the Grid: A party that contracts for the right to take out or feed in energy at an Accounting Point.

Producer: A party that produces electricity.

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

Based on: Consolidated text: Directive (EU) 2019/944.

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 measured quantities.

Additional information:
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 energy.

Based on: Consolidated text: Directive (EU) 2019/944

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.

Additional information:

A power exchange without any privileged responsibilities acts as a Trade Responsible Party.

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: Consolidated text: Commission Regulation (EU) No 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.

4 Process areas within Nordic settlement system

4.1 Process area: Receive and validate Master Data

See separate BRS [9].

4.2 Process area: Distribute Master Data

See separate BRS [9].

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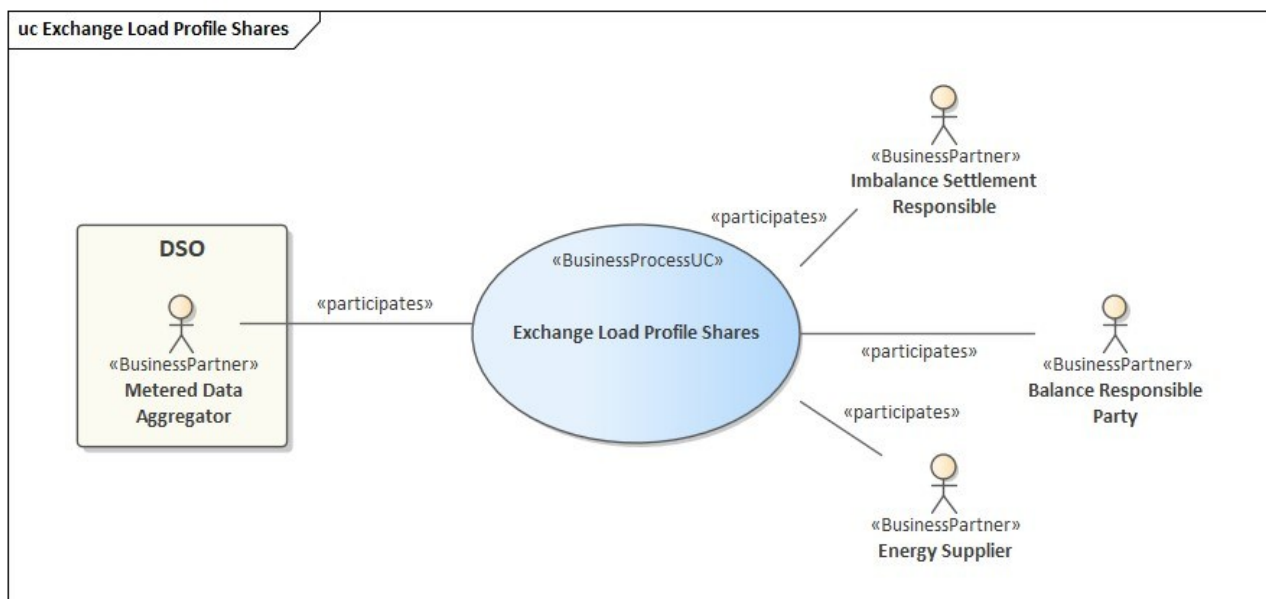
Figure 8: UseCase: Exchange Load Profile Shares

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.

This process is not a part of the first version of a common Nordic Balance Settlement.
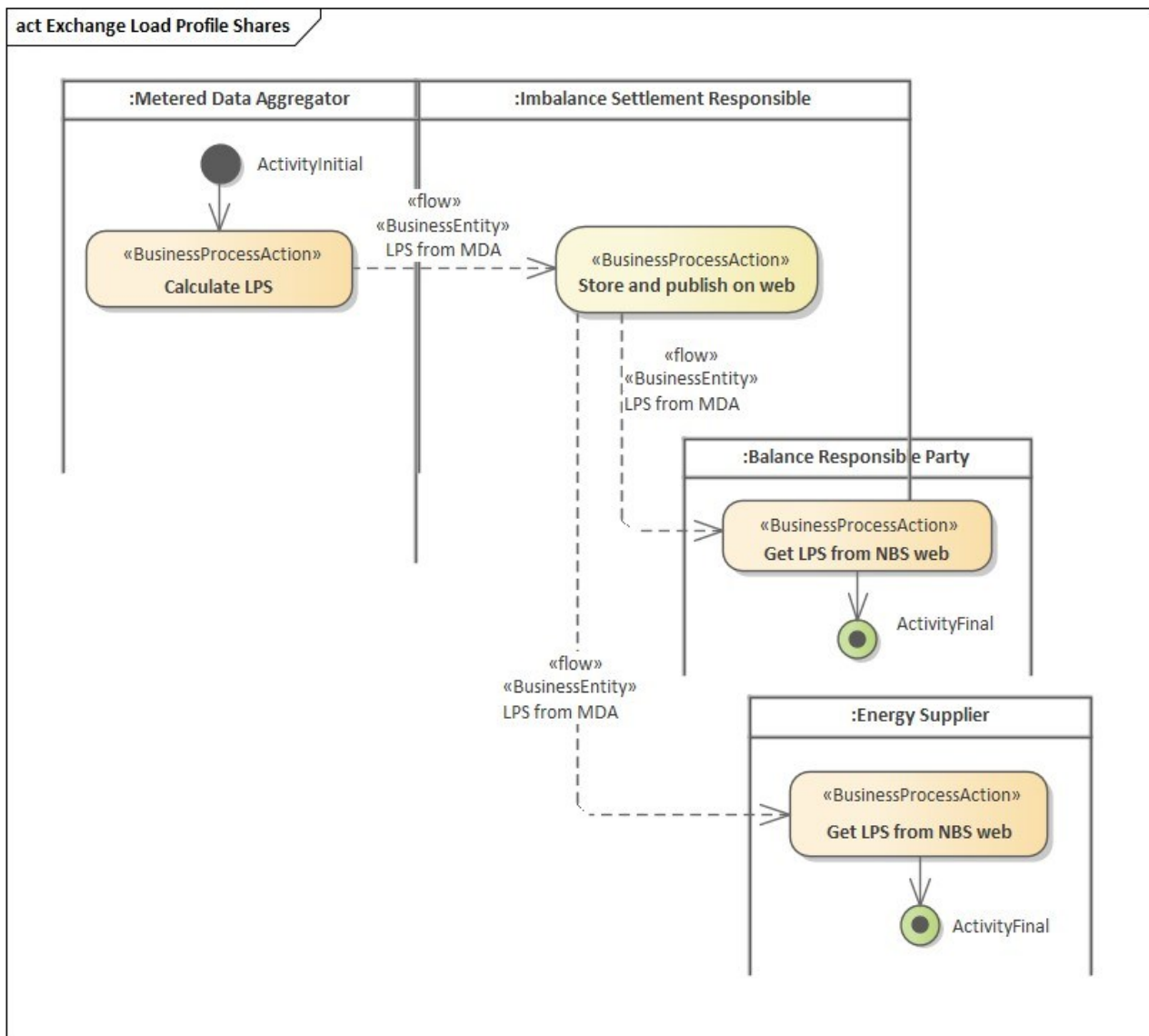
Figure 9: Activity diagram: Exchange Load Profile Shares

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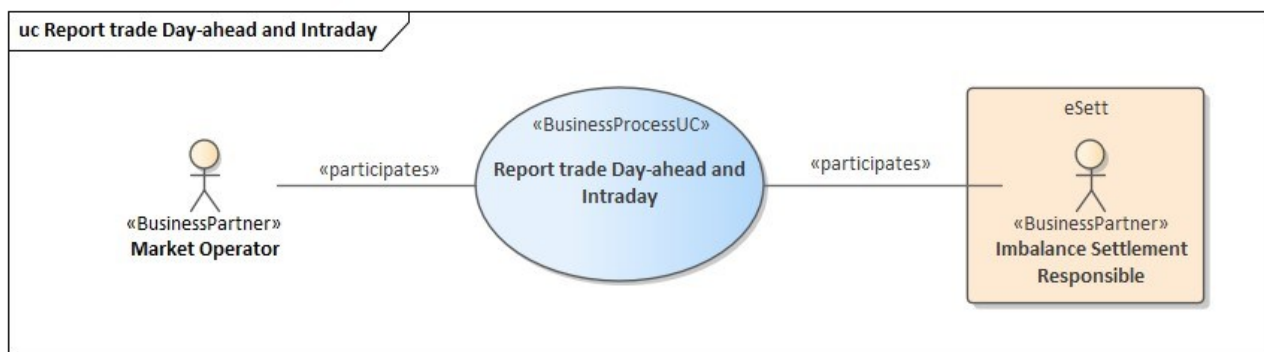
Figure 10: UseCase: Report trade from Day-ahead and Intraday

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 also 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 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.
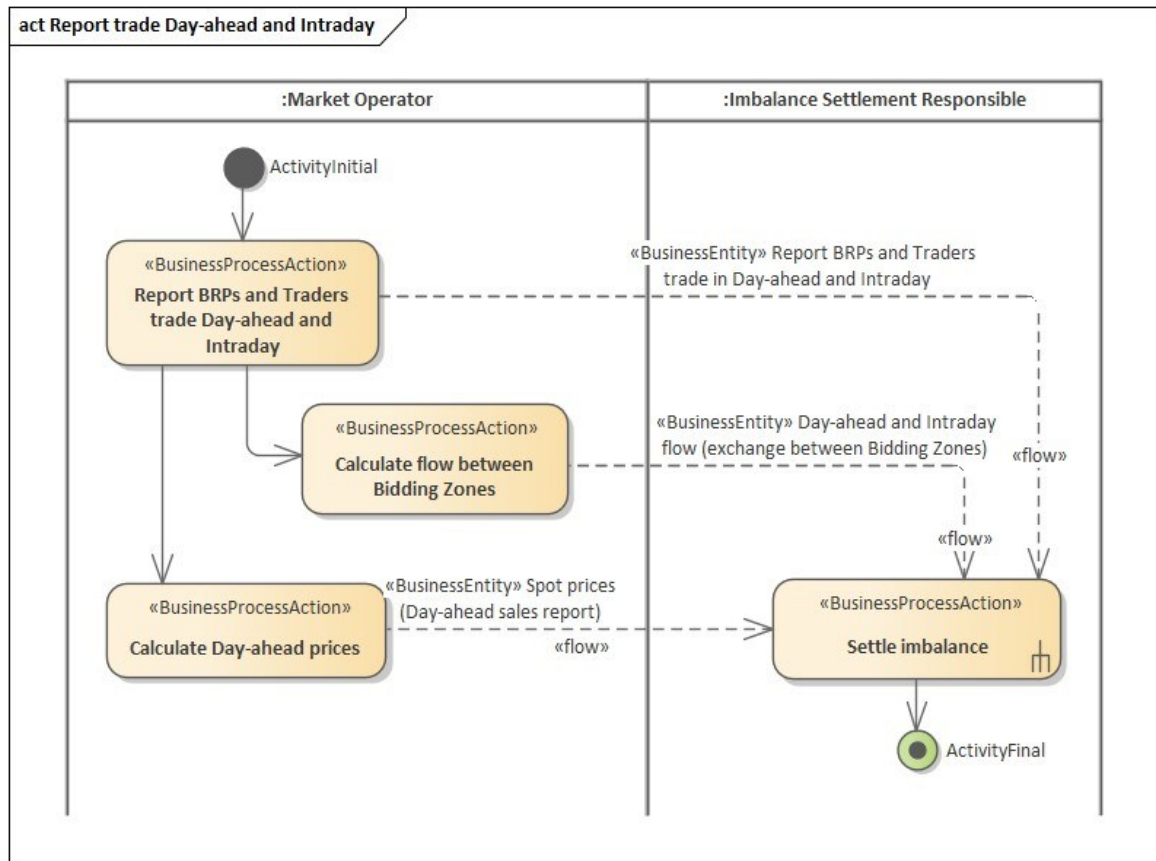
Figure 11: Activity diagram: Report trade from Day-ahead and Intraday

Comment to the diagram:

- Only actions and documents related to NBS is shown

4.5 Process area: Report bilateral trade
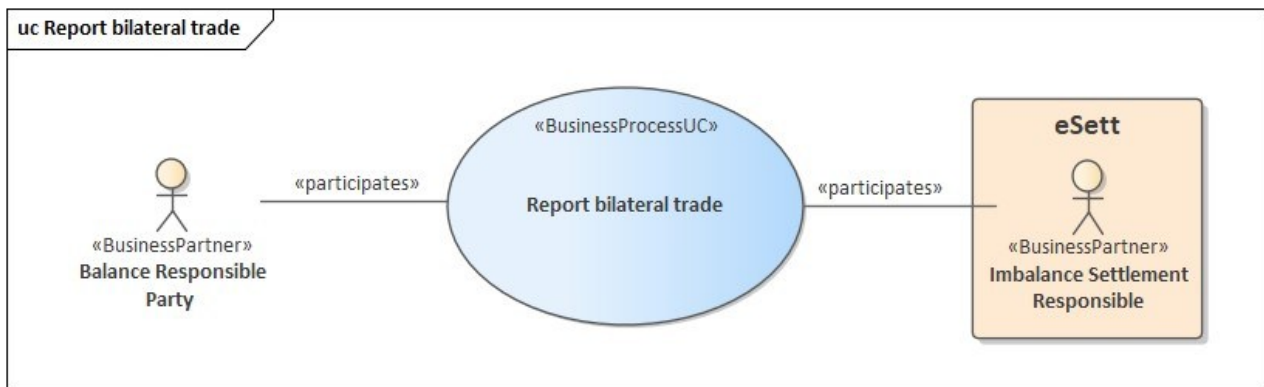
Figure 12: UseCase: Report bilateral trade

In this process the Balance Responsible Parties (BRPs) reports bilateral trade to the Nordic Imbalance Settlement Responsible (eSett). One or both BRPs in a trade reports the trade. If both BRPs reports the trade, eSett matches the bilateral trade report with what is received from the counterpart BRP and returns a confirmation report back to the two BRPs involved in the trade, see chapter "4.5.1, The NBS confirmation process" below.
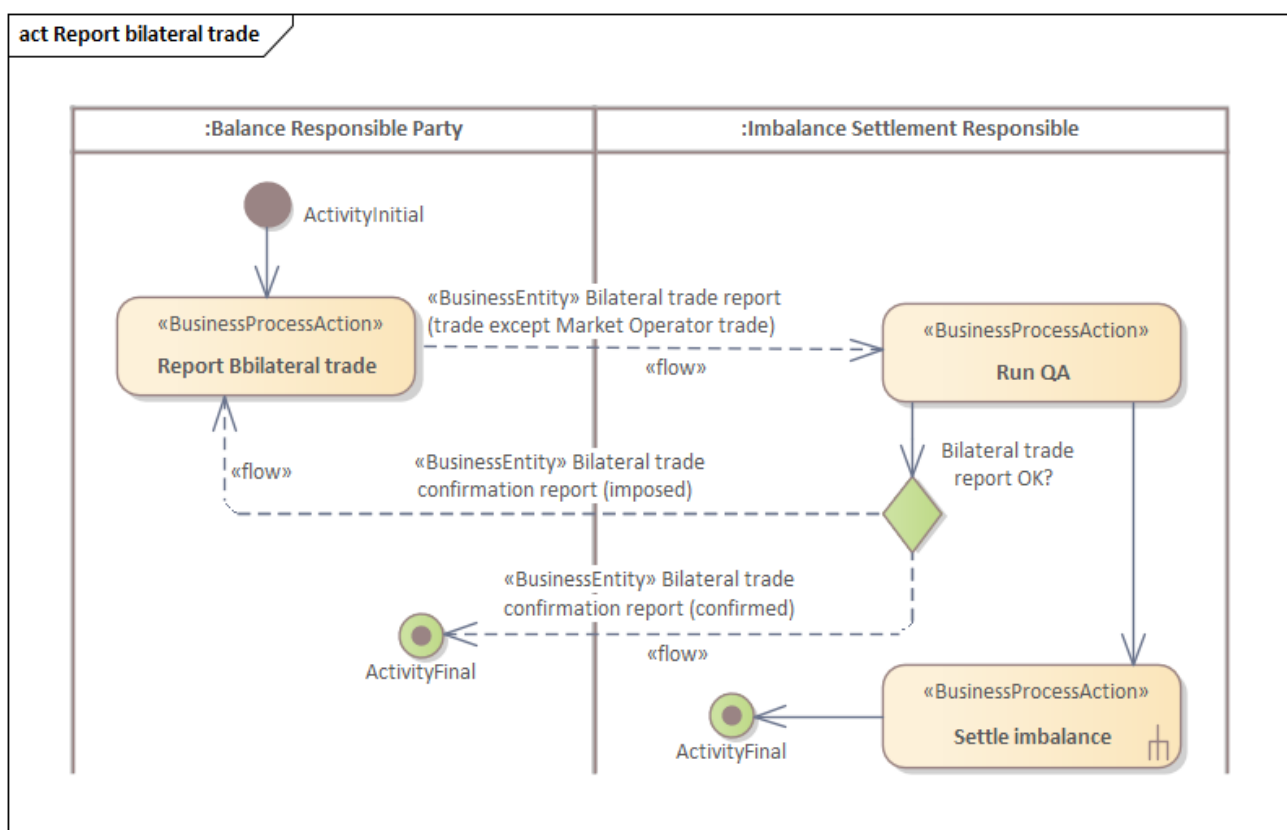
Figure 13: Activity diagram: Report bilateral trade

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:

- The BRPs are responsible for submitting time series for bilateral trade
- One or both BRPs can submit data.
- Before 1st gate closure; 45 minutes before the delivery hour
    - Matching will be performed every time a bilateral trade is received
    - An iCNF (intermediate confirmation report) will be sent to both BRPs. The iCNF will include the delta and the matched value
- Between 1st and 2nd gate closure (2nd gate closure is 12:00 the day after the delivery day).
    - Hours where match is achieved by acceptance of the counterpart's values
        - The BRPs have the possibility to manually accept to use the counterparts' values in hours where there is no match. The BRP may do this hour by hour or for a longer time period in the same operation.
        - Both BRPs have equal rights to accept to use the counterparts' values. This is based on the "first come first serve" principle. The values can only be corrected once between 1st and 2nd gate closure.
        - For hours where one of the BRPs have chosen to accept the counterparts values a fCNF will be sent short time after (Allow some time to incorporate more than one hour in the fCNF)
- After 2nd gate closure (2nd gate closure is 12:00 the day after the delivery day).
    - fCNF will be sent for all hours of the previous day

4.6 Process area: Plan production
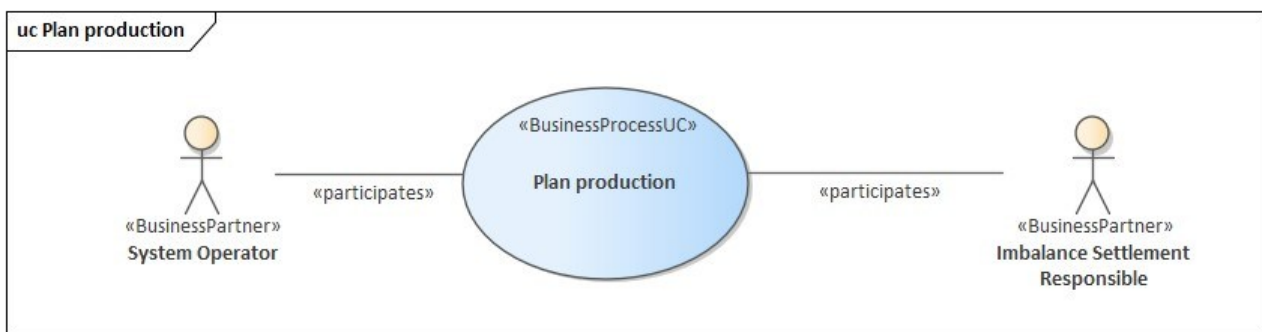
Figure 14: UseCase: Plan production

In this process the TSOs (System Operators) reports binding production plans from the BRPs to the Nordic Imbalance Settlement Responsible (eSett). The basis for the binding production, i.e. the reporting of production plans from the BRPs to the TSOs is described in the NMEG BRS for Nordic Scheduling Process [7].
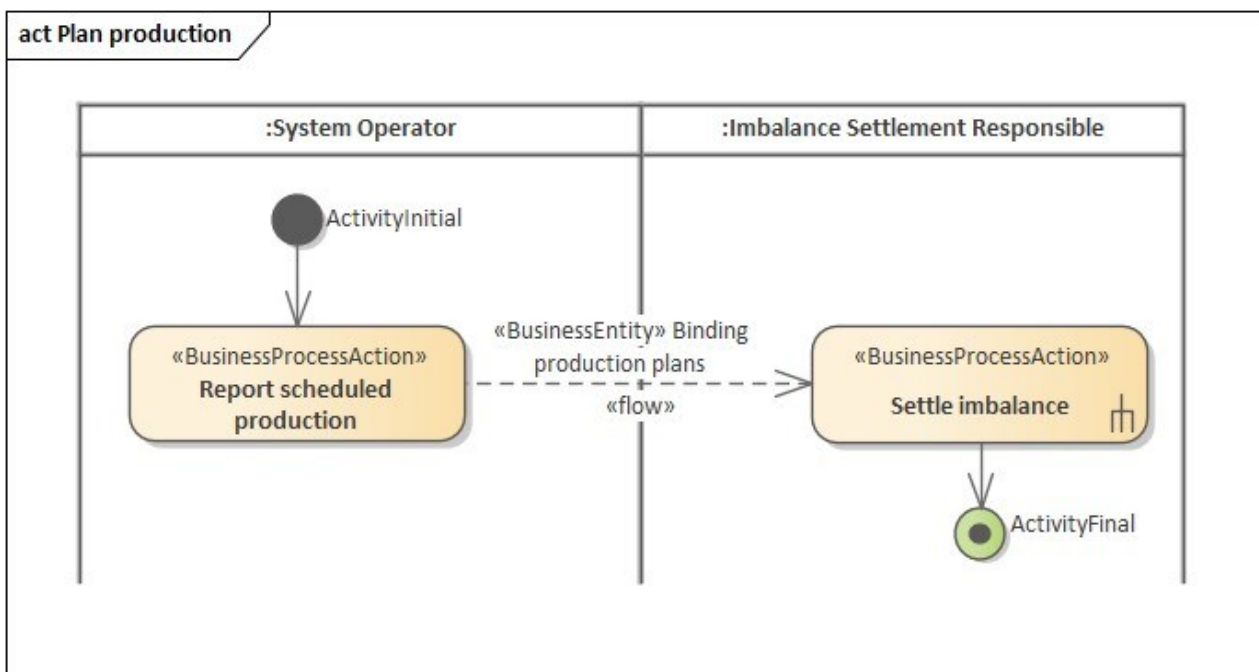
Figure 15: Activity diagram: Plan production

4.7 Process area: Report trade from Balance Regulation Market

The trade on the balance regulation market is documented in [6], 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*.
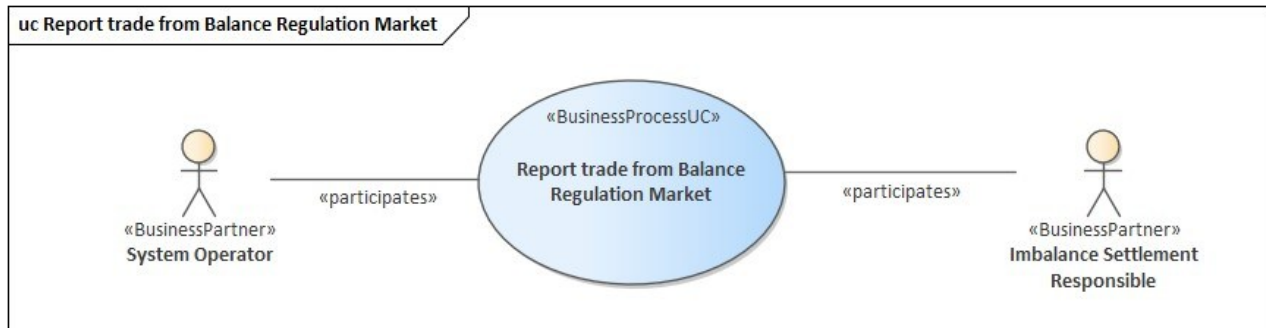
Figure 16: UseCase: Report trade from Balance Regulation Market
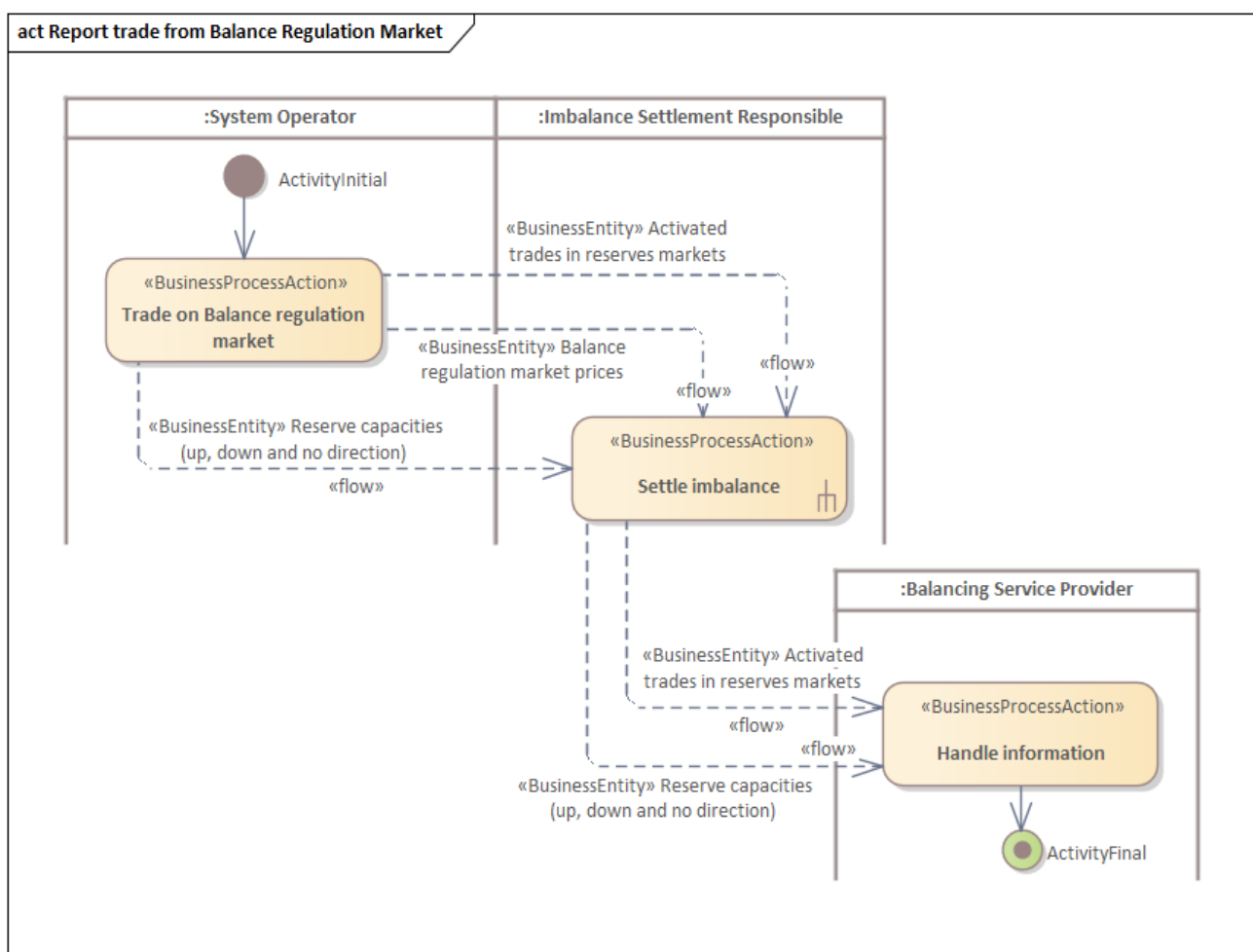
Figure 17: Activity diagram: Report trade from Balance Regulation Market

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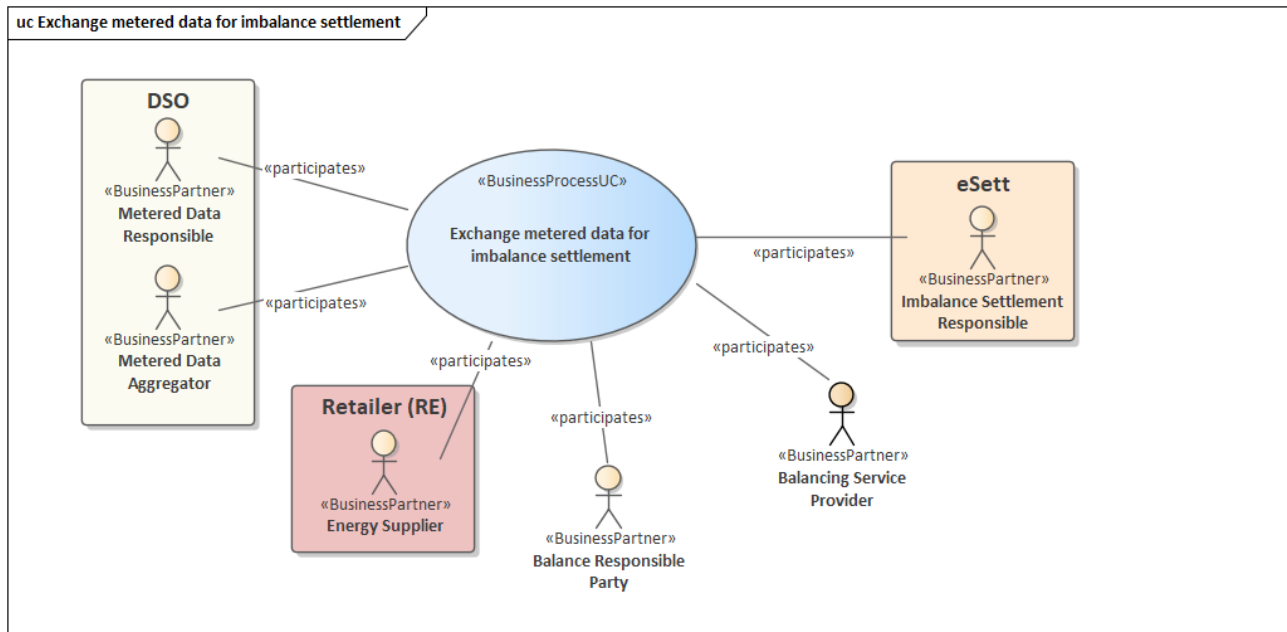
Figure 18: UseCase: Exchange metered data for imbalance settlement

The Metered Data Responsible reports Metered data for production per Accounting Point to the Imbalance Settlement Responsible (eSett).

The Metered Data Aggregator (DSO) reports aggregated metered data to the Imbalance Settlement Responsible:

- 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
- Aggregated metered data from exchange Metering Points between MGAs

In addition, in Sweden the Metered Data Aggregator (DSO) report aggregated profiled consumption per Energy Supplier to the Energy Suppliers and Balance Responsible Parties

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. Rules for how and when to estimate will be stated in the NBS handbook [8].

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).

For MGA-MGA exchanges the following rules apply:

- The DSOs are responsible for submitting time series for exchange between MGAs
- One or both DSOs can submit data.
- Before gate closure
    - Matching will be performed every time MGA-MGA exchanges is received

- o An iCNF (intermediate confirmation report) will be sent to both DSOs. The iCNF will include the delta and the matched value.
- After gate closure a fCNF (final confirmation report) will be sent for all hours of the relevant period.
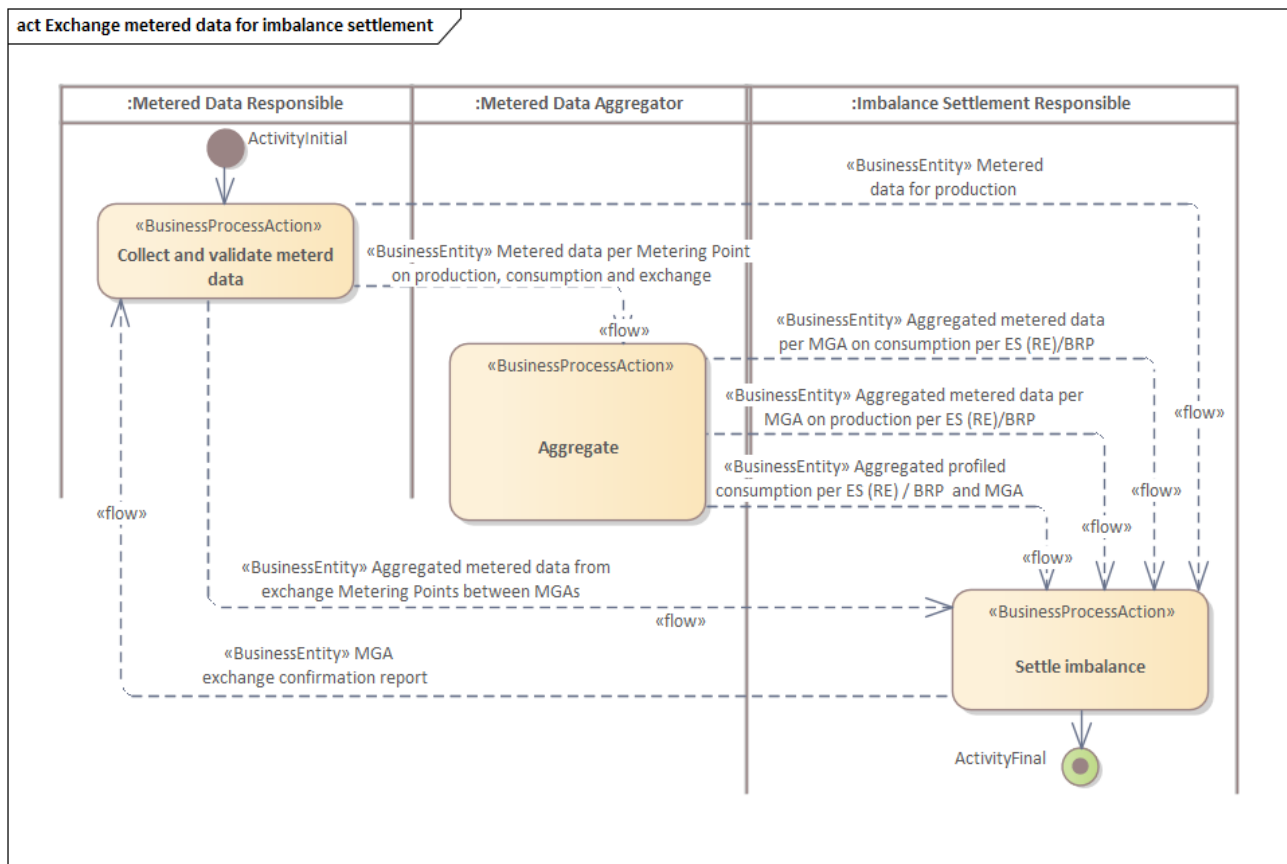
Figure 19: Activity diagram: Exchange metered data for imbalance settlement[2]

4.9 Process area: Report balancing services
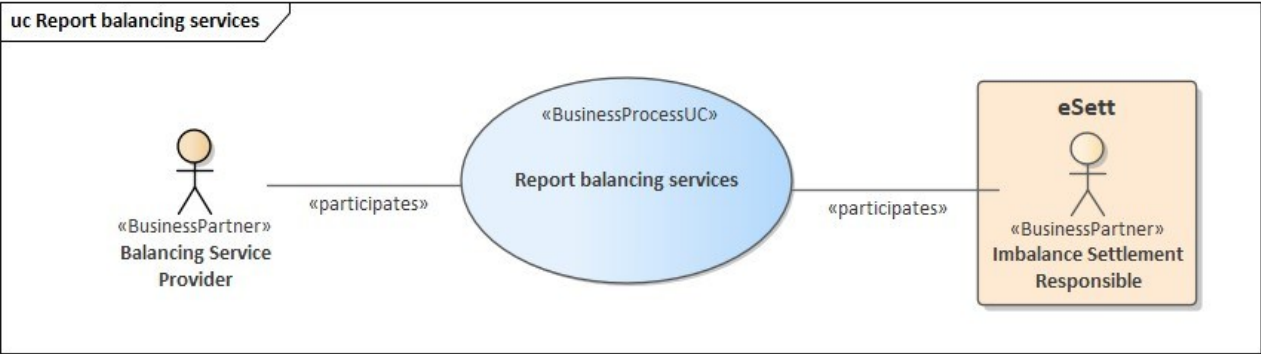
Figure 20: UseCase: Report balancing services

In this process the Balancing Service Provider (BSP) reports production from activated Resources to the Imbalance Settlement Responsible. Alternatively the DSO, the TSO or a datahub can report the production from the activated Resources to the Imbalance Settlement Responsible on behalf of the BSP.
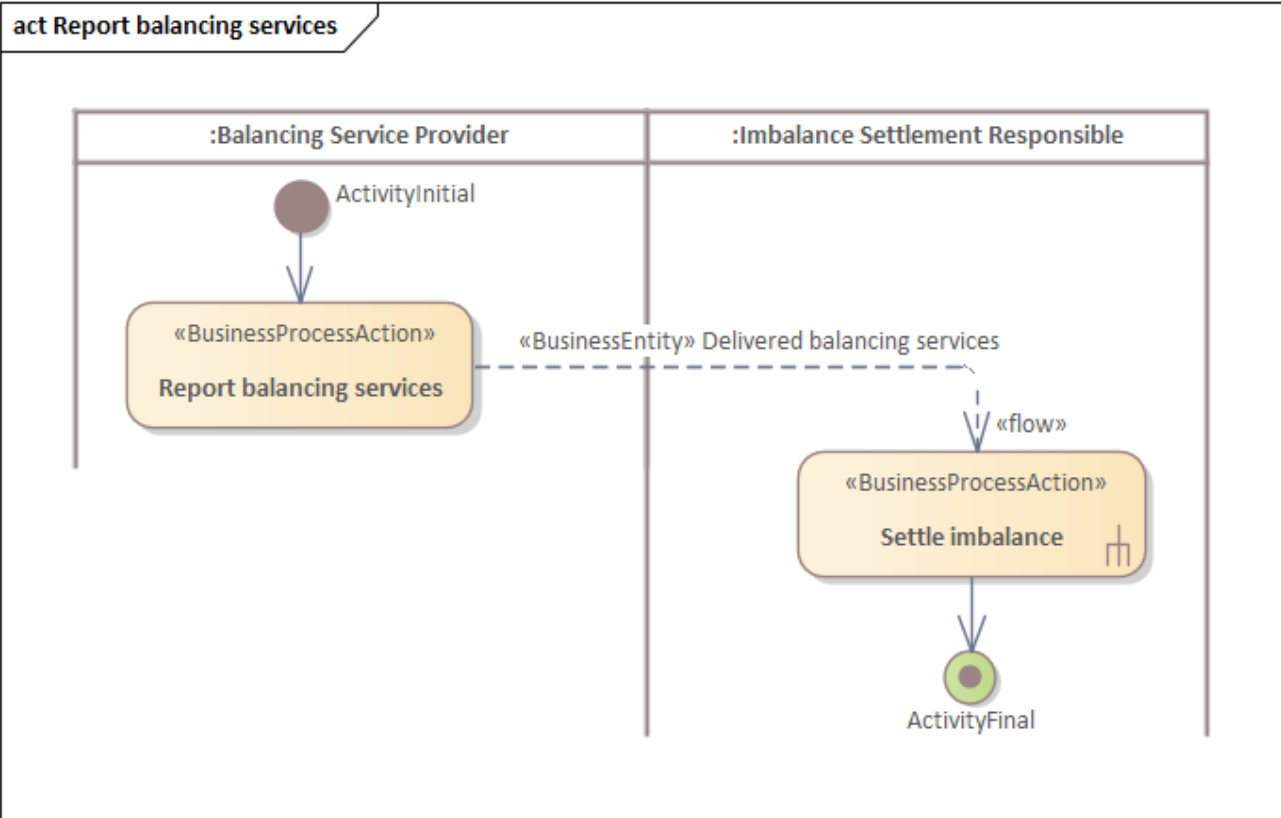
Figure 21: Activity diagram: Report balancing services

4.10 Process area: Distribute settlement basis data

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

4.11 Process area: Settle imbalance
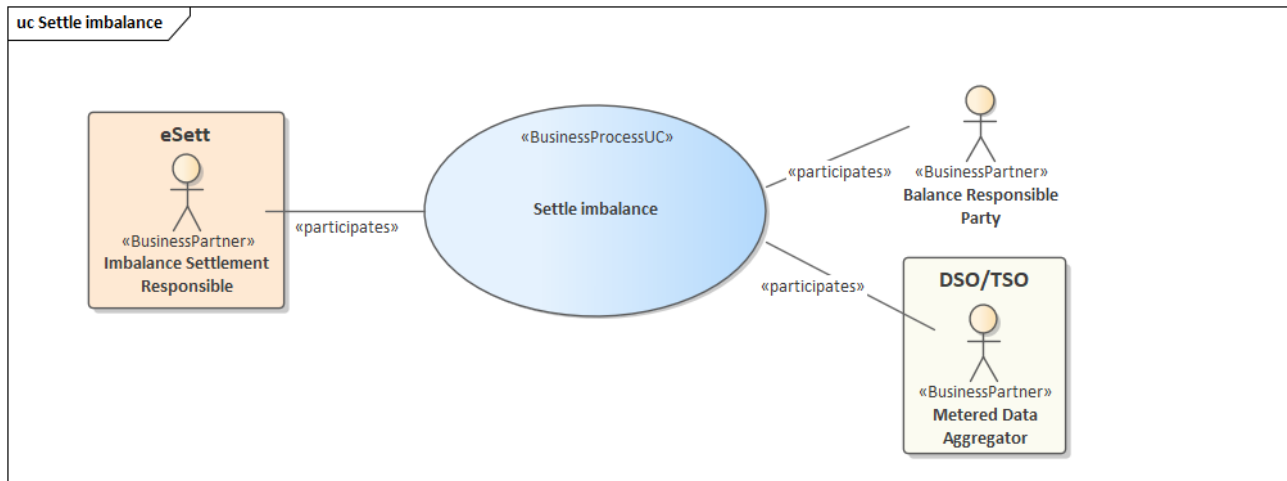
Figure 22: UseCase: Settle imbalance

The Imbalance Settlement Responsible provides:

- The result of the imbalance settlement to the Balance Responsible Parties (BRPs).

- The MGA imbalance is sent to the Metered Data Aggregator (DSO).

- The DP compensation program is sent to the BRPs and the Balancing Service Providers (BSPs).

- The DP Regulation Imbalance is sent to the BRPs and the Balancing Service Providers (BSPs).
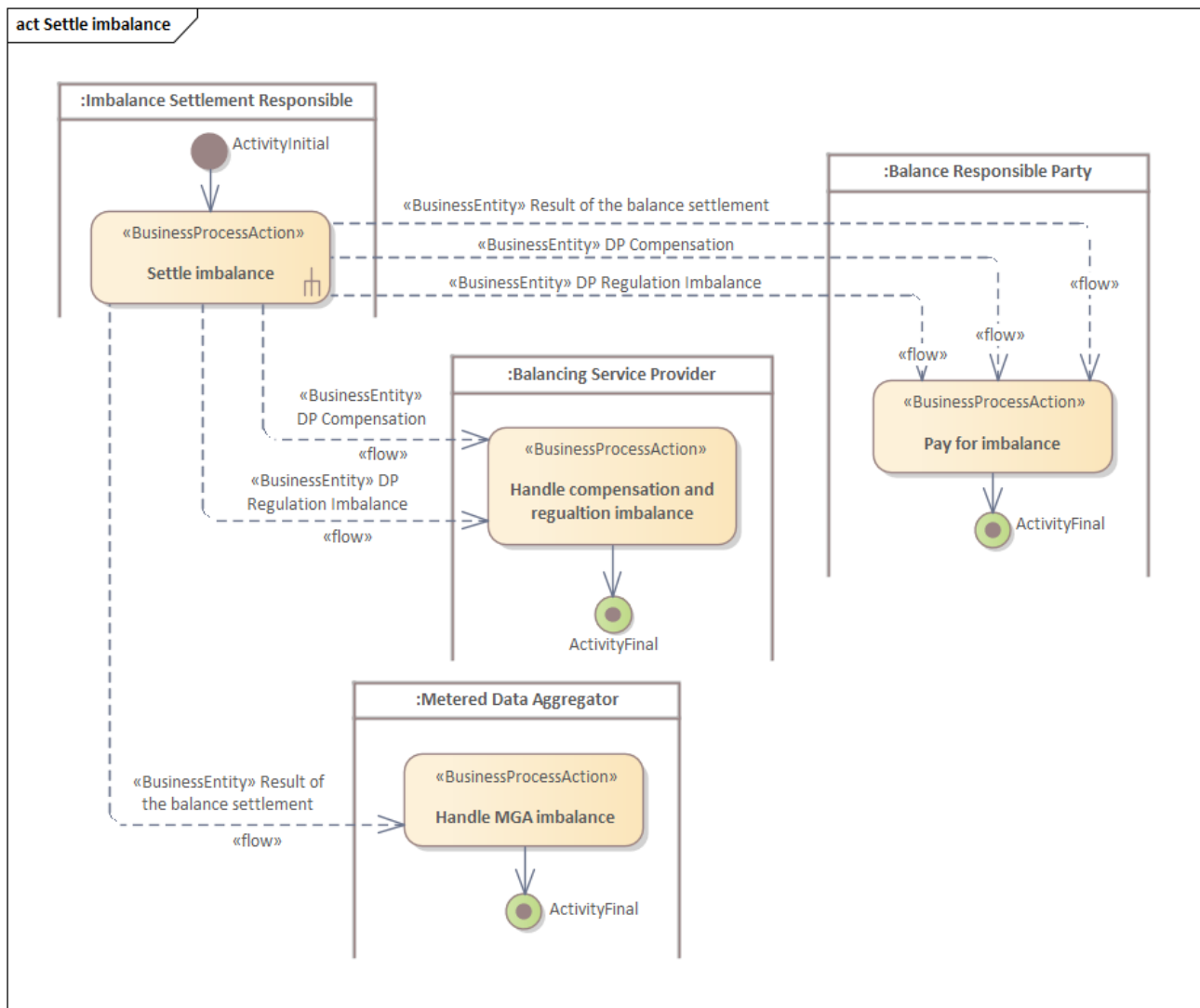
Figure 23: Activity diagram: Settle imbalance

4.12 Process area: Reconcile

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

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 (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 NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)

The NEG (ebIX® based) document *Validated Data for Settlement for Aggregator* is used for sending metered data per metering point from a Metered Data Responsible (e.g. DSO) to:

- The Imbalance settlement Responsible for production metering points
- Other DSOs for exchange between Metering Grid Areas
- Metered data Aggregator (MDA). The MDA can be an internal role within the DSO or a datahub

The NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44) is documented in the ebIX® Business information model for Measure Exchange metered data for Billing, see [2].

5.1.1 Class diagram: NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)
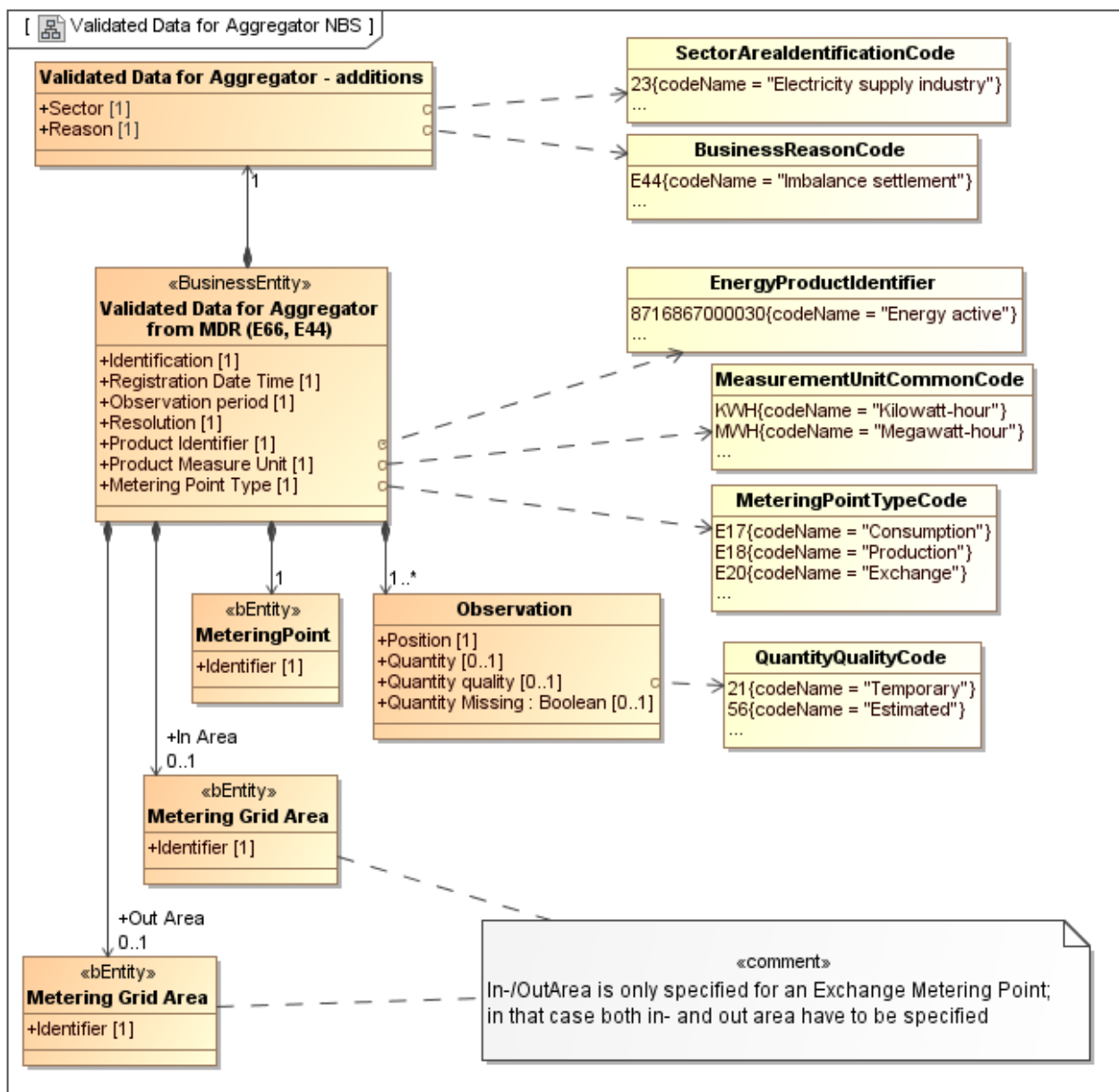
Figure 24: Class diagram: NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)

The document is used in the following exchanges:
- **Table 3:** NBS metering and settlement phase documents:
  - 1.0, Metered data for production
  - 1.1, Metered data per metering point on production, consumption and exchange

5.1.2 Attribute usage: NEG (ebIX® based) Validated Data for Settlement for Aggregator, Production (E66, E44)

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
	Header	[1]		
	Identification	[1]	Business Document ID	Unique identification of the business document **Note:** The maximum length of the ID is 35 characters.
	Document Type	[1]	Document type	**E66** Validated metered data, time series
	Creation	[1]	Creation date/time	Date and time of creation of the business document
	Sender Energy Party	[1]	Sender ID	Unique identification of the sender of the document
	Recipient Energy Party	[1]	Recipient ID	Unique identification of the recipient of the document
Validated data for Aggregator - additions	**Process Energy Content**	[1]		
Reason	Energy Business Process	[1]	Process type	**E44** Imbalance Settlement
	Energy Business Process Role	[1]	Process role	**DEA** Metered data aggregator
Sector	Energy Industry Classification	[1]	Industry	**23** Electricity supply industry
	Payload Energy Time Series	[1..*]		
Identification	Identification	[1]	Time series ID	Unique ID of the Time Series (unique over time for the sender in question) **Note:** The maximum length of the ID is 35 characters.
Registration Date Time	Registration Date Time	[1]	Registration Date Time	As an intermediate solution, the Document Date (Creation) may be mapped to the Registration Date Time

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Validated data for Aggregator from MDR	**Observation Period time Series Period**	[1]		
Resolution	Resolution Duration	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Observation period	Start	[1]	Start date/time	Date and time for the start of the time series
	End	[1]	End date/time	Date and time for the end of the time series
	Product Included Product Characteristics	[1]		
Product Identifier	Identification	[1]	Product	**8716867000030** Energy active
Product Measure Unit	Unit Type	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
	MP Detail Measurement Metering Point Characteristics	[1]		
Metering Point Type	Metering Point Type	[1]	MP type	**E17** Consumption (Only used internally within the DSO, see arrow 1.1, Metered data per metering point on production, consumption and exchange in chapter 2.4, Overview of information exchange for the NBS metering and settlement phase) **E18** Production
Metering Point	**Metering Point Used Domain Location**	[1]		
Identifier	Identification	[1]	MP ID	Unique identification of the Metering Point
Observation	**Observation Interval**	[1..*]		

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
	Observation Period			
Position	Sequence	[1]	Sequence number	Sequence number of the observation in the time series
	Observation Detail Energy Observation	[1]		
Quantity	Energy Quantity	[0..1]	Quantity	The quantity in question The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh Quantity is not used if Quantity Missing Indicator = **true**
Quantity Quality	Quantity Quality	[0..1]	Quality	**21** Temporary **56** Estimated, approved for billing • The default Quantity Quality is *"Metered"*, i.e. Quantity Quality is only used if ≠ "Metered" • Quantity Quality is not used if Quantity Missing Indicator = **true**
Quantity Missing	Quantity Missing	[0..1]	true	**true** (Used for missing quantity. Note: the value is case sensitive) The Quantity Missing Indicator (**true**) is required for observations with missing values (quantities), else not used

Table 5: Attribute usage: NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)

Comments to the table:

- The Energy Supplier (RE), Balance Responsible Party (BRP), Metering Grid Area (MGA), Resource (R) and Production Unit (PU) are master data for the Metering Point, hence not sent.

- In- and Out Areas are not used

5.1.3 Attribute usage: NEG (ebIX® based) Validated Data for Settlement for Aggregator, MGA exchange (E66, E44)

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
	Header	[1]		
	Identification	[1]	Business Document ID	Unique identification of the business document **Note:** The maximum length of the ID is 35 characters.
	Document Type	[1]	Document type	**E66** Validated metered data, time series
	Creation	[1]	Creation date/time	Date and time of creation of the business document
	Sender Energy Party	[1]	Sender ID	Unique identification of the sender of the document
	Recipient Energy Party	[1]	Recipient ID	Unique identification of the recipient of the document
Validated data for Aggregator - additions	**Process Energy Content**	[1]		
Reason	Energy Business Process	[1]	Process type	**E44** Imbalance Settlement
	Energy Business Process Role	[1]	Process role	**DEA** Metered data aggregator
Sector	Energy Industry Classification	[1]	Industry	**23** Electricity supply industry
	Payload Energy Time Series	[1..*]		
Identification	Identification	[1]	Time series ID	Unique ID of the Time Series (unique over time for the sender in question) **Note:** The maximum length of the ID is 35 characters.
Registration Date Time	Registration Date Time	[1]	Registration Date Time	As an intermediate solution, the Document Date (Creation) may be mapped to the Registration Date Time
Validated data for Aggregator from MDR	**Observation Period time Series Period**	[1]		
Resolution	Resolution Duration	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS.** Where nY expresses number of years, nM number of months, nD number of days.

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
				The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Observation period	Start	[1]	Start date/time	Date and time for the start of the time series
	End	[1]	End date/time	Date and time for the end of the time series
	Product Included Product Characteristics	[1]		
Product Identifier	Identification	[1]	Product	**8716867000030** Energy active
Product Measure Unit	Unit Type	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
	MP Detail Measurement Metering Point Characteristics	[1]		
Metering Point Type	Metering Point Type	[1]	MP type	**E20** Exchange
In Area / Metering Grid Area	**In Area Used Domain location**	[1]		
Identifier	Identification	[1]	MGA ID	One MGA in the MGA exchanges
Out Area / Metering Grid Area	**Out Area Used Domain location**	[1]		
Identifier	Identification	[1]	MGA ID	The other MGA in the MGA exchanges
Metering Point	**Metering Point Used Domain Location**	[1]		
Identifier	Identification	[1]	MP ID	Unique identification of the Metering Point
Observation	**Observation Detail Energy Observation**	[1..*]		
Position	Sequence	[1]	Sequence number	Sequence number of the observation in the time series
	Observation Detail Energy Observation	[1]		

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Quantity	Energy Quantity	[0..1]	Quantity	The quantity in question The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh Quantity is not used if Quantity Missing Indicator = **true**
Quantity Quality	Quantity Quality	[0..1]	Quality	**21** Temporary **56** Estimated, approved for billing • The default Quantity Quality is *"Metered"*, i.e. Quantity Quality is only used if ≠ "Metered" • Quantity Quality is not used if Quantity Missing Indicator = **true**
Quantity Missing	Quantity Missing	[0..1]	true	**true** (Used for missing quantity. Note: the value is case sensitive) The Quantity Missing Indicator (true) is required for observations with missing values (quantities), else not used

Table 6: Attribute usage: NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)

5.2 NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - consumption

The NEG (ebIX® based) document *Aggregated Data per MGA (Metering Grid Area) - consumption* is used for sending aggregated metered consumption data from the Metered Data Aggregator to Energy Suppliers, Balance Responsible Parties and the Imbalance settlement Responsible. The time series are aggregated per MGA, Energy Supplier and Balance Responsible Party.

The NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – consumption is documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [2].

5.2.1 Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - consumption
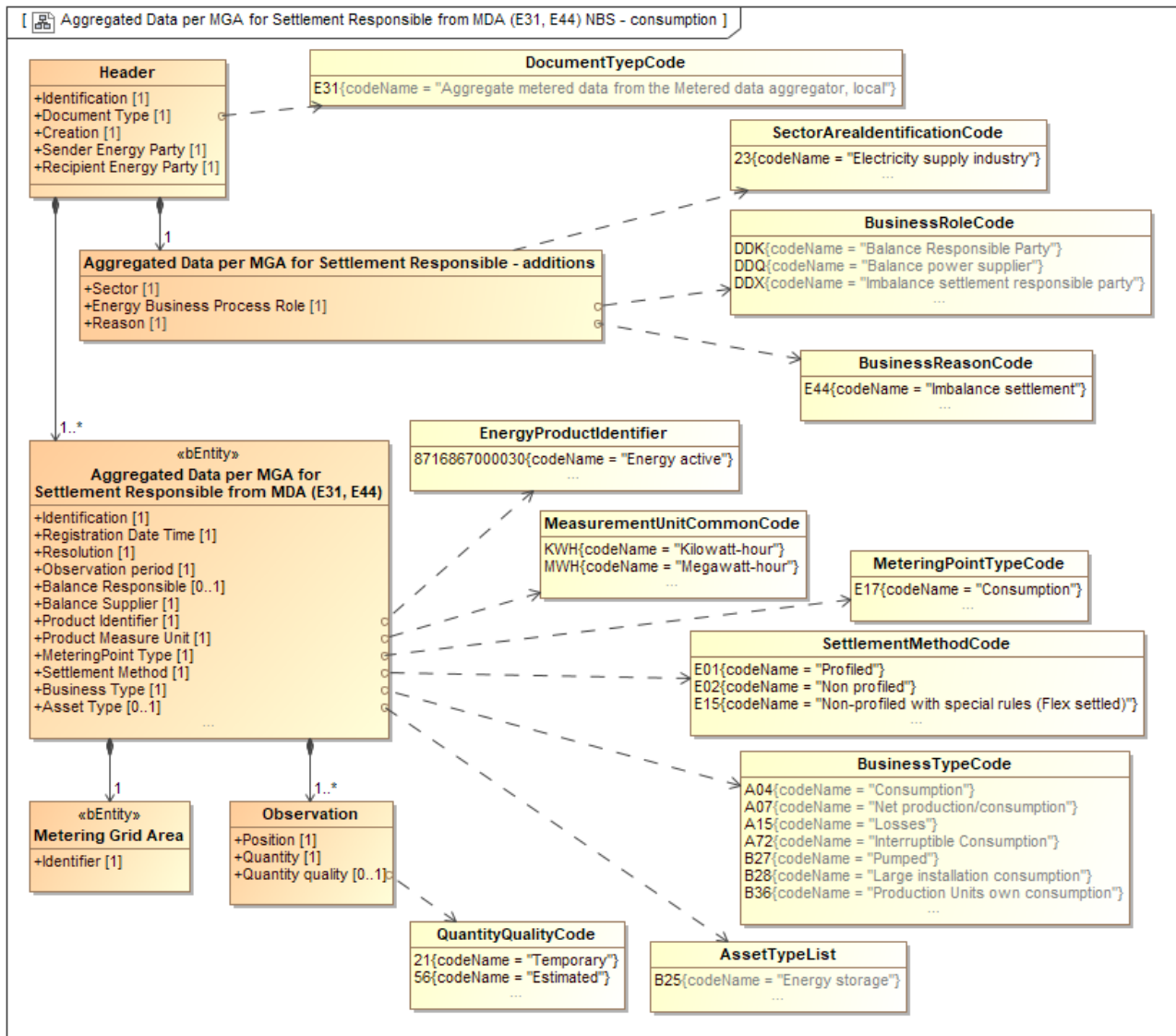
Figure 25: Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - consumption

Comments to the diagram:

- A Energy Supplier and a Business Type are added for the Nordic Balance Settlement.
- Quantities shall always be positive

The document is used in the following exchanges:
- **Table 3:** NBS metering and settlement phase documents:
    o 1.2, Aggregated ES (RE) / BRP metered data per MGA on
    o 1.4, Profiled consumption per ES (RE) / BRP per MGA
    o 1.5, Profiled consumption per ES (RE) / BRP per MGA
    o 1.6, Profiled consumption per ES (RE) / BRP per MGA

5.2.2 Attribute usage: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - consumption

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Header	**Header**	[1]		
Identification	Identification	[1]	Document ID	Unique identification of the business document **Note:** The maximum length of the ID is 35 characters.
Document Type	Document Type	[1]	Document type	**E31** Aggregate metered data from the Metered data aggregator, local
Creation	Creation	[1]	Creation date/time	Date and time of creation of the business document
Sender Energy Party	Sender Energy Party	[1]	Sender ID	Unique identification of the sender of the document
Recipient Energy Party	Recipient Energy Party	[1]	Recipient ID	Unique identification of the recipient of the document
Aggregated Data per MGA for Settlement Responsible - additions	**Process Energy Content**	[1]		
Reason	Energy Business Process	[1]	Process	**E44** Imbalance Settlement
Business Process Role	Energy Business Process Role	[1]	Process Role	**DDX** Imbalance settlement responsible **DDK** Balance responsible party **DDQ** Balance power supplier
Sector	Energy Industry Classification	[1]	Industry	**23** Electricity supply industry
Aggregated Data per MGA for Settlement Responsible	**Payload Energy Time Series**	[1..*]		
Identification	Identification	[1]	Time series ID	Unique ID of the Time Series (unique over time for the sender in question)

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
				Note: The maximum length of the ID is 35 characters.
Registration Date Time	Registration Date Time	[1]	Registration Date Time	As an intermediate solution, the Document Date (Creation) may be mapped to the Registration Date Time
	Observation Period time Series Period	[1]		
Resolution	Resolution Duration	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Observation period	Start	[1]	Start date/time	Date and time for the start of the time series
	End	[1]	End date/time	Date and time for the end of the time series
	Balance Responsible Involved Energy Party	[0..1]		**Dependent:** The Balance Responsible Party is required for Swedish profile settled consumption
Balance Responsible Party	Identification	[1]	BRP ID	Unique identification of the Balance Responsible Party
	Balance Supplier Involved Energy Party	[0..1]		*Note: This element is an extension to the ebIX® specifications* **Dependent:** The Energy Supplier is required for Danish, Finnish and Norwegian MPs and not used for Swedish profile settled consumption
Balance Supplier	Identification	[1]	BS ID	Unique identification of the Energy Supplier
	Product Included Product Characteristics	[1]		
Product Identifier	Identification	[1]	Product	**8716867000030** Energy active

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments	
Product Measure Unit	Unit Type	[1]	**KWH** or **MWH**	**KWH**	kWh
				MWH	MWh
	MP Detail Measurement Metering Point Characteristics	[1]			
Metering Point Type	Metering Point Type	[1]	MP type	**E17**	Consumption
Settlement Method	Settlement Method Type	[1]	Settlement Method	**E01** **E02** **E15**	Profiled Non-profiled Non-profiled with special rules (Flex settled)
Business Type	Business Type	[1]	Business Type code	**A04** **A07** **A15** **A72** **B27** **B28** **B36**	Consumption (general consumption) Net production/consumption (Pumped storage (from combined generator/pump - only in Norway)) Losses Interruptible Consumption Pumped Large installation consumption Production Units own consumption (Only used in Finland)
Asset Type	Asset Type	[0..1]	Asset Type code	**B25**	Energy storage
				Dependent:	
				Only used together with Business type **A04.**	
Metering Grid Area	**Metering Grid Area Used Domain Location**	[1]			
Identifier	Identification	[1]	MGA ID	Unique identification of the Metering Grid Area	
Observation	**Observation Interval Observation Period**	[1..*]			
Position	Sequence	[1]	Sequence number	Sequence number of the observation in the time series	
	Observation Detail Energy Observation	[1]			
Quantity	Energy Quantity	[1]	Quantity	The quantity in question	

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
				Note: • The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh • Business type "**A15** Losses" uses signed values, i.e. may be negative.
Quantity Quality	Quantity Quality	[0..1]	Quality	**21** Temporary **56** Estimated, approved for billing **Note:** • The default Quantity Quality is *"Metered"*, i.e. Quantity Quality is only used if ≠ "Metered". • A time series with aggregated values based on time series on a MP level where one or more observations has a "Quantity Missing Indicator = **true**" (Does not exist) shall use the quantity quality **21** (Temporary)

Table 7: Attribute usage: NEG (ebIX® based) Aggregated Data per MGA for Settlement Responsible (E31, E44) - consumption

5.2.3   Dependency matrix: Types of aggregated metered data for consumption metering points

Description	Settlement method	Business type		Asset type	Production type
Metered consumption in an MGA	**E02** Non-Profiled **E15** **F**lex settled	**A04** Consumption (general consumption) **A07** Net production/consumption (Pumped storage (from combined generator/pump - only in Norway)) **A72** Interruptible Consumption (only in Sweden) **B28** Large installation consumption **B27** Pumped (only in Norway) **B36** Production Units own consumption (Only used in Finland)		Not used	Not used
Total profiled consumption	**E01** Profiled	**A04** Consumption (general consumption)		Not used	Not used
Pumped (only in Norway)	**E01** Profiled	**B27** Pumped		Not used	Not used
Metered grid losses	**E02** Non-Profiled **E15** **F**lex settled	**A15** Losses		Not used	Not used

Description	Settlement method	Business type	Asset type	Production type
Profiled grid losses	**E01** Profiled	**A15** Losses	Not used	Not used
Metered energy storage	**E02** Non-Profiled **E15** Flex settled	**A04** Consumption (general consumption)	**B25** Energy storage	Not used

Table 8: Dependency matrix: Types of aggregated metered data for consumption metering points

5.3 NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - production

The NEG (ebIX® based) document *Aggregated Data per MGA (Metering Grid Area) - production* is used for sending aggregated metered production data from the Metered Data Aggregator to Energy Suppliers, Balance Responsible Parties and the Imbalance settlement Responsible. The time series are aggregated per MGA, Energy Supplier and Balance Responsible Party.

The NEG (ebIX® based) Aggregated Data per MGA (E31, E44) is documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [2].

5.3.1 Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - production
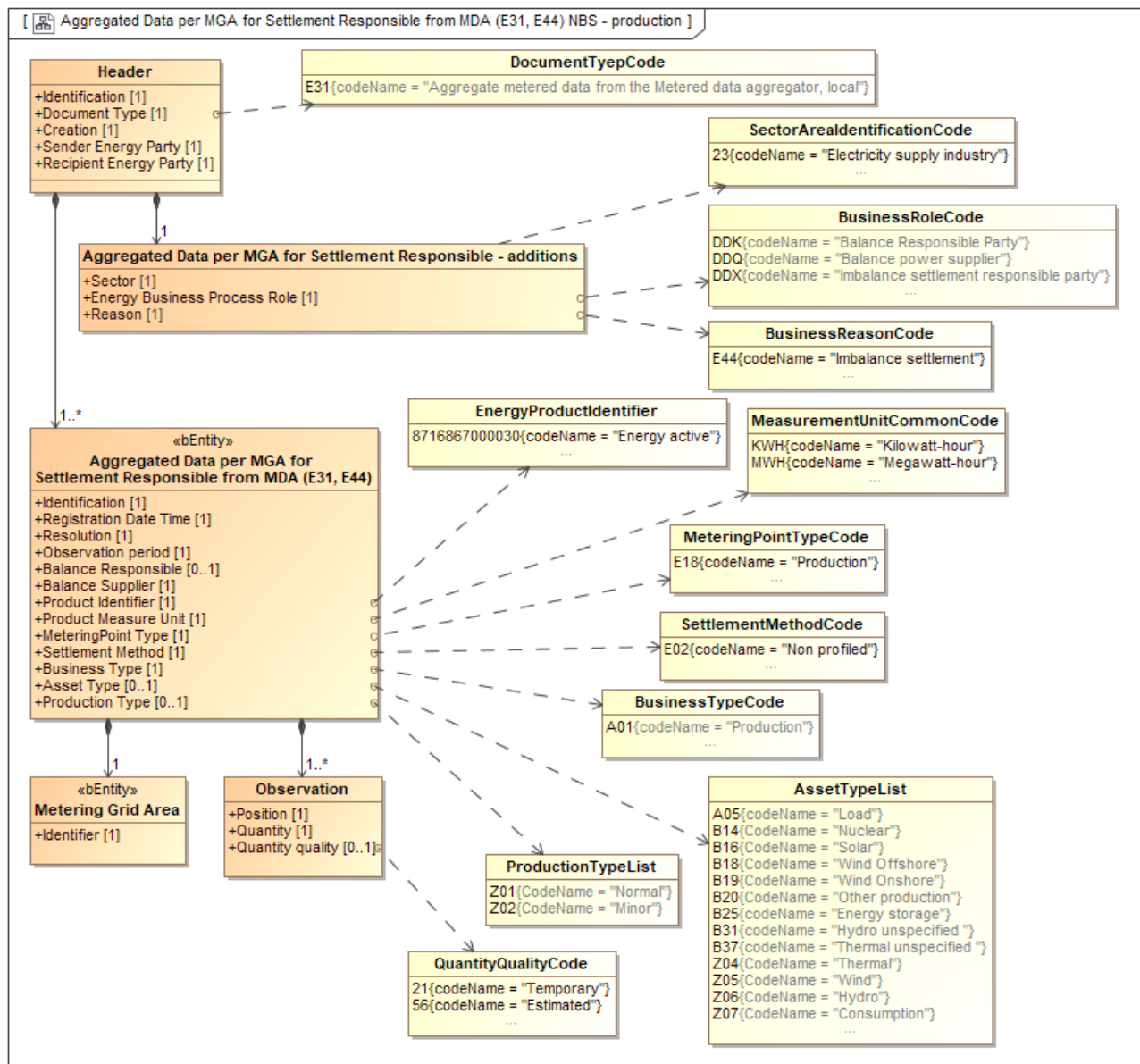
Figure 26: Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - production

Comments to the diagram:

- Energy Supplier, Business Type, Asset Type and Production Type are added for the Nordic Balance Settlement.

- Quantities shall always be positive.

The document is used in the following exchanges:
- **Table 3:** NBS metering and settlement phase documents:
  - 1.3, Aggregated ES (RE) / BRP metered data per MGA on production

5.3.2 Attribute usage: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - production

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Header	**Header**	[1]		
Identification	Identification	[1]	Document ID	Unique identification of the business document **Note:** The maximum length of the ID is 35 characters.
Document Type	Document Type	[1]	Document type	**E31** Aggregate metered data from the Metered data aggregator, local
Creation	Creation	[1]	Creation date/time	Date and time of creation of the business document
Sender Energy Party	Sender Energy Party	[1]	Sender ID	Unique identification of the sender of the document
Recipient Energy Party	Recipient Energy Party	[1]	Recipient ID	Unique identification of the recipient of the document
Aggregated Data per MGA for Settlement Responsible - additions	**Process Energy Content**	[1]		
Reason	Energy Business Process	[1]	Process	**E44** Imbalance Settlement
Business Process Role	Energy Business Process Role	[1]	Process Role	**DDX** Imbalance settlement responsible **DDK** Balance responsible party **DDQ** Balance power supplier
Sector	Energy Industry Classification	[1]	Industry	**23** Electricity supply industry
Aggregated Data per MGA for Settlement Responsible	**Payload Energy Time Series**	[1..*]		

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Identification	Identification	[1]	Time series ID	Unique ID of the Time Series (unique over time for the sender in question) **Note:** The maximum length of the ID is 35 characters.
Registration Date Time	Registration Date Time	[1]	Registration Date Time	As an intermediate solution, the Document Date (Creation) may be mapped to the Registration Date Time
	Observation Period time Series Period	[1]		
Resolution	Resolution Duration	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Observation period	Start	[1]	Start date/time	Date and time for the start of the time series
	End	[1]	End date/time	Date and time for the end of the time series
	Balance Responsible Involved Energy Party	[0..1]		**Dependent:** The Balance Responsible Party is optional.
Balance Responsible Party	Identification	[1]	BRP ID	Unique identification of the Balance Responsible Party
	Balance Supplier Involved Energy Party	[1]		***Note: This element is an extension to the ebIX® specifications***
Balance Supplier	Identification	[1]	BS ID	Unique identification of the Energy Supplier
	Product Included Product Characteristics	[1]		
Product Identifier	Identification	[1]	Product	**8716867000030** Energy active
Product Measure Unit	Unit Type	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments	
	MP Detail Measurement Metering Point Characteristics	[1]			
Metering Point Type	Metering Point Type	[1]	MP type	**E18**	Production
Settlement Method	Settlement Method Type	[1]	Settlement Method	**E02**	Non-profiled
Business Type	Business Type	[1]	Business Type code	**A01**	Production
Asset Type	Asset Type	[0..1]	Asset Type code[3]	**A05** **B14** **B16** **B18** **B19** **B20** **B25** **B31** **B37** **Z04** **Z05** **Z06** **Z07**	Load (replaces **Z07**) Nuclear Solar Wind offshore Wind onshore (replaces **Z05**) Other production Energy storage Hydro unspecified (replaces **Z06**) Thermal unspecified (replaces **Z04**) Thermal Wind Hydro Consumption
Production Type	Production Type	[0..1]	Production Type code	**Z01** **Z02**	Normal Minor
Metering Grid Area	**Metering Grid Area Used Domain Location**	[1]			
Identifier	Identification	[1]	MGA ID	Unique identification of the Metering Grid Area	
Observation	**Observation Interval Observation Period**	[1..*]			
Position	Sequence	[1]	Sequence number	Sequence number of the observation in the time series	
	Observation Detail Energy Observation	[1]			
Quantity	Energy Quantity	[1]	Quantity	The quantity in question **Note:**	

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[3] The "**Znn** codes" will be valid one year after eSett have announcement its removal, approximately until the end of 2025. In the transition period eSett will continue using "**Znn** codes".

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
				• The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh
Quantity Quality	Quantity Quality	[0..1]	Quality	**21** Temporary **56** Estimated, approved for billing **Note:** • The default Quantity Quality is *"Metered"*, i.e. Quantity Quality is only used if ≠ "Metered". • A time series with aggregated values based on time series on a MP level where one or more observations has a "Quantity Missing Indicator = **true"** (Does not exist) shall use the quantity quality **21** (Temporary)

Table 9: Attribute usage: NEG (ebIX® based) Aggregated Data per MGA for Settlement Responsible (E31, E44) - production

5.3.3 Dependency matrix: Types of aggregated metered data for production metering points

Description	Settlement method	Business type	Asset type[4]	Production type
Metered production	**E02** Non-Profiled	**A01** Production	**A05** Load (replaces **Z07**) **B14** Nuclear **B16** Solar **B18** Wind offshore **B19** Wind onshore (replaces **Z05**) **B20** Other production **B25** Energy storage **B31** Hydro unspecified (replaces **Z06**) **B37** Thermal unspecified (replaces **Z04**) **Z04** Thermal **Z05** Wind **Z06** Hydro **Z07** Consumption	**Z01** Normal **Z02** Minor

Table 10: Dependency matrix: Types of aggregated metered data for production metering points

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[4] The "**Znn** codes" will be valid one year after eSett have announcement its removal, approximately until the end of 2025. In the transition period eSett will continue using "**Znn** codes".

5.4 NEG (ebIX® based) Aggregated Data Per Neighbouring Grid For Settlement Responsible (E31, E44)

The NEG (ebIX® based) document *Aggregated Data Per Neighbouring Grid* is used for sending aggregated metered data from exchange Metering Points to the Imbalance settlement Responsible. The time series are aggregated for each combination of two Metering Grid Areas where there can be exchanges.

The NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44) is documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [2].

5.4.1 Class diagram: NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)
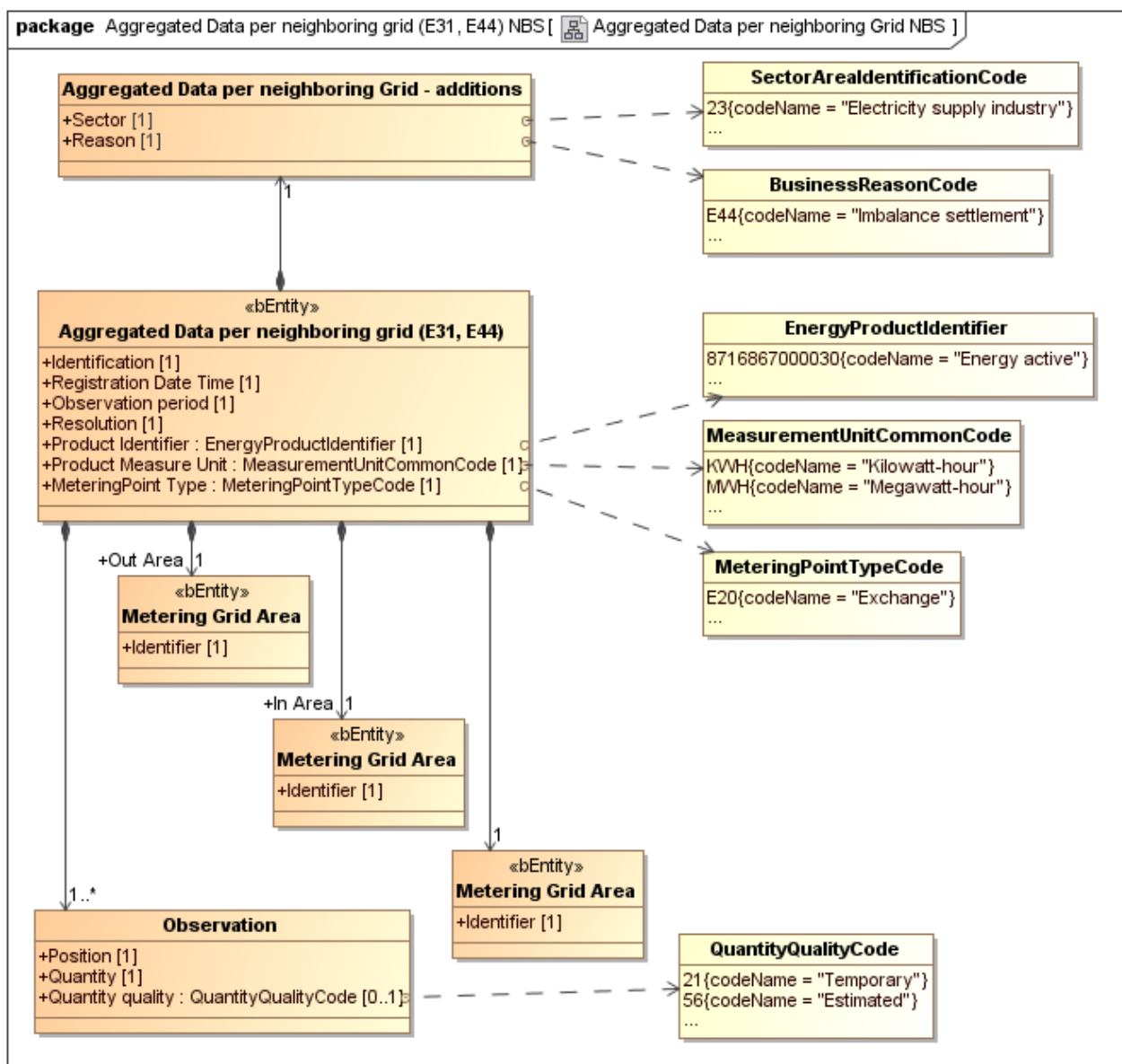
Figure 27: Class diagram: NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

Comments to the diagram:

- The document has an *In Area* (Metering Grid Area) and an *Out Area* (Metering Grid Area) defining the direction of the flow. In addition there is a *Metering Grid Area*, identifying the responsible DSO.
- There is only one time series for each exchange, i.e. netted values are exchanged.

The document is used in the following exchanges:

- **Table 3:** NBS metering and settlement phase documents:
  - 1.7, Aggregated metered data from exchange Metering Points between MGAs

5.4.2 Attribute usage: NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Header	**Header**	[1]		
Identification	Identification	[1]	Document ID	Unique identification of the business document. **Note:** The maximum length of the ID is 35 characters.
Document Type	Document Type	[1]	Document type	**E31** Aggregate metered data from the Metered Data Aggregator, Local
Creation	Creation	[1]	Creation date/time	Date and time of creation of the business document.
Sender Energy Party	Sender Energy Party	[1]	Sender ID	Unique identification of the sender of the document.
Recipient Energy Party	Recipient Energy Party	[1]	Recipient ID	Unique identification of the recipient of the document.
Aggregated Data per Neighbouring Grid - additions	**Process Energy Content**	[1]		
Reason	Energy Business Process	[1]	Process type	**E44** Imbalance Settlement
	Energy Business Process Role	[1]	Process role	**DDX** Imbalance Settlement Responsible
Sector	Energy Industry Classification	[1]	Industry	**23** Electricity supply industry
	Payload Energy Time Series	[1..*]		
Identification	Identification	[1]	Time series ID	Unique ID of the Time Series (unique over time for the sender in question). **Note:** The maximum length of the ID is 35 characters.

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Registration Date Time	Registration Date Time	[1]	Registration Date Time	As an intermediate solution, the Document Date (Creation) may be mapped to the Registration Date Time.
Aggregated Data per Neighbouring Grid	**Observation Period time Series Period**	[1]		
Resolution	Resolution Duration	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Observation period	Start	[1]	Start date/time	Date and time for the start of the time series.
	End	[1]	End date/time	Date and time for the end of the time series.
	Product Included Product Characteristics	[1]		
Product Identifier	Identification	[1]	Product	**8716867000030** Energy active
Product Measure Unit	Unit Type	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
	MP Detail Measurement Metering Point Characteristics	[1]		
Metering Point Type	Metering Point Type	[1]	MP type	**E20** Exchange
Metering Grid Area	**Metering Grid Area Used Domain Location**	[1]		
Identifier	Identification	[1]	MGA ID	Unique identification of the Metering Grid Area. The ID of the MGA responsible for metering the exchange.

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
In Area / Metering Grid Area on	**In Area Used Domain location**	[1]		
Identifier	Identification	[1]	MGA ID	One MGA in the MGA exchanges
Out Area / Metering Grid Area	**Out Area Used Domain location**	[1]		
Identifier	Identification	[1]	MGA ID	The other MGA in the MGA exchanges
Observation	**Observation Interval Observation Period**	[1..*]		
Position	Sequence	[1]	Sequence number	Sequence number of the observation in the time series
	Observation Detail Energy Observation	[1]		
Quantity	Energy Quantity	[1]	Quantity	The quantity in question Netted values are exchanged. The flow from Out Area to In Area will be reported as positive quantities, while the opposite direction will be reported as negative quantities (with a leading minus sign). The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh
Quantity Quality	Quantity Quality	[0..1]	Quality	**21** Temporary **56** Estimated, approved for billing • The default Quantity Quality is *"Metered"*, i.e. Quantity Quality is only used if ≠ "Metered". • A time series with aggregated values based on time series on a MP level where one or more observations has a "Quantity Missing Indicator = **true"** (Does not exist) shall use the quantity quality **21** (Temporary)

Table 11: NEG (ebIX® based) Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

5.5 NEG Confirmation of Aggregated Data Per Neighbouring Grid From Settlement Responsible (A07/A08, Z44)

The Imbalance settlement Responsible will send the NEG document *Confirmation of Aggregated Data Per Neighbouring Grid* as confirmation of received *NEG (ebIX® based) Aggregated Data per Neighbouring Grid* from the DSOs (see chapter 5.4).

The NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44) is a Nordic document described by NEG (Nordic Ediel Group).

5.5.1 Class diagram: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)
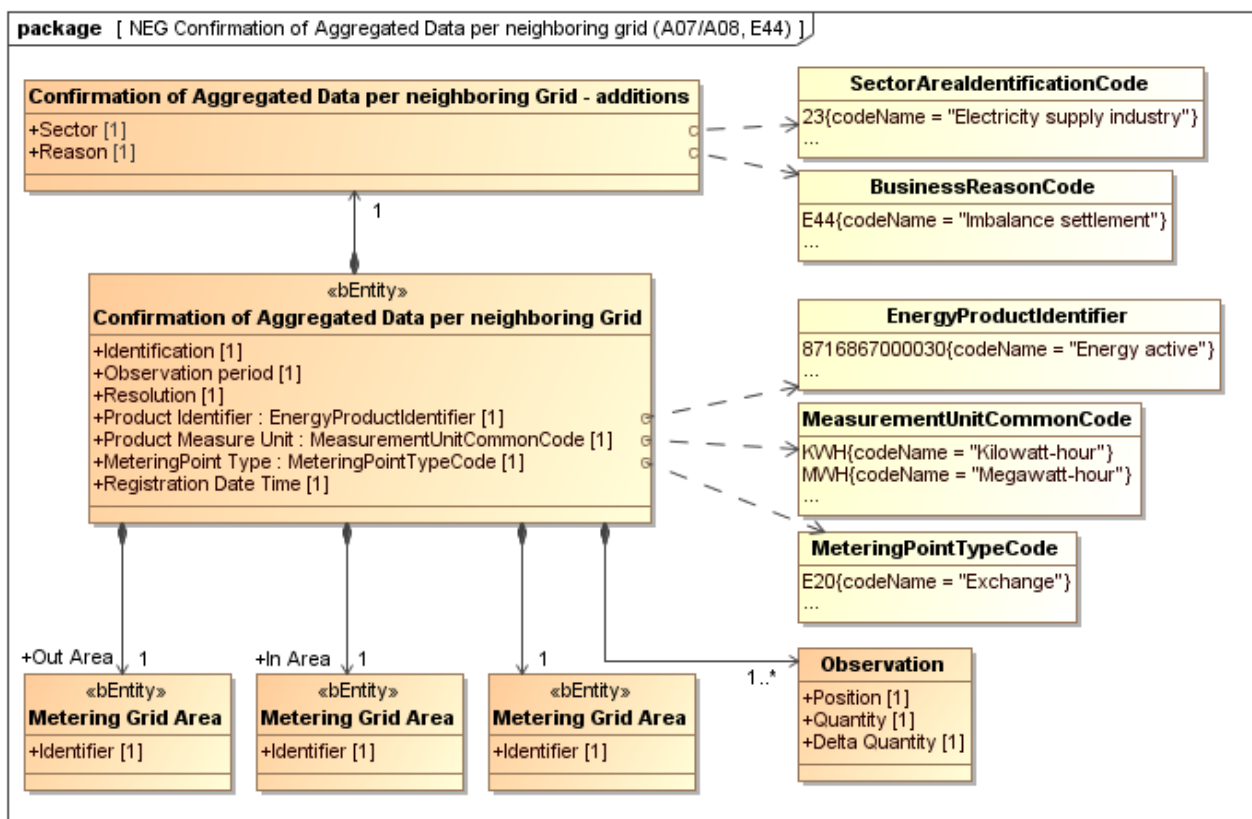
Figure 28: Class diagram: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

Comments to the diagram:

- The document has an *In Area* (Metering Grid Area) and an *Out Area* (Metering Grid Area) defining the direction of the flow. In addition there is a *Metering Grid Area*, identifying the responsible DSO.
- There is only one time series for each exchange, with two elements for each observation, i.e. a Quantity and a Delta quantity

The document is used in the following exchanges:
- **Table 3:** NBS metering and settlement phase documents:
  - 1.8, MGA exchange confirmation report

5.5.2 Attribute usage: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Header	**Header**	[1]		
Identification	Identification	[1]	Document ID	Unique identification of the business document **Note:** The maximum length of the ID is 35 characters.
Document Type	Document Type	[1]	Document type	**A07** Intermediate confirmation report **A08** Final confirmation report
Creation	Creation	[1]	Creation date/time	Date and time of creation of the business document
Sender Energy Party	Sender Energy Party	[1]	Sender ID	Unique identification of the sender of the document
Recipient Energy Party	Recipient Energy Party	[1]	Recipient ID	Unique identification of the recipient of the document
Confirmation of Aggregated Data per Neighbouring Grid - additions	**Process Energy Content**	[1]		
Reason	Energy Business Process	[1]	Process type	**E44** Imbalance Settlement
	Energy Business Process Role	[1]	Process role	**DEA** Metered Data Aggregator
Sector	Energy Industry Classification	[1]	Industry	**23** Electricity supply industry
	Payload Energy Time Series	[1..*]		
Identifier	Identification	[1]	Time series ID	Unique ID of the Time Series (unique over time for the sender in question) **Note:** The maximum length of the ID is 35 characters.
Registration Date Time	Registration Date Time	[1]	Registration Date Time	As an intermediate solution, the Document Date (Creation) may be mapped to the Registration Date Time

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Confirmation of Aggregated Data per Neighbouring Grid	**Observation Period time Series Period**	[1]		
Resolution	Resolution Duration	[1]	Resolution	The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Observation period	Start	[1]	Start date/time	Date and time for the start of the time series.
	End	[1]	End date/time	Date and time for the end of the time serie.s
	Product Included Product Characteristics	[1]		
Product Identifier	Identification	[1]	Product	**8716867000030** Energy active
Product Measure Unit	Unit Type	[1]	**KWH** or **MWH**	KWH kWh **MWH** MWh
	MP Detail Measurement Metering Point Characteristics	[1]		
Metering Point Type	Metering Point Type	[1]	MP type	**E20** Exchange
Metering Grid Area	**Metering Grid Area Used Domain Location**	[1]		
Identifier	Identification	[1]	MGA ID	Unique identification of the Metering Grid Area responsible for metering the exchange.
In Area / Metering Grid Area	**In Area Used Domain location**	[1]		
Identifier	Identification	[1]	MGA ID	One MGA in the MGA exchanges.

Attribute (class diagram)	Attribute (XML schema)	Cl.	Content	Descriptions and comments
Out Area / Metering Grid Area	**Out Area Used Domain location**	[1]		
Identifier	Identification	[1]	MGA ID	The other MGA in the MGA exchanges.
Observation	**Observation Interval Observation Period**	[1..*]		
Position	Sequence	[1]	Sequence number	Sequence number of the observation in the time series.
	Observation Detail Energy Observation	[1]		
Quantity	Energy Quantity	[1]	Quantity	The result from the matching process. The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.
Delta Quantity	Delta Quantity	[1]	Quantity	The delta quantity in question. The delta quantity is the difference between the quantities reported from the two DSOs where an energy exchange has taken place. Unless there are errors in the original reported exchanged quantities from the two DSOs, the delta quantity will be zero. Netted values are exchanged. The flow from Out Area to In Area will be reported as positive quantities, while the opposite direction will be reported as negative quantities (with a leading minus sign). The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh

Table 12: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

5.6   NEG ESP Energy Account Report Document (EAR)

The *NEG ESP Energy Account Report Document (EAR)* is sent from the Imbalance settlement Responsible to the Balance Responsible Parties (BRP) to inform the BRPs of the result of the imbalance settlement. It is also sent from the Imbalance settlement Responsible to the Metered Data Aggregator (DSO) to give the quality assurance of area balance (MGA imbalance) per MGA.

The *NEG ESP Energy Account Report Document (EAR)* is a "namespaced version" of the *ENTSO-E ESP Energy Account Report Document version 1-2 (EAR)* documented in the ENTSO-E Settlement Process (ESP) Implementation Guide, see [1].

5.6.1 Class diagram: NEG ESP Energy Account Report Document (EAR)

[NEG ESP Energy Account Report document, v1.0]

«BusinessEntity»
EnergyAccountReport

+DocumentIdentification : IdentificationType
+DocumentVersion : VersionType
+DocumentType : MessageType
+DocumentStatus : StatusType
+ProcessType : ProcessType
+ClassificationType : ClassificationType
+SenderIdentification : PartyType
+SenderRole : RoleType
+ReceiverIdentification : PartyType
+ReceiverRole : RoleType
+DocumentDateTime : MessageDateTimeType
+AccountingPeriod : TimeIntervalType
+Domain : AreaType [0..1]

1..*

«BusinessEntity»
AccountTimeSeries

+SendersTimeSeriesIdentification : IdentificationType
+BusinessType : BusinessType
+Product : EnergyProductType
+ObjectAggregation : ObjectAggregationType
+Area : AreaType
+Party : PartyType [0..1]
+AgreementIdentification : IdentificationType [0..1]
+MeasurementUnit : UnitOfMeasureType
+Currency : CurrencyType [0..1]
+AccountingPoint : AreaType [0..1]

1..*

«BusinessEntity»
Period

+TimeInterval : TimeIntervalType
+Resolution : ResolutionType

1..*

«BusinessEntity»
AccountInterval

+Pos : PositionType
+InQty : QuantityType
+OutQty : QuantityType
+SettlementAmount : AmountType [0..1]

Figure 29: Class diagram: NEG ESP Energy Account Report Document (EAR)

The document is used in the following exchanges:

- **Table 3:** NBS metering and settlement phase documents:
  - 3.6, Result of the balance settlement (Business Type A17, B14 and B15)
  - 3.7, Result of the balance settlement – MGA Imbalance (Business Type B29)

5.6.2 Attribute usage: NEG ESP Energy Account Report Document (EAR)

EAR Attribute	Cl.	Content	Descriptions and comments
Energy Account Report Document			
Document Identification	[1]	Document ID	Unique identification of the document **Note:** The maximum length of the ID is 35 characters.
Document Version	[1]	Version	Fixed 1
Document Type	[1]	Document Type	**A12** Imbalance report **A56** Compensation Program Schedule
Document Status	[1]	Document Status	**A01** Intermediate **A02** Final
Process Type	[1]	Process Type	**A06** Imbalance settlement **A27** Reserve resource process
Classification Type	[1]	Classification Type	**A02** Summary type
Sender Identification	[1]	SO or MO ID	Unique identification of the sender
Sender role	[1]	Sender role	**A05** Imbalance Settlement Responsible
Receiver Identification	[1]	ISR ID	Unique identification of the receiver
Receiver role	[1]	Receiver role	**A08** Balance Responsible Party **A09** Metered Data Aggregator **A46** Balancing Service Provider (BSP)
Document date and time	[1]	Creation date time	The time stamp of the calculation
Accounting period	[1]	Start and end date of the time series	The beginning and ending date and time of the period covered
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
Account 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) **Note:** The maximum length of the ID is 35 characters.

EAR Attribute	Cl.	Content	Descriptions and comments
Business Type	[1]	Business Type	**A17** Settlement deviation **A23** Balance Management **A95** Frequency containment reserve **A96** Automatic frequency restoration reserve **A97** Manual frequency restoration reserve **B14** Production deviation **B15** Consumption deviation **B29** MGA imbalance **C26** Frequency Containment Reserve-Normal (FCR-N) **C27** Frequency Containment Reserve-Disturbance (FCR-D) **Z85** Fast frequency reserve
Product	[1]	Product	**8716867000030** Active energy
Object Aggregation	[1]	Aggregation	**A01** Area
Area	[1]	BZ or MGA ID	The Bidding Zone or Metering Grid Area to which the settlement result belongs
Party	[1]	BRP ID	The Balance Responsible Party for which the imbalance settlement is calculated
Measurement Unit	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
Currency	[0..1]	Currency	ISO three digit currency code, e.g.: **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona Not used for Business type "**B29 =** MGA imbalance"
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 number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position

EAR Attribute	Cl.	Content	Descriptions and comments
In Qty	[1]	In Quantity	The quantity of the product that enters the area for the position within the account interval in question
			The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh
			NBS: BRP selling quantity.
Out Qty	[1]	Out Quantity	The quantity of the product that leaves the area. For the position within the account interval in question
			The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh
			NBS: BRP buying quantity.
Settlement Amount	[0..1]	Amount	The amount due for the account interval in question.
			This information defines the settlement amount taking into consideration the in and out quantities and the pricing scheme based on local market rules.
			A negative value indicates that the settlement amount is due by the party in question (party to be debited). If the amount is positive it is due by the imbalance settlement responsible (party to be credited).
			Not used for Business type "**B29 =** MGA imbalance"

Table 13: Attribute usage: NEG ESP Energy Account Report Document (EAR)

5.6.3 Dependency matrix: NEG ESP Energy Account Report Document (EAR)

Document type	Process type	Receiver role	Business Type
A12 Imbalance report	**A06** Imbalance settlement	**A08** Balance Responsible Party	**A17** Settlement deviation **B14** Production deviation **B15** Consumption deviation
		A08 Balance Responsible Party **A09** Metered Data Aggregator	**B29** MGA imbalance
A12 Imbalance report	**A27** Reserve resource process	**A08** Balance Responsible Party **A46** Balancing Service Provider (BSP)	**A23** Balance Management
A56 Compensation Program Schedule	**A06** Imbalance settlement	**A08** Balance Responsible Party **A46** Balancing Service Provider (BSP)	**A95** Frequency containment reserve **A96** Automatic frequency restoration reserve **A97** Manual frequency restoration reserve **C26** Frequency Containment Reserve-Normal (FCR-N) **C27** Frequency Containment Reserve-Disturbance (FCR-D) **Z85** Fast frequency reserve

Table 14: Dependency matrix: NEG ESP Energy Account Report Document (EAR)

5.7 ENTSO-E ESS Schedule Document

The ENTSO-E *ESS Schedule Document* is used for market schedules. The document is used to send Bilateral trade reports from the Balance Responsible Parties to the Imbalance settlement Responsible.

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

5.7.1 Class diagram: ENTSO-E ESS Schedule Document
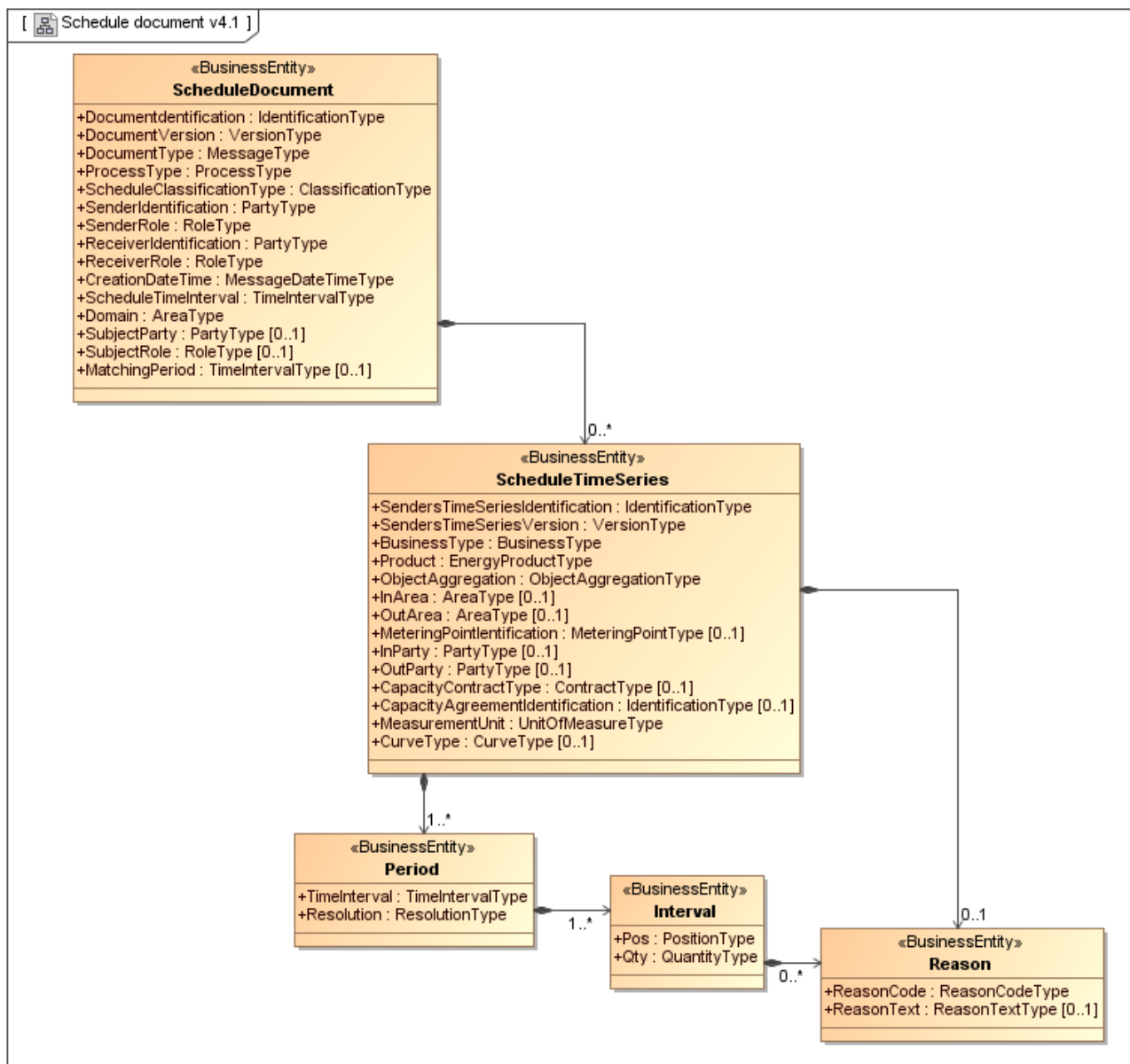
Figure 30: Class diagram: ENTSO-E ESS Schedule Document

The document is used in the following exchanges
- **Table 2:** NBS scheduling phase documents:
    - 2.0, BRPs and Traders trade in Day-ahead and Intraday
    - 2.1, Day-ahead and Intraday flow (exchange between Bidding Zones)
    - 2.2, Day-ahead and Intraday flow (exchange between Bidding Zones)
    - 3.0, Bilateral trade report (trade except Market Operator trade)

5.7.2   Attribute usage: ENTSO-E ESS Schedule Document, Bilateral Trade

ESS Schedule Document Attribute	Cl.	Content	Descriptions and comments
Schedule Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document **Note:** The maximum length of the ID is 35 characters.
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[5]
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) **Note:** The maximum length of the ID is 35 characters.

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[5] The code "**Z05** Bilateral trade" will be valid one year after eSett have announcement its removal, approximately until the end of 2025. In the transition period eSett will continue using **Z05**.

ESS Schedule Document Attribute	Cl.	Content	Descriptions and comments
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.
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.
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 number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	Position

ESS Schedule Document Attribute	Cl.	Content	Descriptions and comments
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 15: Attribute usage: ENTSO-E ESS Schedule Document, Bilateral Trade

5.7.3 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** **Z17**	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **Z15** External trade (Trade outside the Capacity Calculation Region) **Z17** Intraday auction NSL process (NSL = North Sea Link)
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.**

ESS Attribute	Cl.	Content	Descriptions and comments
Product	[1]	8716867000030	**8716867000030** Active energy
Object Aggregation	[1]	**A01**	**A01** Area
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 16: Attribute usage: ENTSO-E ESS Schedule document, Day-ahead and Intraday trade

5.7.4 Dependency matrix: ENTSO-E ESS Schedule document, Day-ahead and Intraday trade

Document Type [1]	Process Type [1]		Business Type [1]		Market (in eSett)
A01 Balance responsible schedule	**A01**	Day-ahead	**A08** Net internal trade		Day-ahead
	A19	Intraday accumulated			Intraday Continuous
	A02	Intraday incremental			Intraday Auctions
	Z15	External trade	**A06** External trade without explicit capacity		Day-ahead NSL
	Z17	Intraday auction NSL process (NSL = North Sea Link)			Intraday Auction NSL

5.7.5   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** **Z17**	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **Z15** External trade (Trade outside the Capacity Calculation Region) **Z17** Intraday auction NSL process (NSL = North Sea Link)
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

ESS Attribute	Cl.	Content	Descriptions and comments
Out Area	[1]	**BZ** 2 ID	The other Bidding Zone
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 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 17: Attribute usage: ENTSO-E ESS Schedule document, Day-ahead/intraday flow

5.7.6 Dependency matrix: ENTSO-E ESS Schedule document, Day-ahead/intraday flow

Document Type [1]	Process Type [1]	Business Type [1]	Market (in eSett)
A55 Summarised Market Schedule	**A01** Day-ahead	**A66** Energy flow **B67** DC flow with losses **B68** DC flow without losses	Day-ahead
	A19 Intraday accumulated	**A66** Energy flow	Intraday Continuous
	A02 Intraday incremental		Intraday Auctions
	Z15 External trade		Day-ahead NSL
	Z17 Intraday auction NSL process (NSL = North Sea Link)		Intraday Auction NSL

5.8   ENTSO-E ESS Confirmation Report

The ENTSO-E *ESS Confirmation Report document* is used for confirmation of market schedules. The Imbalance settlement Responsible use the document to confirm Bilateral trade reports from the Balance Responsible Parties. The *ENTSO-E ESS Confirmation Report* is documented in the *ENTSO-E Scheduling System (ESS) Implementation Guide*, see [1].

5.8.1   Class diagram: ENTSO-E ESS Confirmation Report
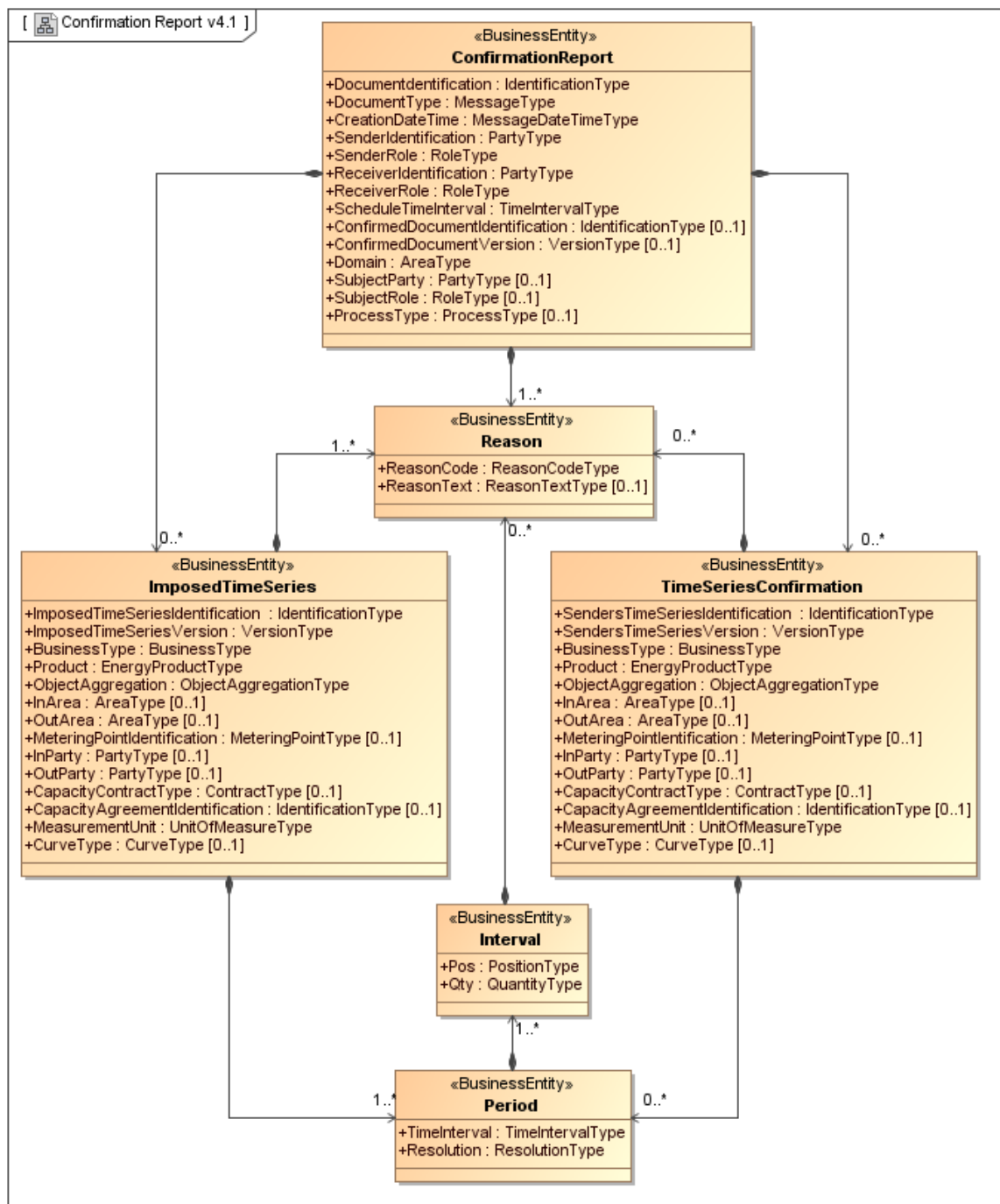
Figure 31: Class diagram: ENTSO-E ESS Confirmation Report

The document is used in the following exchanges:
- *Table 2: NBS scheduling phase documents):*
  - 3.1, Bilateral trade confirmation report
  - 5.1, TSO could report back if bilateral trade inconsistency

5.8.2 Rules for usage of: ENTSO-E ESS Confirmation Report

5.8.2.1 Link between ESS Schedule Time Series and ESS Confirmation Reports Time Series

When eSett is returning ESS Conformation Reports, which require a reference to one unique ESS Schedules Time Series ID, there will be separate ESS Confirmation Reports Time Series for each received ESS Schedule Time Series. This may in worst cases result in a separate ESS Confirmation Report for each observation of the day. Note that this only is an issue for the ESS Time Series Confirmation, where a reference to the ESS Schedule Time Series is required. The ESS Imposed Time Series in the ESS Confirmation Report is not referencing any received ESS Schedule Time Series and can contain all 24 hours of the day.

The settlement structure management (e.g. retailer balance responsibility) will be complied with national legislations. The settlement structures will be managed in:

- Eastern European Time (EET)/Eastern European Summer Time (EEST) in Finland
- Central European Time (CET) the whole year in Sweden
- Central European Time (CET)/Central European Summer Time (CEST) in Norway

5.8.2.2 Time Series Confirmation vs Imposed Time series

eSett will always return a Time Series Confirmation to the party that has sent an ESS schedule document and an imposed time series to the counterpart.

5.8.2.3 Time Series Identification

The Time Series Identification shall be unique over time for the sender in question. Note that this is a Nordic rule that is stricter than what is stated in the ESS implementation guide from ENTSO-E [1], which only requires the Time Series Identification to be unique within the document.

5.8.3 Attribute usage: ENTSO-E ESS Confirmation Report

ESS Confirmation Report Attribute	Cl.	Content	Descriptions and comments
ESS Confirmation Report	[1]		
Document Identification	[1]	Document ID	Unique identification of the document **Note:** The maximum length of the ID is 35 characters.
Document Type	[1]	**A07** or **A08**	**A07** Intermediate confirmation report **A08** Final confirmation report
Creation Date Time	[1]	Creation date/time	Date and time for creation of the document
Sender Identification	[1]	ISR ID	The unique identification of the Imbalance Settlement Responsible, who is sending the document

ESS Confirmation Report Attribute	Cl.	Content	Descriptions and comments
Sender Role	[1]	**A05**	**A05** Imbalance Settlement Responsible
Receiver Identification	[1]	BRP ID	The unique identification of the Balance Responsible Party who is receiving the document
Receiver Role	[1]	**A08**	**A08** Balance responsible party
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 document containing the schedule
Domain	[1]	Nordic Market Area ID	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
Process Type	[1]	**A59** or **Z05**	**A59** Internal trade reporting **Z05** Bilateral trade[6]
Reason (Confirmation Report level)	[1]		
Reason Code	[1]	Reason Code	**A06** Schedule accepted **A07** Schedule partially accepted *A06* is used when there are no changes to a received time series, while *A07* is used when there are changes to a received schedule or when sending imposed time series to the counterparty
Time Series Confirmation	[0..*]		At least one **Time Series Confirmation** or one **Imposed time series** must be present in the ESS confirmation report.
Senders Time Series Identification	[1]	Original Time Series ID	Sender's identification of the time series instance (the same as in the referenced ESS Schedule Document) **Note:** The maximum length of the ID is 35 characters. **Note:** The confirmation report contains two time series for each trade (one with the quantity to be used in the settlement, and another with the delta value). Both time series reference the same time series from the ESS schedule document, hence the Original Time Series ID (Senders Time Series Identification) will be the same.
Senders Time Series Version	[1]	Version	Fixed 1
Business Type	[1]	**A08 or Z64**	**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)). **Z64** Internal trade difference, within a Bidding Zone, i.e. the difference between trades reported from an out party (seller) and an in party (buyer). The internal

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[6] The code "**Z05** Bilateral trade" will be valid one year after eSett have announcement its removal, approximately until the end of 2025. In the transition period eSett will continue using **Z05**.

ESS Confirmation Report Attribute	Cl.	Content	Descriptions and comments
			trade difference is the delta value between what is reported by the two Balance Responsible Parties.
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.
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	The Balance Responsible Party acting as the buyer in the bilateral trade.
Out Party	[1]	BRP 2	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.
Measurement Unit	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
Reason (Time Series Confirmation level)	[1]		
Reason Code	[1]	Reason Code	**A85** Confirmation without adjustment (time series have been matched without change) **A86** Confirmation with adjustment (time series have been modified)
Imposed time series	[0..*]		At least one **Time Series Confirmation** or one **Imposed time series** must be present in the ESS confirmation report.
Imposed Time Series Identification	[1]	Original Time Series ID	Unique identification of the Time Series (unique over time for the sender in question (eSett)) **Note:** The maximum length of the ID is 35 characters.
Imposed Time Series Version	[1]	Version	Fixed 1
Business Type	[1]	**A08** or **Z64**	**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)). **Z64** Internal trade difference, within a Bidding Zone, i.e. the difference between trades reported from an out party (seller) and an in party (buyer). The internal trade difference is the delta value between what is reported by the two Balance Responsible Parties.
Product	[1]	**8716867000030**	**8716867000030** Active energy
Object Aggregation	[1]	**A01**	**A01** Area

ESS Confirmation Report Attribute	Cl.	Content	Descriptions and comments
In Area	[1]	BZ ID	The Bidding Zone where the trade has taken place.
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]		For Business type **A08**: • The Balance Responsible Party acting as the buyer in the bilateral trade. For business type **Z64** (delta value): • The Balance Responsible Party having to buy energy to get the trade in balance
Out Party	[1]	BRP 2	For Business type **A08**: • The Balance Responsible Party acting as the seller in the bilateral trade. For business type **Z64** (delta value): • The Balance Responsible Party having to sell energy to get the trade in balance
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. The Bilateral Trade ID (Capacity Agreement Identification) is metadata for trade on supplier level. The BRP sends bilateral trade with InParty = BRP1 and OutParty = BRP2. If the trade is between two suppliers, then the Bilateral Trade ID is added to the message. The Bilateral Trade ID is generated by eSett when the BRP enters (structures) which trade relations (on a supplier level) this has balance responsibility for. The suppliers can then be identified by the Bilateral Trade ID.
Measurement Unit	[1]	**KWH** or **MWH**	**KWH** kWh **MWH** MWh
Reason (Imposed time series level)	[1]		
Reason Code	[1]	Reason Code	**A30** Imposed Time series from nominated party's time series
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 number of years, nM number of months, nD number of days.

ESS Confirmation Report Attribute	Cl.	Content	Descriptions and comments
			The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds.
			In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**
Interval	[1..*]		
Pos	[1]	Position	The relative position of a period within a time interval
			Note: There can be gaps in the sequence of the Position element, i.e. to be able to confirm only single observations of a day.
Qty	[1]	Quantity	The quantity of the product for the position within the time interval in question.
			The direction from Out Party (seller) to In Party (buyer) is positive, while the opposite direction is negative (with minus signs))
			Rules regarding the delta value: • The delta value is defined as: $\Delta = \text{Value}_{\text{BRP sale}} - \text{Value}_{\text{BRP purchase}}$ • The latest received value from a party is used in the calculation of the delta value. • If a value is received from only one of the parties in a trade, the delta value is zero. • There are no delta values in the final confirmation report
			The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh
Reason (Interval level)	[0..1]		
Reason Code	[1]	Reason Code	**A43** Quantity increased **A44** Quantity decreased
			Only used for *Reason Code "**A86** Confirmation with adjustment (time series have been modified)"* in *Reason* at *Time Series Confirmation* level. I.e. Not used for Imposed Time Series.

Table 18: Attribute usage: ENTSO-E ESS Confirmation Report

5.9 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].

5.9.1 Class diagram: ENTSO-E ERRP Planned resource schedule
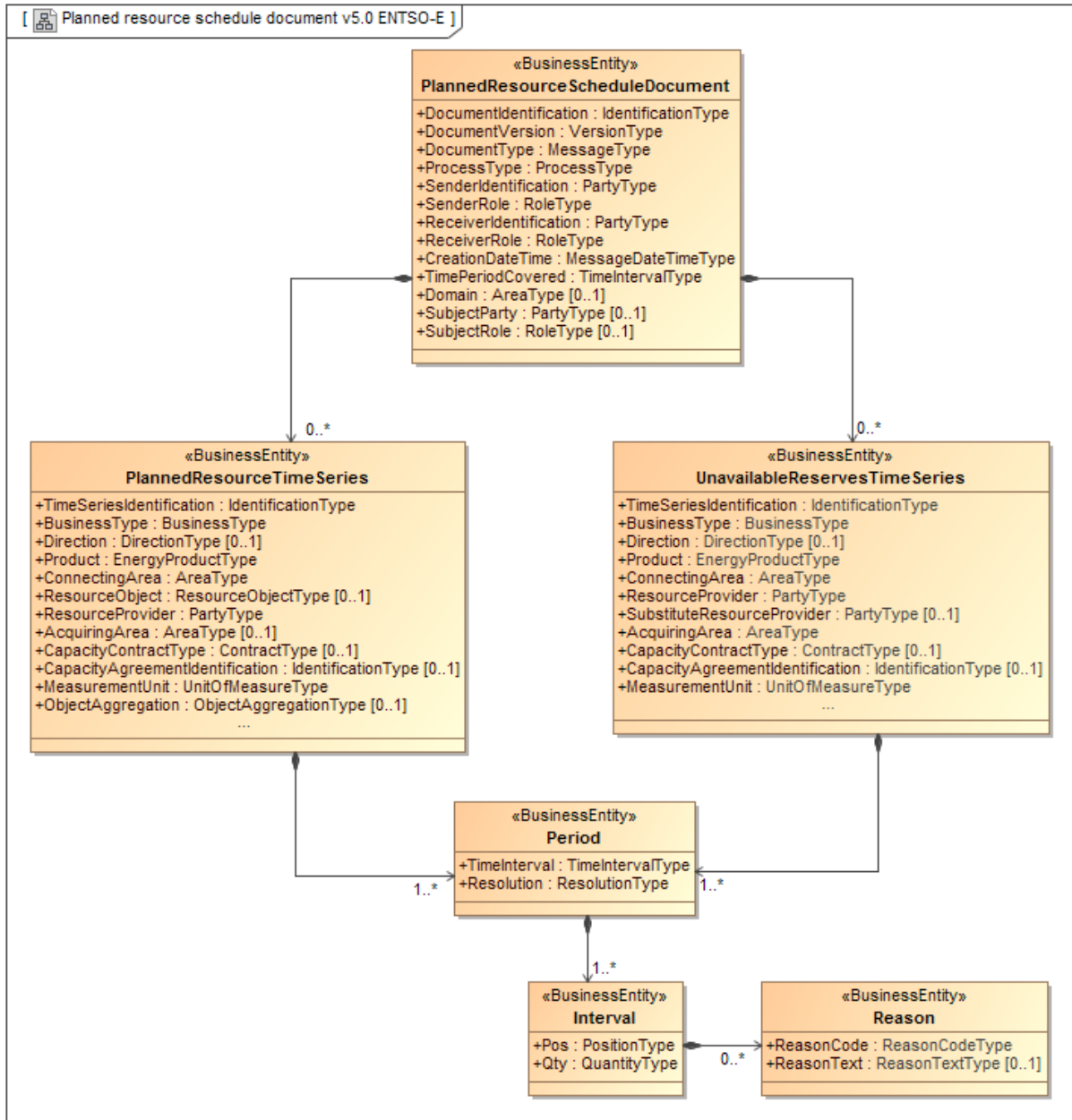
Figure 32: Class diagram: ENTSO-E ERRP Planned resource schedule

The document is used in the following exchanges:
- Overview of information exchange for the NBS scheduling phase, **Table 2:** NBS scheduling phase documents:
  - 4.3, Binding production plans

5.9.2 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

ERRP Planned Resource Schedule Attribute	Cl.	Content	Descriptions and comments
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
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 19: Attribute usage: ENTSO-E ERRP Planned resource schedule

5.10 ENTSO-E CIM Activation document

The ENTSO-E CIM Activation Document is document in the ENTSOE document "Activation document UML model and schema" and part of the IEC standard "62325-451-7: Balancing processes, contextual and assembly models for European style market".

5.10.1 Class diagram: ENTSO-E CIM Activation document contextual model version 6.4
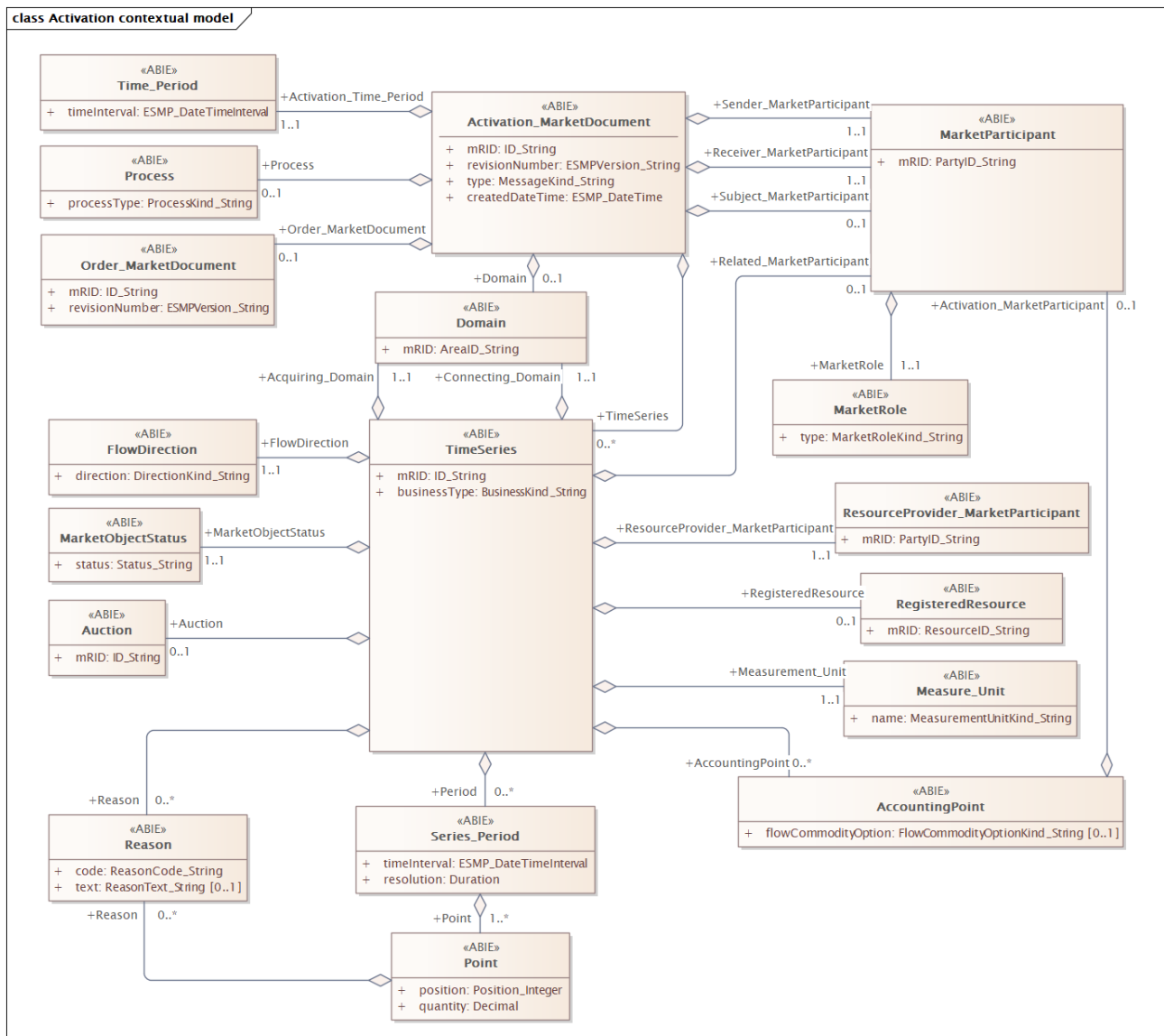
Figure 33: Class diagram: ENTSO-E CIM Activation document contextual model version 6.4

5.10.2   Class diagram: ENTSO-E CIM Activation document assembly model version 6.4

Figure 34: Class diagram: ENTSO-E CIM Activation document assembly model version 6.4

The document is used in the following exchanges:
- **Table 3:** NBS metering and settlement phase documents:
  - 2.0, Delivered balancing services

5.10.3 Attribute usage: ENTSO-E CIM Activation document Document
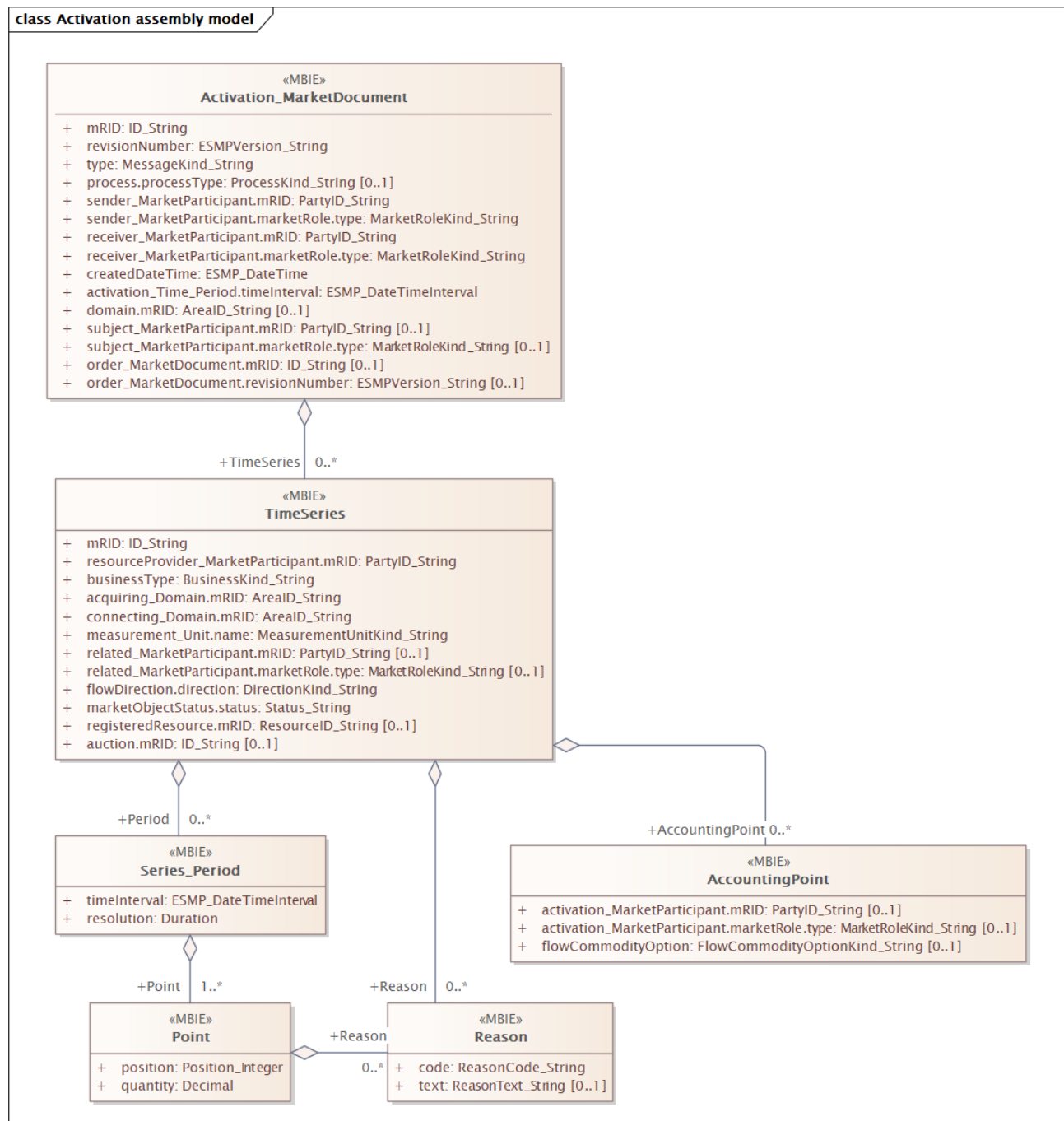
Attribute	Cl.	Code and description
Activation_MarketDocument		
mRID	[1]	Unique identification of the document.

revisionNumber	[1]	Use one of:
		
		    1) Sequence number incrementing by 1 for each update
		    2) Fixed value "1"
		
		Note: If 1) is used, the mRID must be the same for messages in the same sequence.

type	[1]	**A83** Activated balancing quantities
process.processType	[1]	**A16** Realised
sender_MarketParticipant.mRID	[1]	Unique identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A05** Imbalance Settlement Responsible (eSett ID: **44X-00000000004B**) **A09** Metered Data Aggregator **A46** Balancing Service Provider
receiver_MarketParticipant.mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible **A08** Balance Responsible Party **A46** Balancing Service Provider
createdDateTime	[1]	Date and time for creation of the document.
activation_Time_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
domain.mRID	[1]	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area).
subject_MarketParticipant.mRID	[0..1]	Specifies the BSP (**A46**) when a TSO, DSO or someone else is sending on behalf of the BSP
subject_MarketParticipant. marketRole.type	[0..1]	**A46** Balancing Service Provider (BSP)
Time Series	**[1..*]**	
mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question).
resourceProvider_ MarketParticipant.mRID	[1]	The identification of the Balancing Service Provider.
Related_MarketParticipant.mRID	[1]	Unique identification of the party whose resource is activated
Related_MarketParticipant. marketRole.type	[1]	**A08** Balance Responsible Party **A12** Energy Supplier (Retailer)
businessType	[1]	**A95** Frequency containment reserve (FCR) **A96** Automatic frequency restoration reserve (aFRR) **A97** Manual frequency restoration reserve (mFRR) **C26** Frequency Containment Reserve-Normal (FCR-N)

		C27	Frequency Containment Reserve-Disturbance (FCR-D)
		Z85	Fast Frequency Reserve (FFR)
acquiring_Domain.mRID	[1]	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_Domain.mRID	[1]	Unique identification of the Bidding Zone (BZ) or Metering Grid Area (MGA) where the resource is connected.	
measurement_Unit.name	[1]	**KWH** kWh (kilowatt hour)	
		MWH MWh (megawatt hour)	
flowDirection.direction	[1]	**A01**	Up
		A02	Down
marketObjectStatus.status	[1]	**A07**	Activated
		A73	Delta (used for reporting misdelivered quantity, where correction applies to a BRP instead of the BSP, i.e. uses signed values, i.e. will be negative in case of an 'under-delivery' and positive in case of an 'over-delivery'.
registeredResource.mRID	[1]	Regulation object code	
AccountingPoint	**[0..1]**		
flowCommodityOption	[1]	**A17**	Consumption
		A18	Production
Reason (TimeSeries Level)	**1st rep.**		
code	[1]	**Z29**	FCR (Frequency Containment Reserve)
		Z30	aFRR (Frequency Restoration Reserve - Automatic)
		Z31	mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves, Balancing Power)
		Z34	mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves, Quarter regulation)
		Z35	mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves, Special Regulation)
		Z36	Hour Change Regulation
		Z37	Power Transaction
		Z38	TSO Internal Countertrades
		Z39	Day Ahead Production Adjustment
		Z40	Frequency Containment Reserve, Normal operation (FCR-N).
		Z41	Frequency Containment Reserve, Disturbance (FCR-D).
		Z54	Activation by AOF (Activation Optimisation Function)
		Z55	Manual activation not based on AOF
		Z56	Fast Frequency Reserve (FFR)
		Z63	Period shift activation

	2nd rep.	Reason (TimeSeries Level)
code	[0..1]	**Z84** Activation of own resources as Balance Responsible Party/Energy Supplier (Retailer) **Z85** Activation of contracted resources as contractual Balancing Service Provider (no compensation) **Z86** Independent aggregation
Period	**[1..*]**	
timeInterval	[1]	The start and end date and time of the time interval of the period in question.
resolution	[1]	The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Point	**[1]**	
position	[1]	The position of the observation in a time series – Always 1.
quantity	[1]	The quantity for the interval in question. The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh

Table 20: Attribute usage: ENTSO-E CIM Activation document

5.10.4 Dependency matrix: Activation document

Document type	Process type	Business type	Direction	Reason code (1st repetition)	DK	FI	NO	SE
A83 Activated balancing quantities	**A16** Realised	**A95** Frequency containment reserve	**A01** Up **A02** Down	**Z29** FCR (Frequency Containment Reserve)		✓	✓	✓
		Z85 Fast frequency reserve (FFR)	**A01** Up **A02** Down	**Z56** Fast Frequency Reserve (FFR)	✓			✓
		A96 Automatic frequency restoration reserve (aFRR)	**A01** Up **A02** Down	**Z30** aFRR (Frequency Restoration Reserve - Automatic)	✓	✓	✓	✓
				Z54 Activation by AOF (Activation Optimisation Function)	✓	✓	✓	✓
				Z55 Manual activation not based on AOF	✓	✓	✓	✓
		A97 Manual frequency restoration reserve (mFRR)	**A01** Up **A02** Down	**Z31** mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves, Balancing Power)	✓	✓	✓	✓
				Z34 mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves, Quarter regulation)			✓	
				Z35 mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves, Special Regulation)	✓	✓	✓	
				Z36 Hour Change Regulation		✓	✓	
				Z37 Power Transaction		✓		
				Z38 TSO Internal Countertrades		✓		
				Z39 Day Ahead Production Adjustment		✓	✓	✓
				Z63 Period shift activation			✓	
		C26 Frequency Containment Reserve-Normal (FCR-N)	**A01** Up **A02** Down	**Z40** Frequency Containment Reserve, Normal operation (FCR-N).	✓			✓
		C27 Frequency Containment Reserve-Disturbance (FCR-D)	**A01** Up **A02** Down	**Z41** Frequency Containment Reserve, Disturbance (FCR-D).				✓

Table 21: Dependency matrix: Activation document

5.11 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].

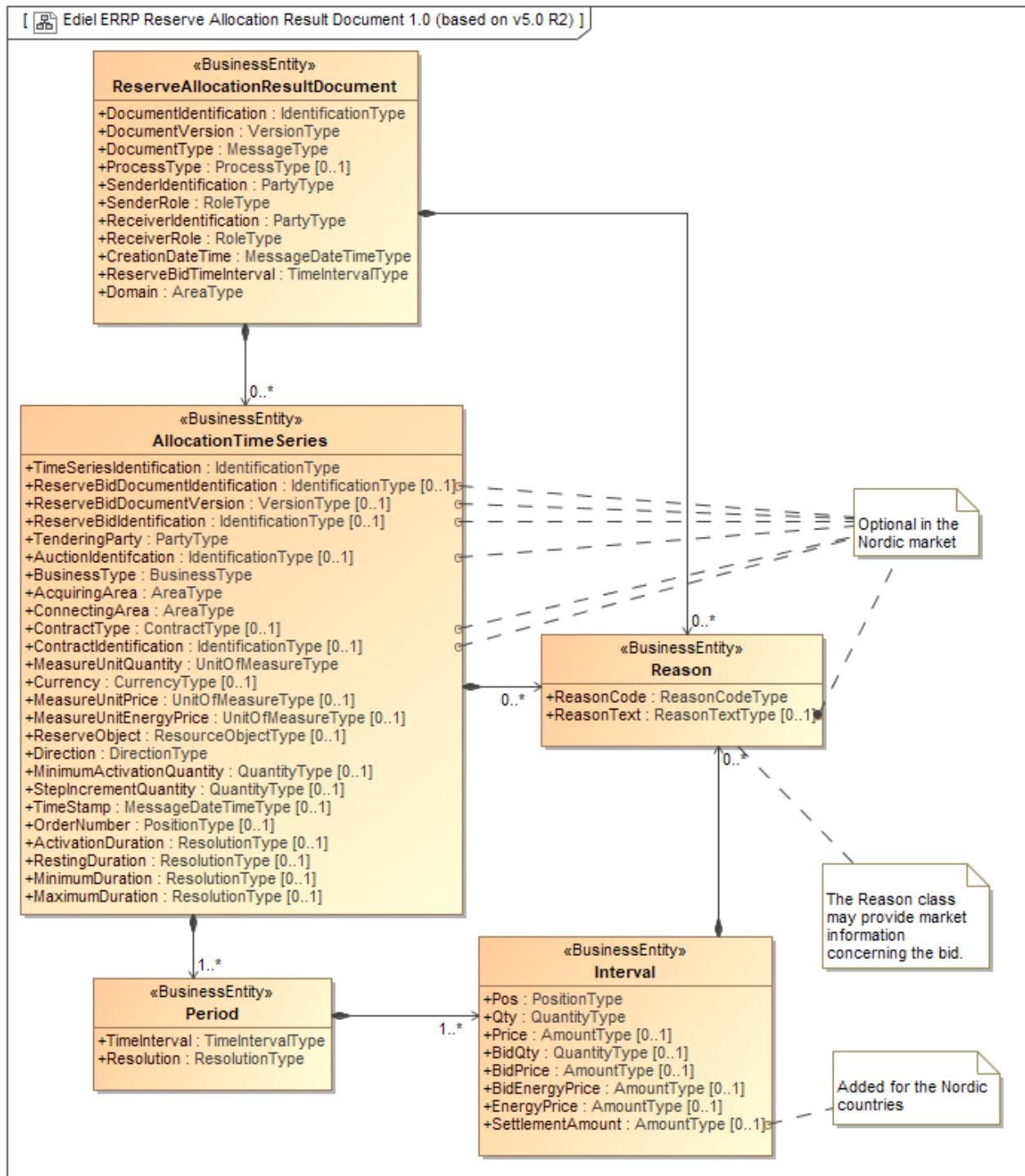### 5.11.1   Class diagram: Ediel ERRP Reserve Allocation Result Document

Figure 35: Class diagram: Ediel ERRP Reserve Allocation Result Document

The document is used in the following exchanges:
- Overview of information exchange for the NBS scheduling phase, **Table 2:** NBS scheduling phase documents:
    - 5.2, Activated trades in reserves markets:
        - Reserves Up
        - Reserves Down
        - Supportive power Sold
        - Supportive power Bought
    - 5.3, Activated trades in reserves markets:
        - Capacities up
        - Capacities down
        - Capacity, no direction
    - 5.5, Reserve capacities (up, down and no direction)
    - 5.6, Reserve capacities (up, down and no direction)

5.11.2 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.

5.11.3 Attribute usage: Ediel ERRP Reserve Allocation Result Document

Ediel ERRP Reserve Allocation 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

Ediel ERRP Reserve Allocation Result Document Attribute	Cl.	Content	Descriptions and comments
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.
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.

Ediel ERRP Reserve Allocation Result Document Attribute	Cl.	Content	Descriptions and comments
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 **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**[7] 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**[8] 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)

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

[8] 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
			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)
			Z54 Activation by AOF (Activation Optimisation Function)
			Z55 Manual activation not based on AOF
			Z56 Fast Frequency Reserve (FFR)
			Z63 Period shift activation
			Z74 Disturbance reserve mFRR-D
			Z75 aFRR, correction
			Z76 mFRR, correction
			Z83 Unspecified non-standard bids
			Z89 Base load
			Z93 mFRR-D correction
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.

Ediel ERRP Reserve Allocation Result Document Attribute	Cl.	Content	Descriptions and comments
			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. • 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: <table><tr><td></td><td>Price</td><td>Sign when sending from TSO to eSett</td></tr><tr><td>Up regulation (A01)</td><td>Positive</td><td>Negative</td></tr><tr><td>Up regulation (A01)</td><td>Negative</td><td>Positive</td></tr><tr><td>Down regulation (A02)</td><td>Positive</td><td>Positive</td></tr><tr><td>Down regulation (A02)</td><td>Negative</td><td>Negative</td></tr></table> • When positive prices, up-regulation means negative Settlement Amount while down-regulation means positive Settlement Amount. Opposite sign occurs when prices are negative.

Table 22: Attribute usage: Ediel ERRP Reserve Allocation Result Document

5.11.4 Dependency matrix: Ediel ERRP Reserve Allocation Result Document

Process type	Business type	Doc. Type	Direction	Reason Code, 1st repetition	Reason Code, 2nd repetition	Tendering Party	Reserve Object	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	**BRP**	✓	✓	✓	✓	✓
					Z59 Direct activation	**BRP**	✓	✓	✓	✓	✓
					Z60 Faster activation	**BRP**	✓	✓		✓	
					Z61 Faster deactivation	**BRP**	✓	✓		✓	
					Z62 Slower activation	**BRP**	✓	✓		✓	
				Z34 mFRR, Quarter regulation	N/A	**BRP**	✓			✓	
				Z35 mFRR, Special Regulation (**NO:** Specially regulation)	**Z58** Scheduled activation	**BRP**	✓	✓	✓	✓	✓
					Z59 Direct activation	**BRP**	✓	✓	✓	✓	✓
					Z60 Faster activation	**BRP**	✓	✓		✓	
					Z61 Faster deactivation	**BRP**	✓	✓		✓	
					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**	✓			✓	

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
				Z54	Activation by AOF (Activation Optimisation Function)	N/A	**BSP**	✔	✔	✔	✔	✔
				Z55	Manual activation not based on AOF	N/A	**BSP**	✔	✔	✔	✔	✔
				Z63	Period shift activation	N/A	**BRP**	✔			✔	
				Z74	Disturbance reserve mFRR-D	N/A	**BRP**	✔			✔	✔
				Z83	Unspecified non-standard bids	N/A	**BRP**	✔			✔	
				Z89	Bidless activation (Activation without BSP bid)	N/A	**BRP**	✔			✔	✔
				ZA9	Planned ramping adjustment	N/A	**BRP**				✔	
		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	✔			✔
				Z74	Disturbance reserve mFRR-D	N/A	**BRP or BSP**	N/A			✔	
				Z76	mFRR, correction	N/A	BRP or BSP	N/A			✔	✔
				Z93	mFRR-D 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			✔			✔

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
		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**	✓	✓	✓	✓	✓
				Z54	Activation by AOF	N/A	**BSP**	✓	✓	✓	✓	✓
				Z55	Manual activation not based on AOF	N/A	**BSP**	✓	✓	✓	✓	✓
A29 (Secondary reserve process)	**A12** (Secondary control)	A81	A01 or A02	Z30	aFRR	N/A	**BRP or BSP**	**N/A**	✓		✓	✓
				Z75	aFRR, correction	N/A	**BRP or BSP**	**N/A**			✓	✓

Table 23: Dependency matrix: Ediel ERRP Reserve Allocation Result Document

5.12 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].

5.12.1 Class diagram: Ediel ECAN Publication document
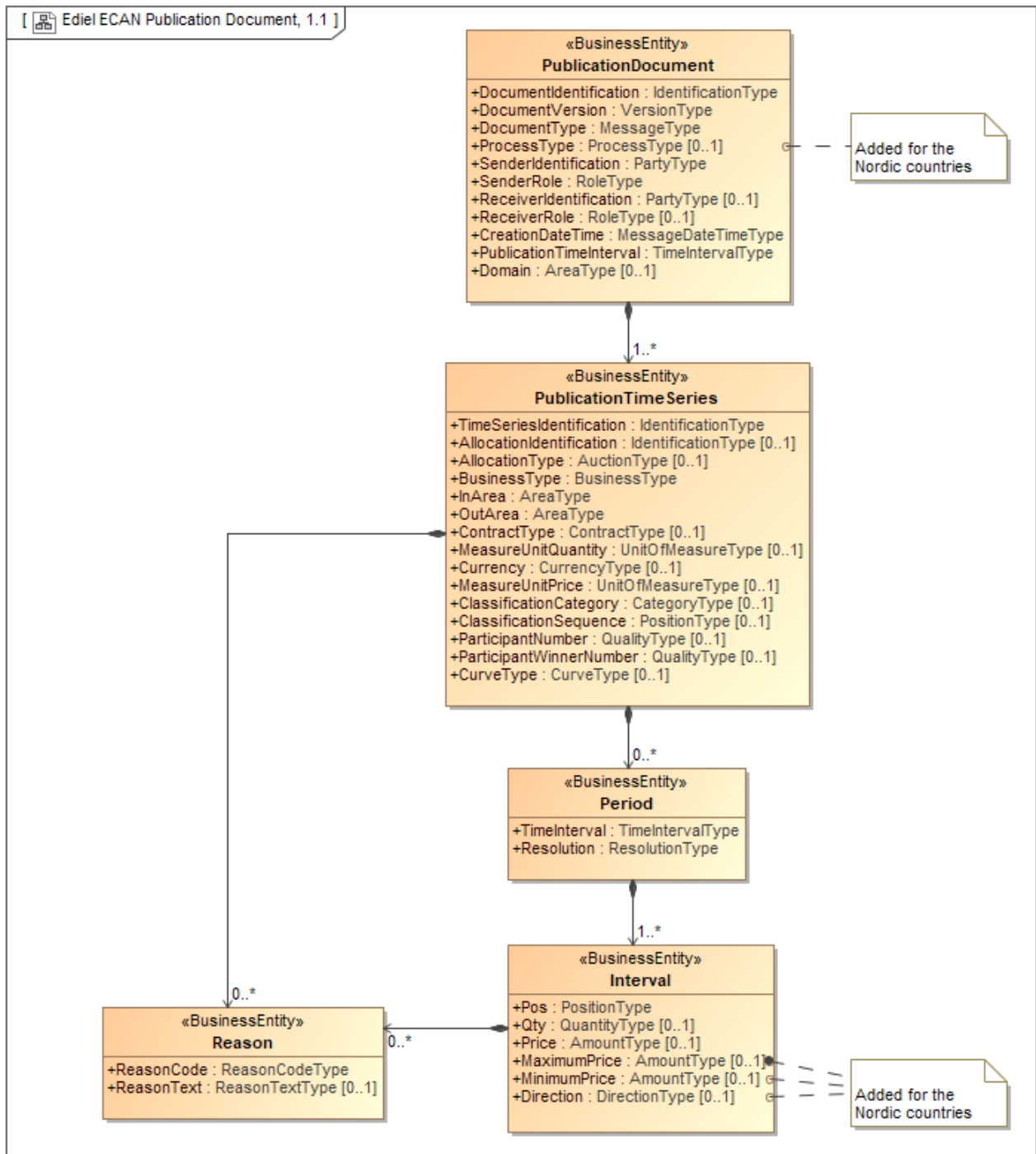
Figure 36: Class diagram: Ediel ECAN Publication Document

The document is used in the following exchanges:

- Overview of information exchange for the NBS scheduling phase, **Table 2:** NBS scheduling phase documents:
    - 2.3, Spot prices (Day-ahead sales report)
    - 5.4, Balance regulation market prices

5.12.2 Attribute usage: Ediel ECAN Publication Document

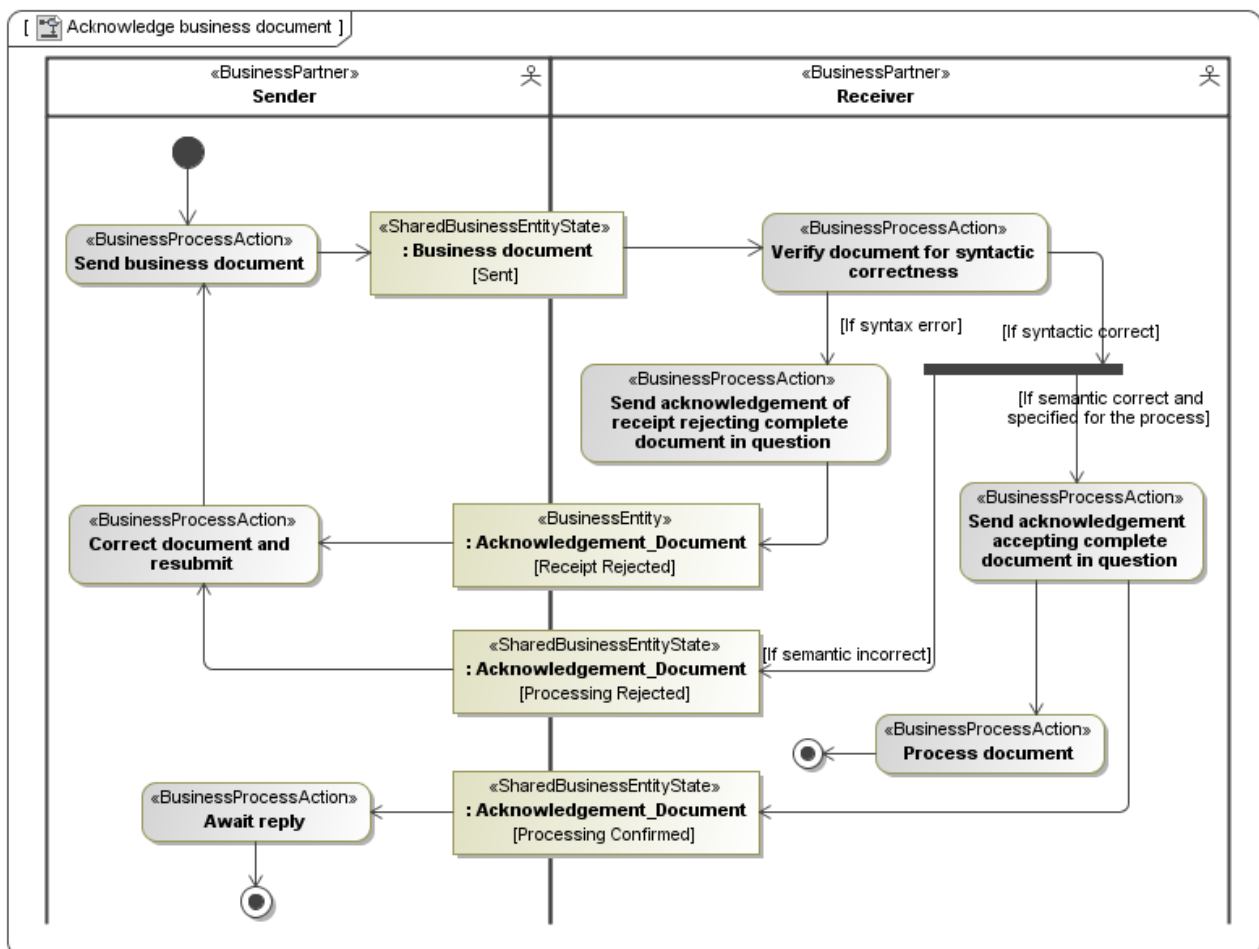| Ediel ECAN Publication Document Attribute	Cl.	Content	Descriptions and comments
Allocation Result Document	[1]		
Document Identification	[1]	Document ID	Unique identification of the document
Document Version	[1]	"1"	Fixed 1
Document Type	[1]	**A44**	**A44** Price document
Process Type	[1]	Process Type	**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 **Z75** Imbalance purchase price

Ediel ECAN Publication Document Attribute	Cl.	Content	Descriptions and comments
			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 **Z07** Intraday Auction Combined
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 24: 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 37: Activity diagram: ENTSO-E Acknowledgement process

Details of the acknowledgment document are found in *Common Nordic XML rules and recommendations* [6]**.**

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 Basse Information Service

The *Basse Information Service* from eSett enables Market Parties to retrieve information related to the Settlement process, such as Settlement Structure. The *Basse Information Service Interface* allows market participants to request data from Basse. The request is represented by an ENTSO-E Status Request Document (ESRD). Based on the request, Basse creates a response, consisting of according business document (one of the supported ENTSO-E or ebIX® formats) and passes it back to the market participant as a Message. Using this interface, the market participant can retrieve information related to the Settlement process.

The Basse Information Service implementation of the ENTSO-E Status Request Document (ESRD) and the Web Service interface are documented in the document "Basse Connection Guideline", see [10].

8 Technical business rules

8.1 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.

8.2 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   Usage of Coding Schemes

	Denmark		Finland		Norway		Sweden	
	ebIX®	**ENTSO-E**	**ebIX®**	**ENTSO-E**	**ebIX®**	**ENTSO-E**	**ebIX®**	**ENTSO-E**
Parties	9 or 305	A10 or A01	260/SLY[1]	NFI[1]	9	A10	260/SVK[1]	NSE[1]
MGA	260/DK	NDK	260/SLY	NFI	305	A01	260/SVK	NSE
BZ	**305**	**A01**	305	A01	305	A01	305	A01
MP	9	A10	260/SLY	NFI	9	A10	9 or 89	A10 or NSE
R	9	A10	260/SLY	NFI	260/SM	NNO	260/SVK	NSE

Table 25: Usage of Coding Schemes in the Nordic countries

1) For parties active in more than one country only one id, GS1 (9 or A10) or EIC (305 or A01), shall be used when communicating with eSett.

Abbreviations:

MGA	Metering Grid Area
BZ	Bidding Zone
MP	Metering point
R	Resource
EIC	European Identification Code, issued by ENTSO-E

In ebIX® document the *list-* or *scheme Agency Identifier* can be:

9	GS1
305	ENTSO-E
260	ebIX®
89	DSOs own Metering Point ID in Sweden

For national *code Lists* or *identification Schemes* the *list- or scheme Agency Identifier* will be ebIX® (code 260) and, in addition, a *list-* or *scheme Identifier* will identify the country:

DK	Danish Ediel group
SLY	Finnish Electricity Association
SM	Norwegian code list
SVK	Svenska kraftnät

In ENTSO-E documents the *list-* or *scheme Agency Identifier* can be:

GS1	A10
EIC	A01
Denmark	NDK
Finland	NFI
Norway	NNO
Sweden	NSE