European Network of
Transmission System Operators
for Electricity

ENTSO-E RG CE
Schedule Reporting Process

IMPLEMENTATION GUIDE

2019-12-04

APPROVED DOCUMENT
VERSION 2.1

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The force of the following words is modified by the requirement level of the document in which they are used.

- SHALL: This word, or the terms “REQUIRED” or “MUST”, means that the definition is an absolute requirement of the specification.
- SHALL NOT: This phrase, or the phrase “MUST NOT”, means that the definition is an absolute prohibition of the specification.
- SHOULD: This word, or the adjective “RECOMMENDED”, means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications shall be understood and carefully weighed before choosing a different course.
- SHOULD NOT: This phrase, or the phrase “NOT RECOMMENDED”, means that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.
- MAY: This word, or the adjective “OPTIONAL”, means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor feels that it enhances the product while another vendor may omit the same item. An implementation which does not include a particular option SHALL be prepared to interoperate with another implementation which does include the option, though perhaps with reduced functionality. In the same vein an implementation which does include a particular option SHALL be prepared to interoperate with another implementation which does not include the option (except, of course, for the feature the option provides.).

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Revision History

Version	Release	Date	(Sub-)Section	Comments
1	0	2010-09-08		**Approval from ENTSO-E RG CE Plenary**
1	1	2011-11-15	all	Correction of mistypes Modifications for clarification (Revision History see V1R1)
2	0	2016-11-09	all	Revision of complete document, taking into account Guideline on Electricity Transmission System Operation and Operational Handbook Policy 2 XX/2015 Approved by the RGCE Plenary 2016-11-09
2	1	2019-12-04	all	- Actualisation of references to EU legislation - Actualisation of Definitions - Actualisation of Business rules for the RG CE schedule reporting process. - Modification of Table 6 – “Mandatory attributes of Status request market document” (Removal of type B20) - Modification of Table 7 – “Status request market document dependency table” to allow the versioning of Reporting Status Market Document and Reporting Information Market Document - Adding new Reason Code for Reporting Status Market Document Approved by SOC.

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INTRODUCTION

This document was drafted based on IEC 62325 series. In particular, the IEC 62325-450 methodology was applied to develop the conceptual and assembly models.

1 Scope

To operate a large power system like the one of ENTSO-E Regional Group Continental Europe (RG CE) and to create the suitable conditions for commercial electricity trade it is necessary to schedule in advance the power to be exchanged at the interconnection borders between the system operators. During daily operation, the schedules are followed by means of the load frequency control installed in each load-frequency control area (LFC area) / load-frequency control block (LFC block). Notwithstanding load frequency control, unintentional deviations invariably occur in energy exchanges. For this reason, it is necessary to coordinate the schedule nomination between the system operators and to perform the verification process to ensure that all aggregated netted external schedules within a synchronous area sum up to zero.

The objective of this implementation guide is to make it possible for software vendors to develop an IT application to enable the various ENTSO-E RG CE Operators (scheduling area, LFC area, LFC block and coordination centre zone) to report the schedule related information for the areas that they manage to all interested parties within the ENTSO-E RG CE network.

The implementation guide is one of the building blocks for using UML (Unified Modelling Language) based techniques in defining processes and documents for interchange between the involved actors.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC TS 61970-2, *Energy management system application program interface (EMS-API) –Part 2: Glossary*

IEC 62325-301, *Framework for energy market communications – Part 301: Common information model (CIM) extensions for markets*

IEC 62325-351, *Framework for energy market communications – Part 351: CIM European market model exchange profile*

IEC 62325-450, *Framework for energy market communications – Part 450: Profile and context modelling rules*

IEC 62325-451-1, *Framework for energy market communications – Part 451-1: Acknowledgement business process and contextual model for CIM European market*

IEC 62325-451-5, *Framework for energy market communications – Part 451-5: Status request business process and contextual model for CIM European market*

Synchronous Area Framework Agreement (SAFA) Policy on Scheduling

The ENTSO-E RG CE *System operator to system operator Implementation guide*

COMMISSION REGULATION (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

COMMISSION REGULATION (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation

The ENTSO-E Harmonized Role Model 2019-01 (HRM2019-01)

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3 Terms and definitions

All definitions included in this document reflect the definitions from ENTSO-E– Metadata Repository (HRM2019-01) and latest versions of the guidelines that were available at the time of creation of this document. Definitions used in this Implementation Guide can be found in an explanatory document.

3.1 Aggregated netted external market schedule

A schedule representing the netted aggregation of all external commercial trade schedules between two scheduling areas or between a scheduling area and a group of other scheduling areas; (replaces “summarised market schedules”).

3.2 Aggregated netted external TSO schedule

A schedule representing the netted aggregation of all external TSO schedules between two scheduling areas or between a scheduling area and a group of other scheduling areas; (replaces “timeframe independent schedules”).

3.3 Compensation program schedule

A schedule representing the exchange of electricity of TSOs related to a compensation program.

3.4 Coordination centre zone

The composition of a number of load-frequency control blocks under the responsibility of the same coordination centre zone operator.

3.5 Load-frequency control area operator

Responsible for:

1. The coordination of exchange programs between its related scheduling areas and for the exchanges between its associated load-frequency control areas.

2. The load frequency control for its own area.

3. The coordination of the correction of time deviations.

3.6 Load-frequency control block operator

Responsible for

1. The load frequency control within its own block and ensuring that its load-frequency control areas respect their obligations in respect to load frequency control and time deviation.

2. The organisation of the settlement and/or compensation between its load-frequency control areas.

3.7 Coordination centre zone operator

Responsible for:

1. The coordination of exchange programs between its related load-frequency control blocks and for the exchanges between its associated coordination centre zones.

2. Ensuring that its load-frequency control blocks respect their obligations in respect to load frequency control.

3. Calculating the time deviation in cooperation with the associated coordination centres

4. Carrying out the settlement and/or compensation between its load-frequency control blocks and against the other coordination centre zones.

3.8 Compensation program

The compensation of inadvertent deviations is performed by exporting to / importing from the interconnected system during the compensation period by means of schedules of constant power within the same tariff periods as when they occurred (COMP).

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3.9 Domain

A delimited area that is uniquely identified for a specific purpose and where energy consumption, production or trade may be determined.

3.10 Load frequency control

See 'Secondary control'.

3.11 Netted area position

The netted aggregation of all AC and DC external schedules of an area.

3.12 Secondary control

A centralised automatic function to regulate the generation in a load-frequency control area based on secondary control reserves in order:

- to maintain its interchange power flow at the control program with all other load-frequency control areas (and to correct the loss of capacity in a load-frequency control area affected by a loss of production) and, at the same time,

- (in case of a major frequency deviation originating from the load-frequency control area, particularly after the loss of a large generation unit) to restore the frequency in case of a frequency deviation originating from the load-frequency control area to its set value in order to free the capacity engaged by the primary control (and to restore the primary control reserves).

In order to fulfil these functions, secondary control operates by the network characteristic method. Secondary control is applied to selected generator sets in the power plants comprising this control loop. Secondary control operates for periods of several minutes, and is therefore dissociated from primary control. This behaviour over time is associated with the PI (proportional-integral) characteristic of the secondary controller.

3.13 Unintentional deviation

For each energy exchange that has taken place in a given time interval, between a relevant area and its synchronous zone, or between a relevant area and another relevant area in a different synchronous zone, the difference between the actual measured energy exchange, and the scheduled energy exchange and all intentional deviations from that schedule.

3.14 Virtual scheduling area

A scheduling area without generation or consumption.

3.15 Definitions originating from Regulations of EU

According to: COMMISSION REGULATION (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management:

5. ‘net position’ means the netted sum of electricity exports and imports for each market time unit for a bidding zone;

According to: COMMISSION REGULATION (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation:

(12) ‘load-frequency control area’ or ‘LFC area’ means a part of a synchronous area or an entire synchronous area, physically demarcated by points of measurement at interconnectors to other LFC areas, operated by one or more TSOs fulfilling the obligations of load-frequency control;

(18) ‘load-frequency control block’ or ‘LFC block’ means a part of a synchronous area or an entire synchronous area, physically demarcated by points of measurement at interconnectors to other LFC blocks, consisting of one or more LFC areas, operated by one or more TSOs fulfilling the obligations of load-frequency control;

(44) ‘schedule’ means a reference set of values representing the generation, consumption or exchange of electricity for a given time period;

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(69) 'aggregated netted external schedule' means a schedule representing the netted aggregation of all external TSO schedules and external commercial trade schedules between two scheduling areas or between a scheduling area and a group of other scheduling areas;

(75) 'external commercial trade schedule' means a schedule representing the commercial exchange of electricity between market participants in different scheduling areas;

(76) 'external TSO schedule' means a schedule representing the exchange of electricity between TSOs in different scheduling areas;

(81) 'netted area AC position' means the netted aggregation of all AC external schedules of an area;

(91) 'scheduling area' means an area within which the TSOs' obligations regarding scheduling apply due to operational or organisational needs;

According to: COMMISSION REGULATION (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators:

(2) 'synchronous area' means an area covered by synchronously interconnected TSOs, such as the synchronous areas of Continental Europe, Great Britain, Ireland-Northern Ireland and Nordic and the power systems of Lithuania, Latvia and Estonia, together referred to as 'Baltic' which are part of a wider synchronous area;

According to: COMMISSION REGULATION (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council:

(3) 'bidding zone' means the largest geographical area within which market participants are able to exchange energy without capacity allocation; Countertrading. Means a Cross Zonal energy exchange initiated by the System Operators between two Bidding Zones to relieve a Physical Congestion.

According to: REGULATION (EU) No 1227/2011 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2011on wholesale energy market integrity and transparency:

(7) 'market participant' means any person, including transmission system operators, who enters into transactions, including the placing of orders to trade, in one or more wholesale energy markets

According to: DIRECTIVE 2009/72/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 concerning common rules for the internal market in electricity:

4. 'transmission system operator' means a natural or legal person responsible for operating, ensuring the maintenance of and, if necessary, developing the transmission 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 transmission of electricity;

4 The RG CE schedule reporting business process

4.1 Overall business context

This Implementation Guide provides:

- Standard document formats enabling a uniform layout for the transmission of reporting information between all relevant organisations within the ENTSO-E RG CE hierarchy.

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- A standard enabling a uniform layout for the transmission of reporting information between all relevant organisations within the ENTSO-E RG CE hierarchy
- A standard enabling ENTSO-E RG CE TSOs to perform the verification process that all aggregated netted external schedules within a synchronous area sum up to zero.

This shall ensure a common interface between different software solutions.

LFC blocks containing more than one LFC area and LFC areas containing more than one scheduling area may agree on the additional transmission of reporting information to the parent area or block.

This Implementation Guide respects the requirements of the ENTSO-E RG CE verification process described in SAFA Policy on Scheduling.

The following schedules are covered in this implementation guide:

1) Aggregated netted external schedules;
2) Aggregated netted external market schedules;
3) Aggregated netted external TSO schedules;
4) Compensation program schedules;
5) Netted area AC position;
6) Netted area position.

The schedules 2, 3 and 4 are used in the ENTSO-E RG CE verification process to ensure that within a synchronous area they sum up to zero (see Figure 1).

The 1st schedule corresponds to the aggregation of schedules 2 and 3.

The coordination centre zone operators of ENTSO-E RG CE will use the Verification Platform to perform the ENTSO-E RG CE verification process.

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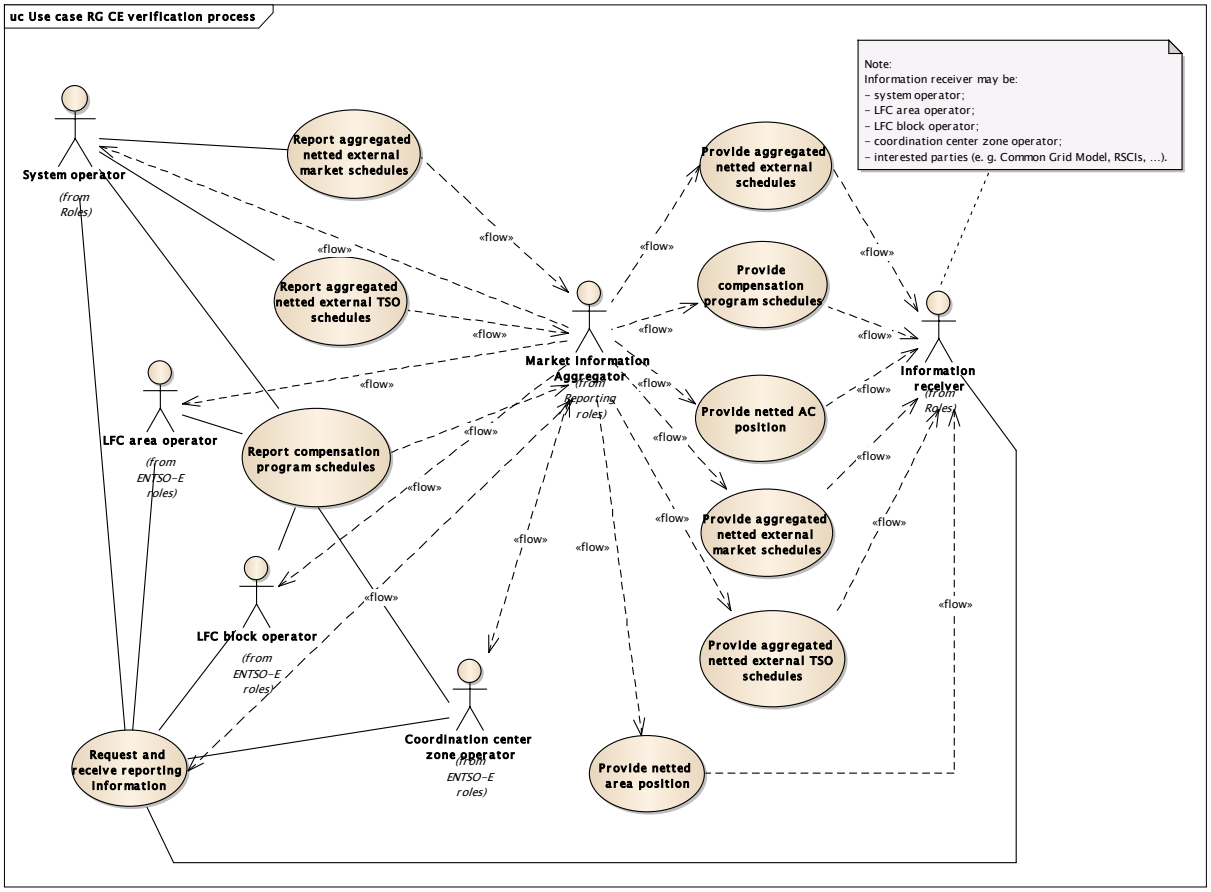

Figure 1: The ENTSO-E RG CE schedule reporting process use case

For bilateral exchanges between two scheduling areas, prior to the start of the ENTSO-E RG CE reporting process it is first of all necessary for all TSOs operating a scheduling area to agree on the external commercial trade schedules with their counterparts.

When the schedules have been agreed each TSO operating a scheduling area reports the agreed schedules in aggregated and netted form to the verification system. This information will then be used by the LFC area operators, LFC block operators and coordination centre zone operators to carry out the necessary checks on data pertaining to their respective areas to ensure overall information coherence.

TSOs operating a scheduling area, LFC area operators and LFC block operators report to the verification system the compensation programs for the corresponding application date. These compensation programs will be put into place on the application date corresponding to the compensation period, in their respective areas in order to compensate the ENTSO-E RG CE unintentional deviations which occurred during the previous (corresponding) calculation period. This information is used by the coordination centre zone operators, load-frequency control block operators, and, when applicable, by the LFC area operators respectively to verify that the compensation program is being implemented as requested.

During the course of the day emergency procedures may be put into place to counteract congestion or a problem in the network. Whenever this happens the TSOs operating a scheduling area immediately post using the verification system an aggregated netted external TSO schedule. This enables the LFC area and LFC block operators to modify their load frequency control programs and for the coordination centre zone operators to ensure that the ENTSO-E RG CE region correctly balances out.

Schedules provided from centralised mechanisms (such as Market Coupling) which produce as output external schedules based on net position (in combination with a virtual scheduling area) can be considered as “reference schedules” that highly simplify the Scheduling process:

- "SO-SO-Matching", as currently defined, will not be required in this specific case,
- The reporting process is still required. The schedule reported by a TSO operating a scheduling area can be directly compared to the reference schedule from the centralised mechanism.

Note concerning virtual scheduling areas:

Scheduling areas participating in a centralised mechanism that uses a virtual scheduling area to support scheduling in net position (e.g. market coupling, compensation of unintentional deviation) have a virtual border with the virtual scheduling area. The sum of all imports of this virtual scheduling area is equal to the sum of all exports of this virtual scheduling area.

In special cases the virtual scheduling area may also contain the exchange of other virtual scheduling areas (e.g. netted area AC position of a load-frequency control block may contain schedules related to a virtual scheduling area for compensation of load-frequency control block).

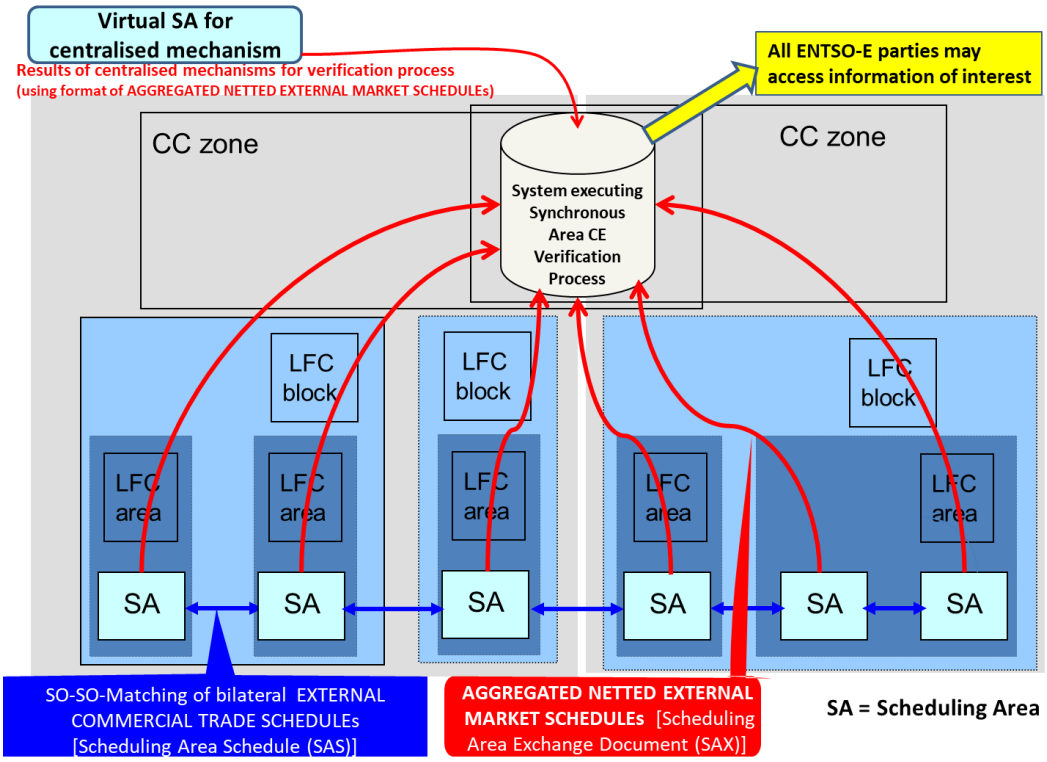

Figure 2 – ENTSO-E RG CE schedule reporting process for aggregated netted external market schedules

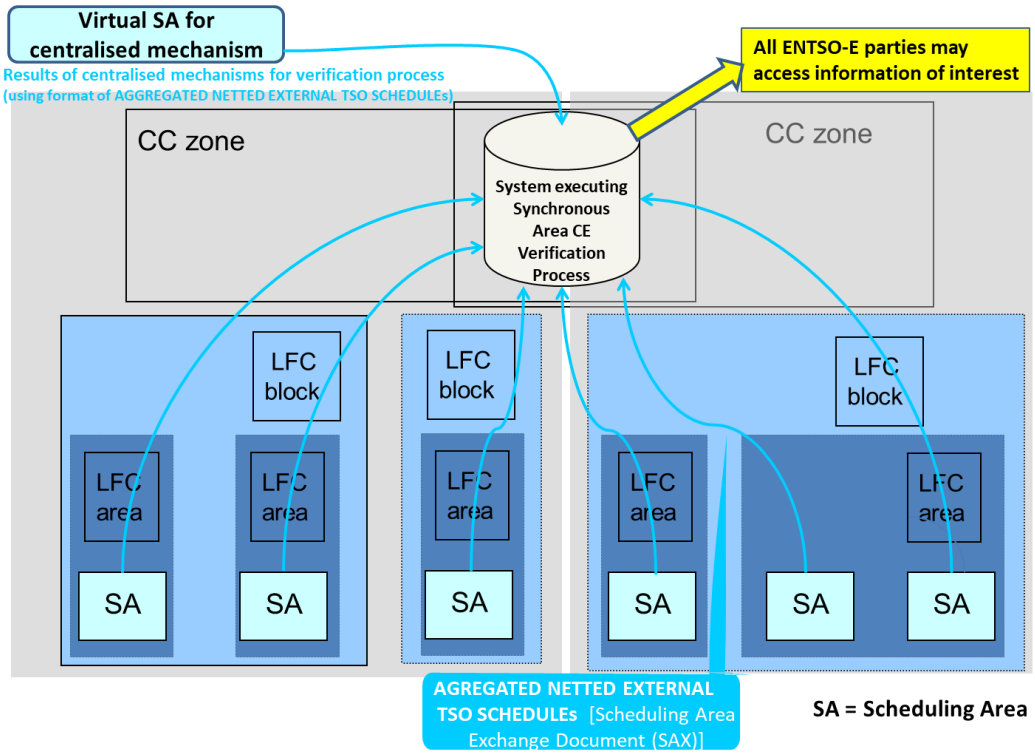

Figure 3 - ENTSO-E RG CE schedule reporting process for aggregated netted external TSO schedules

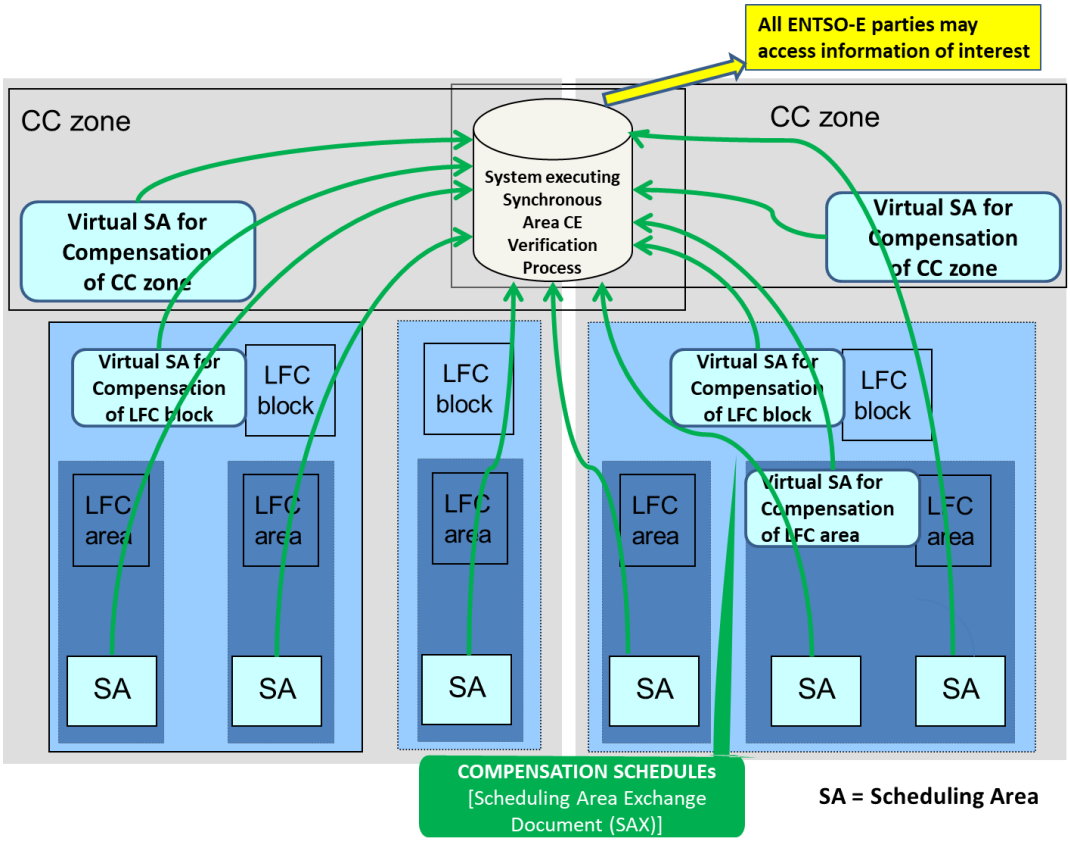

Figure 4 – ENTSO-E RG CE schedule reporting process for compensation schedules

The examples shown in Figure 2, Figure 3 and Figure 4 are merely indications of the posting of schedules to the verification system. They are not exhaustive.

4.2 Schedule reporting process sequence

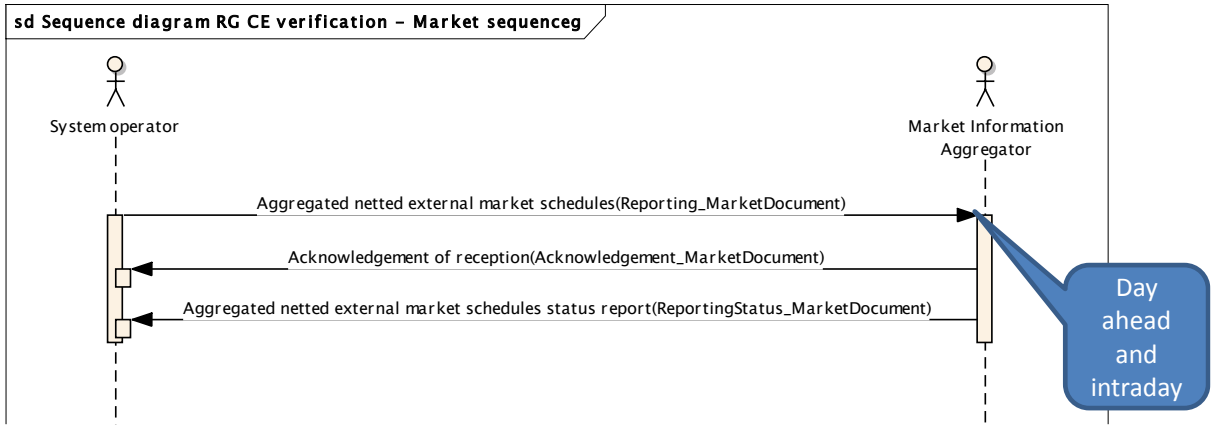

Figure 5 – Schedule reporting process sequence diagram for market schedules

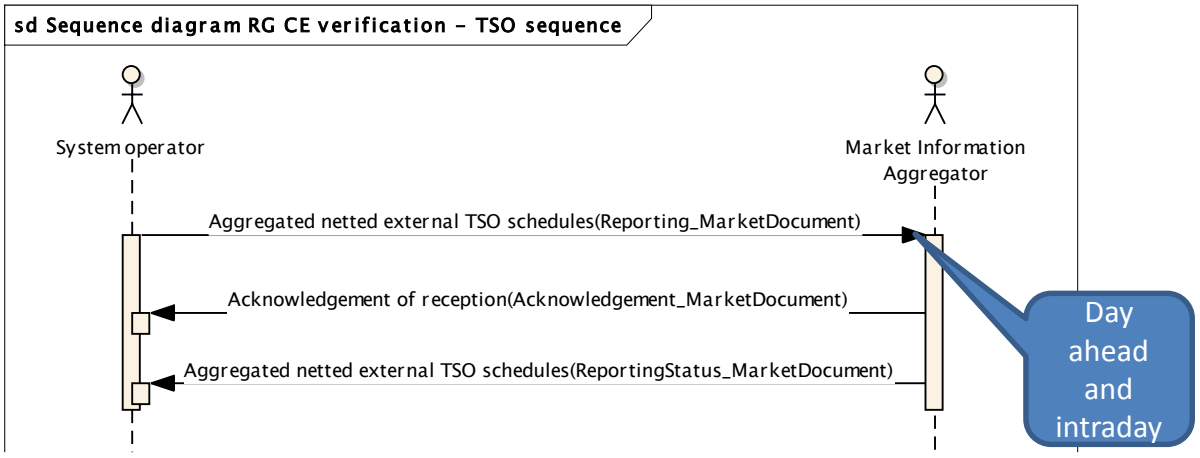

Figure 6 - Schedule reporting process sequence diagram for TSO schedules

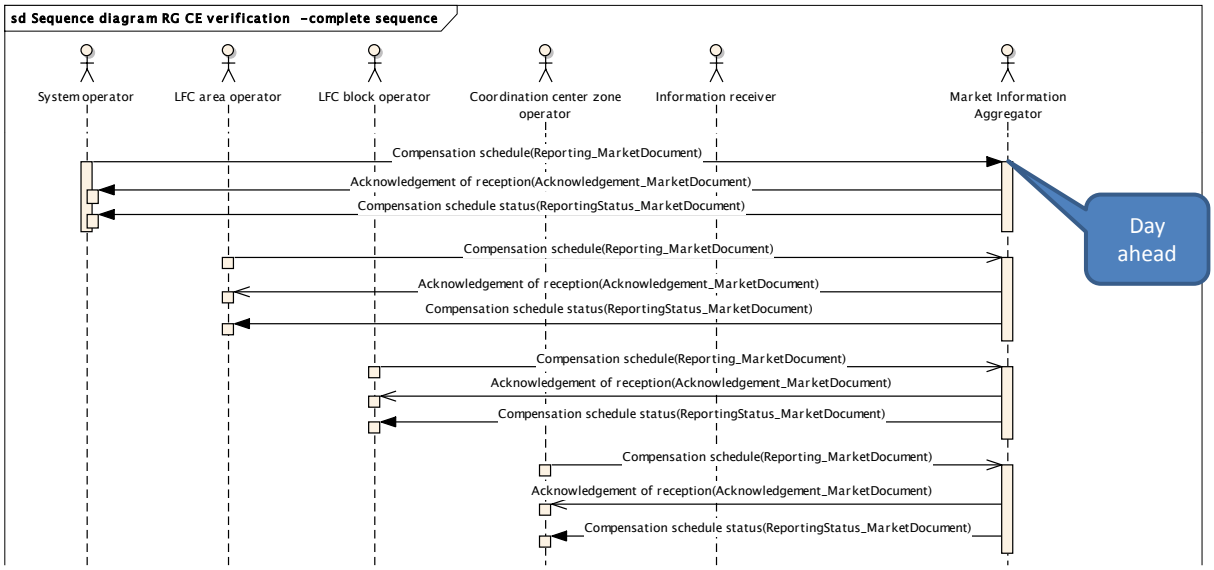

Figure 7 – Schedule reporting process sequence diagram for compensation schedules

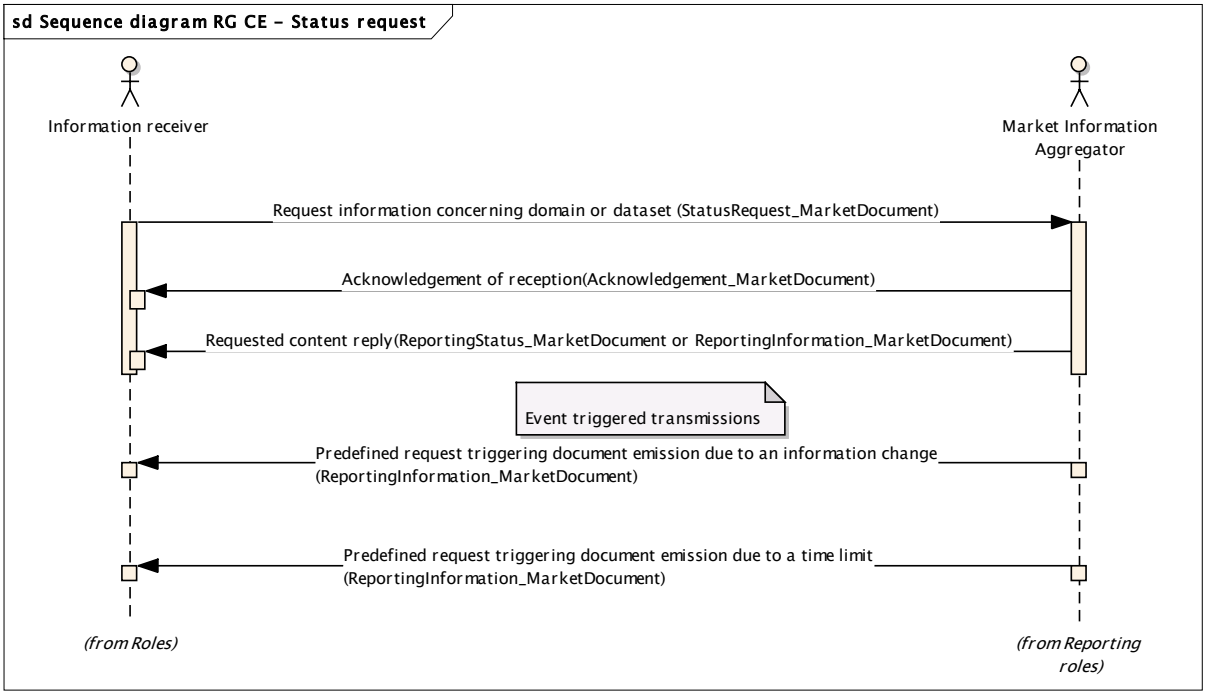

Figure 8 - Schedule reporting process sequence diagram for reporting status requests and replies

The sequence diagrams in Figure 5, Figure 6, Figure 7 and Figure 8 outline the information that is provided using the verification system. It is used by the different actors in the ENTSO-E RG CE SCHEDULE Reporting process.

The initial sequence (Figure 5) covers the reporting of the aggregated netted external market schedule by the system operator. The document reported contains the respective data for one given border. The reception of the submission is acknowledged by the verification system if it can be parsed.

Once the verification system has verified an aggregated netted external market schedule for a specific border, both of the involved TSOs operating a scheduling area (sender and counterpart) will receive result of the validation process in a reporting status market document. This reporting status market document includes all available time series related to the specific border and process.

A similar sequence (Figure 6) occurs when the TSO operating a scheduling area transmits the aggregated netted external TSO schedule to the verification system.

The third sequence (Figure 7) set covers the reporting of the ENTSO-E RG CE compensation program schedules to the verification system.

The whole process is reiterative and may evolve throughout the day.

Any schedule changes that occur require immediate posting on the verification system.

A fourth sequence is shown in Figure 8 and deals with the request of Information receivers for information concerning a domain or a predefined dataset and the reply from the verification system.

An information receiver can be:

- a system operator;
- a LFC area operator;

- a LFC block operator;
- a coordination centre zone operator;
- an interested party (e. g. Common Grid Model, RSCIs, …).

The information* will be provided:

- on request using the status request market document;
- if changes in the values of a domain in a dataset occur (event triggered);
- at a predefined point in time in a dataset (time triggered).

*Remark concerning "the provision of information": The verification system will send the information to the involved TSOs and also make available the information in order to allow the TSOs to retrieve it.

A status request may identify for a given time interval and process type:

- a domain and optionally a referenced date/time and business type.
- a dataset and optionally a referenced date/time.

The verification system shall provide the information relative to the domain or dataset for the designated time interval as available at the referenced date/time, if provided.

Figure 9 provides an example of such requests.

Request for.
Delivery day 24.12.2014,
REFERENCED DATE AND TIME 23.12.2014, 15:30 delivers data shown in row 1

Request for.
Delivery day 24.12.2014,
REFERENCED DATE AND TIME 24.12.2014, 07:10 delivers data shown in row 3

Request for.
Delivery day 24.12.2014,
REFERENCED DATE AND TIME 24.12.2014, 07:15 delivers data shown in row 4

	Delivery day	24.12.2014		from	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	...
				to	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	...
row 1	available at	23.12.2014	15:30		100	100	100	100	100	100	100	100	100	100	100	100	...
row 2		24.12.2014	03:50		100	100	100	100	100	200	200	200	100	100	100	100	...
row 3		24.12.2014	07:10		100	100	100	100	100	200	200	200	250	100	100	100	...
row 4		24.12.2014	07:11		100	100	100	100	100	200	200	200	300	100	100	100	...
row 5		24.12.2014	12:03		100	100	100	100	100	200	200	200	300	100	100	100	...

Figure 9 – Request examples

The requests will always be satisfied by the verification system with the provision of a reporting status market document or a reporting information market document containing one or all of the following:

- Aggregated netted external market schedules.
- Aggregated netted external TSO schedules.
- Aggregated netted external schedules.
- Compensation program schedules.
- Netted area AC position;

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- Netted area position

4.3 Business rules for the RG CE schedule reporting process

4.3.1 Documents overview

The document exchange processes of RG CE schedule reporting process described in the previous chapter require sending and receiving various ESMP documents. The information to be exchanged is:

- Acknowledgement_MarketDocument v8.0 based on IEC 62325-451-1:2017 Ed2;
- Reporting_MarketDocument (urn-entsoe-eu-wgedi-rgce-reporting_marketdocument-2-0.xsd)
- ReportingStatus_MarketDocument (urn-entsoe-eu-wgedi-rgce-reportingstatus_marketdocument-2-0.xsd)
- ReportingInformation_MarketDocument (urn-entsoe-eu-wgedi-rgce-reportinginformation_marketdocument-2-0.xsd)
- StatusRequest_MarketDocument v4.0 based on IEC 62325-451-5:2015

4.3.2 General rules

For each electronic data interchange defined in this document, an acknowledgement document, as defined in IEC 62325-451-1, should be generated either accepting the whole received document (with the exception of the status request market document that does not require it since the reply is made with the document containing the requested content) or rejecting it completely.

4.3.2.1 Bilateral Cross Border Scheduling

If bilateral cross border scheduling is applied, each scheduling area border is reported separately (see also 4.2). Both of the involved TSOs operating the scheduling areas adjacent to the reported scheduling area border (sender and counterpart) shall send a reporting market document each. The reporting market document shall contain 2 time series (AC position). One time series provides the input to the area and the other provides the output from the area.

The reporting status market document for a given scheduling area border shall contain:

- the latest reported time series of the actual process (process type A01 day ahead or A18 intraday) of both involved TSOs operating a scheduling area for the given border.
    - If no reporting market document for the scheduling area border is reported, the reporting status market document will not include any time series.
    - If only one TSO operating a scheduling area has reported a reporting market document for the given scheduling area border, the reporting status market document will contain the 2 reported time series.
    - If both TSOs operating a scheduling area have reported a reporting market document for the given scheduling area border, the reporting status market document will contain the 4 reported time series.

4.3.2.2 Scheduling in Net Position

If scheduling in net position is applied, centralised mechanisms using a virtual scheduling area shall report all net positions of the centralized process in a single reporting market document (multilateral schedule)[1]. Each TSO involved in the centralized process shall report its net position in a single reporting market document. A net position is represented as bilateral cross border schedule between the virtual scheduling area and the involved scheduling areas of the

[1] It is assumed that HV DC links are reported separately. The reported net positions in scheduling in net positions include only AC positions.

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TSOs. The reporting market document shall contain 2 time series per scheduling area border[2]. For all scheduling area borders between virtual scheduling area and involved scheduling areas the EIC of the virtual scheduling area shall be used for domain.mRID.

For a given centralized mechanism, a reporting status market documents is send for each scheduling area border between virtual scheduling area and involved scheduling areas. The reporting status market documents shall contain:

- the latest reported time series (net position) of the actual process (process type A01 day ahead or A18 intraday) of both involved parties (centralized mechanism and TSO operating a scheduling area) for a given border (virtual scheduling area of the centralized mechanism and scheduling area of the TSO)
    - If no reporting market document for the given border is reported, the reporting status market document will not include any time series.
    - If only one party has reported a reporting market document for the given border, the reporting status market document will contain the reported 2 time series.
    - If both parties have reported a reporting market document for the given border, the reporting status market document will contain the 4 reported time series.

4.3.2.3 Reporting of DC- and controllable AC-links

For each border between scheduling areas and virtual scheduling areas, DC-links and controllable AC-links shall be reported separately using additional "connectingLine_RegisteredResource.mRID" element. For each DC- and controllable AC-link, 2 time series are reported (in addition to the aggregated AC position, if applicable). One time series provides the input to the area and the other provides the output from the area.

For the scheduling losses of an HV DC link, a dedicated scheduling area representing the HV DC link is required. In this case, the schedule for the HVDC link area is either represented as 1) a cross border schedule for each border or 2) a multilateral schedule including all borders.

1. Cross border schedule: Bilateral cross border scheduling between the HV DC link operator and TSOs operating a scheduling area (for the content of the reporting status market document see 4.3.2.1).

2. Multilateral schedule: The HV DC link operator acts as a centralized mechanism reporting a single reporting market document (multilateral schedule) including all borders of the HV DC link scheduling area. The TSOs involved in the centralized process shall report a bilateral cross border schedule for their scheduling area borders to the HV DC link scheduling area (for the content of the reporting status market document see 4.3.2.2).

   For all scheduling area borders between the scheduling area of the HV DC link and involved scheduling areas the EIC of the scheduling area of the HV DC link shall be used for domain.mRID.

[2] Example:

A centralized mechanism with 1 virtual scheduling area and 3 involved scheduling areas operated by 3 TSOs

- The centralized mechanism reports a single reporting market document including 3 net positions (3x2 time series),
- TSO 1 reports a single reporting market document including its net position (1x2 time series),
- TSO 2 reports a single reporting market document including its net position (1x2 time series), and
- TSO 3 reports a single reporting market document including its net position (1x2 time series)

4.3.2.4 Reporting Information Market Document

The reporting information market document shall contain 2 time series per each domain (e.g. scheduling area border, area), process type, business type, and voltage type (AC or DC). The reporting information market document contains verified values and, thus, cannot be empty.

4.3.3 Dependencies governing the Reporting_MarketDocument

The reporting market document is used to provide all the information related to the ENTSO-E RG CE verification process.

The information provided in a reporting market document concerns:

- Aggregated netted external market schedule;
- Aggregated netted external TSO schedule;
- Compensation program schedules.

The dependencies are listed in the following paragraphs.

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4.3.3.1 Aggregated netted external market schedule

Table 1 – Aggregated netted external market schedule dependency table

	Day ahead	Intraday
Reporting_MarketDocument		
type	B16 = Aggregated netted external market schedule document	
process.processType	A01 = Day ahead	A18 = Total intraday
sender_MarketParticipant.marketRole.type	A04 = System operator	
receiver_MarketParticipant.marketRole.type	A32 = Market information aggregator A15 = load-frequency control block operator A14 = load-frequency control area operator	
domain.mRID / codingScheme	A scheduling area border identified with an EIC Y code. codingScheme = A01	
subject_Domain.mRID / codingScheme	A scheduling area of the originator of the market schedule identified with an EIC Y code. This identification shall be found in either the in_Domain.mRID or the out_Domain.mRID of the time series. codingScheme = A01	
TimeSeries		
businessType	B61 = Aggregated netted external market schedule;	
product	8716867000016 = Active Power.	
in_Domain.mRID / codingScheme	A scheduling area where the product is being delivered identified with an EIC Y code. codingScheme = A01.	
out_Domain.mRID / codingScheme	A scheduling area where the product is being extracted identified with an EIC Y code. codingScheme = A01.	
connectingLine_RegisteredResource.mRID	Required if DC link or controllable AC link	
quantity_Measure_Unit.name	MAW	
curveType	A03 = Variable block	
Series_Period		
resolution	PT1M = 1 minute	

Table 1 provides the dependencies for the aggregated netted external market schedules.

There shall be a single reporting market document per scheduling area border per process. The scheduling area border is identified in the domain.mRID attribute. The scheduling area that is the subject of the document is defined in the subject_Domain.mRID attribute.

Reporting market documents providing schedules from centralised mechanisms (such as Market Coupling) which produce as output external schedules based on net position in combination with a virtual scheduling area shall provide a single reporting market document containing all scheduling area borders of the virtual scheduling area. The virtual scheduling area is identified in the domain.mRID attribute and the subject_Domain.mRID attribute.

Two reporting market documents will be provided per sender per border per ENTSO-E RG CE day:

- One document containing the day ahead values (required in order to provide the day ahead situation for the day). This shall have a unique document identification and a process type of “Day ahead” (A01). Any evolutions to this schedule shall be carried out through the creation of a new version. The new version will replace the previous version. A day ahead

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document is required for every border even if there are no market nominations for the border (see ENTSO-E RG CE Operation Handbook Policy 2).

- One document containing the intraday values. This will have a unique document identification and shall have a process type of «Intraday Total» (A18). This shall include the updated values of the values already provided in the day ahead document. The Time_Period.timeInterval and the timeInterval_DateTimeInteval shall always cover the complete period. Any evolutions to this schedule shall be carried out through the creation of a new version. The new version will replace the previous version.

Note: An aggregated netted external market schedule that uses the Curve Type “A03” with a resolution of 1 minute shall report the Interval classes which shall respect the constraint that a change in the block value can only occur based on the bilaterally agreed resolution boundary that has been used in the system operator to system operator matching.

4.3.3.2 Aggregated netted external TSO schedule

Table 2 – Aggregated netted external TSO schedule dependency table

	Aggregated netted external TSO schedule
Reporting_MarketDocument	
type	B17 = Aggregated netted external TSO schedule document
process.processType	A01 = Day ahead A18 = Total intraday
sender_MarketParticipant.marketRole.type	A04 = System operator
receiver_MarketParticipant.marketRole.type	A32 = Market information aggregator A15 = load-frequency control block operator A14 = load-frequency control area operator
domain.mRID / codingScheme	A scheduling area border identified with an EIC Y code. codingScheme = A01
subject_Domain.mRID / codingScheme	The scheduling area of the originator of the market schedule identified with an EIC Y code. This identification shall be found in either the in_Domain.mRID or the out_Domain.mRID of the TimeSeries. codingScheme = A01
TimeSeries	
businessType	B62 = Aggregated netted external TSO schedule
product	8716867000016 = Active Power.
in_Domain.mRID / codingScheme	A scheduling area where the product is being delivered identified with an EIC Y code. codingScheme = A01.
out_Domain.mRID / codingScheme	A scheduling area where the product is being extracted identified with an EIC Y code. codingScheme = A01.
connectingLine_RegisteredResource.mRID	Required if DC link or controllable AC link
quantity_Measure_Unit.name	MAW = Mega watts
curveType	A03 = Variable block
Series_Period	
resolution	PT1M = 1 minute

Table 2 provides the dependencies for the aggregated netted external TSO schedules.

There shall be a single reporting market document per scheduling area border per process. The scheduling area border is identified in the domain.mRID attribute. The scheduling area that is the subject of the document is defined in the subject_Domain.mRID attribute.

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Reporting market documents providing schedules from centralised mechanisms which produce as output external schedules based on net position in combination with a virtual scheduling area shall provide a single reporting market document containing all scheduling area borders of the virtual scheduling area. The virtual scheduling area is identified in the domain.mRID attribute and the subject_Domain.mRID attribute.

In the case where external TSO schedules are agreed, reporting market documents are expected per sender per border per ENTSO-E RG CE day:

- One document shall contain the day ahead values (required in order to provide the day ahead situation for the day). This shall have a unique document identification and a process type of “Day ahead” (A01). Any evolutions to this schedule shall be carried out through the creation of a new version. The new version will replace the previous version.

  A day ahead document is not required for a border if there are no external TSO schedules for the border.

- One document shall contain the intraday values. This will have a unique document identification and shall have a process type of «Intraday Total» (A18). This shall include the updated values of the values already provided in the day ahead document. The Time_Period.timeInterval and the timeInterval_DateTimeInteval shall always cover the complete period. Any evolutions to this schedule shall be carried out through the creation of a new version. The new version will replace the previous version.

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558 #### 4.3.3.3 Compensation program schedules

559 **Table 3 – Compensation program schedule dependency table**

	TSO operating a scheduling area to load-frequency control area operator	Load-frequency control area operator to load-frequency control block operator	Load-frequency control block operator to coordination centre operator
Reporting_MarketDocument			
type	A56 = Compensation program schedule		
process.processType	A01 = Day ahead		
sender_MarketParticipant.marketRole.type	A04 = System operator	A14 = Load-frequency control area operator	A15 = Load-frequency control block operator
receiver_MarketParticipant.marketRole.type	A32 = Market information aggregator	A32 = Market information aggregator	A32 = Market information aggregator
domain.mRID / codingScheme	The load-frequency control area identified with an EIC Y code. codingScheme = A01	The load-frequency control block identified with an EIC Y code. codingScheme = A01	The coordination centre zone identified with an EIC Y code. codingScheme = A01
subject_Domain.mRID / codingScheme	The scheduling area of the originator of the compensation program schedule identified with an EIC Y code. This identification shall be found in either the in_Domain.mRID or the out_Domain.mRID of the TimeSeries. codingScheme = A01	The load-frequency control area of the originator of the compensation program schedule identified with an EIC Y code. This identification shall be found in either the in_Domain.mRID or the out_Domain.mRID of the TimeSeries. codingScheme = A01	The load-frequency control block of the originator of the compensation program schedule identified with an EIC Y code. This identification shall be found in either the in_Domain.mRID or the out_Domain.mRID of the TimeSeries. codingScheme = A01
TimeSeries			
businessType	A44 = Compensation program		
product	8716867000016 = Active Power.		
in_Domain.mRID / codingScheme	A scheduling area where the product is being delivered identified with an EIC Y code. codingScheme = A01.	A load-frequency control area or load-frequency control block where the product is being delivered identified with an EIC Y code. codingScheme = A01.	A load-frequency control block or coordination centre zone where the product is being delivered identified with an EIC Y code. codingScheme = A01.
out_Domain.mRID / codingScheme	A scheduling area where the product is being extracted identified with an EIC Y code. codingScheme = A01.	A control area or load-frequency control block where the product is being extracted identified with an EIC Y code. codingScheme = A01.	A load-frequency control block or coordination centre zone where the product is being extracted identified with an EIC Y code. codingScheme = A01.

connectingLine_RegisteredResource.mRID	Required if DC link or controllable AC link
quantity_Measure_Unit.name	MAW = Mega watts
curveType	A03 = Variable block
Series_Period	
resolution	PT1M = 1 minute

Table 3 provides the dependencies for the compensation schedules

There shall be only one reporting market document for compensation per area. This shall have a unique document identification and a process type of “Day ahead” (A01). Any evolutions to this schedule shall be carried out through the creation of a new version. The new version will replace the previous version. The domain.mRID attribute shall be the area where the area being reported belongs. The area shall be identified in the subject_Domain.mRID attribute.

Reporting market documents providing schedules from centralised mechanisms which produce as output external schedules based on net position in combination with a virtual scheduling area shall provide a single reporting market document containing all scheduling area borders of the virtual scheduling area. The virtual scheduling area is identified in the domain.mRID attribute and the subject_Domain.mRID attribute.

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573 ### 4.3.4 Dependencies governing the Reporting Status Market Document

574 **Table 4 – Reporting status market document dependency table**

	Day Ahead	Intraday
ReportingStatus_MarketDocument		
type	B18 = Reporting status market document	
process.processType	A01 = Day ahead	A18 = Total intraday
sender_MarketParticipant.marketRole.type	A32 = Market information aggregator	
receiver_MarketParticipant.marketRole.type	A04 = System Operator A14 = Load-frequency control area operator A15 = Load-frequency control block operator A16 = Coordination centre zone operator A33 = Information receiver	
domain.mRID	Used if no dataset_MarketDocument information provided	
time_Period.timeInterval	This information provides the start and end date and time of the period covered by the document.	
TimeSeries		
businessType	A44 = Compensation program schedule B61 = Aggregated netted external market schedule B62 = Aggregated netted external TSO schedule	
product	8716867000016 = Active Power.	
in_Domain.mRID / codingScheme	An area where the product is being delivered identified with an EIC Y code. codingScheme = A01.	
out_Domain.mRID / codingScheme	An area where the product is being extracted identified with an EIC Y code. codingScheme = A01.	
connectingLine_RegisteredResource.mRID	Required if DC link or controllable AC link	
quantity_Measure_Unit.name	MAW = Mega watts	
curveType	A03 = Variable block	
Series_Period		
resolution	PT1M = 1 minute	
Reason		
code	This information may be provided at three levels. At the header level to indicate if no information to a status request is available. The following code shall be used: B08 = Data not yet available. At the Time series level to provide the following information: A28 = Counterpart time series missing A29 = Counterpart time series quantity differences A63 = Time Series modified A88 = Time series matched At the Point level to provide information on a given quantity. The following codes shall be used: A43 = Quantity increased A44 = Quantity decreased BXX= Values of this time series are also valid for counterpart Other reason codes according to ENTSO-E code list	

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576 Table 4 provides the dependencies for the reporting status market document.

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4.3.5 Dependencies governing the Reporting Information Market Document

Table 5 – Reporting information market document dependency table

	Day Ahead	Intraday
ReportingInformation_MarketDocument		
type	B19 = Reporting information market document	
process.processType	A01 = Day ahead	A18 = Total intraday
sender_MarketParticipant.marketRole.type	A32 = Market information aggregator	
receiver_MarketParticipant.marketRole.type	A04 = System Operator A14 = Load-frequency control area operator A15 = Load-frequency control block operator A16 = Coordination centre zone operator A33 = Information receiver	
domain.mRID	Used if no dataset_MarketDocument information provided. Identified with an EIC Y code (codingScheme = A01).	
time_Period.timeInterval	This information provides the start and end date and time of the period covered by the document.	
Doc_Status	The identification of the condition or position of the document with regard to its standing. A document may be intermediate or final. A01 = Intermediate A02 = Final	
TimeSeries		
businessType	A44 = Compensation program schedule B61 = Aggregated netted external market schedule B62 = Aggregated netted external TSO schedule B63 = Aggregated netted external schedule B64 = Netted area AC position B65 = Netted area position.	
product	8716867000016 = Active Power.	
in_Domain.mRID / codingScheme	An area where the product is being delivered. Identified with an EIC Y code (codingScheme = A01).	
out_Domain.mRID / codingScheme	An area where the product is being extracted. Identified with an EIC Y code (codingScheme = A01).	
connectingLine_RegisteredResource.mRID	Required if DC link or controllable AC link	
quantity_Measure_Unit.name	MAW = Mega watts	
curveType	A03 = Variable block	
Series_Period		
resolution	PT1M = 1 minute	
Reason		
code	This information may be provided at three levels. At the header level to indicate if no information to a status request is available. The following code shall be used: B08 = Data not yet available. At the Time series level to provide the following information: A28 = Counterpart time series missing A29 = Counterpart time series quantity differences A63 = Time Series modified A88 = Time series matched At the Point level to provide information on a given quantity. The following codes shall be used: A43 = Quantity increased A44 = Quantity decreased	

	Other reason codes according to ENTSO-E code list

Table 4 provides the dependencies for the reporting information market document.

4.3.6 Generic rules and dependencies for the Status Request Market Document

The Status Request Market Document is specified in IEC 62325 – 451-5. In this specification the attributes described in Table 6 are mandatory.

Table 6 – Mandatory attributes of Status request market document

Attribute name / Attribute type	Description
mRID	The unique identification of the document being exchanged within a business process flow.
type	The coded type of a document. The document type describes the principal characteristic of the document. A59 = status request for a status within a process
sender_MarketParticipant.mRID	The identification of a party in the energy market. --- Document owner.
sender_MarketParticipant.marketRole.type	The identification of the role played by a market player. --- Document owner. --- The role associated with a MarketParticipant.
receiver_MarketParticipant.mRID	The identification of a party in the energy market. --- Document recipient.
receiver_MarketParticipant.marketRole.type	The identification of the role played by a market player. --- Document recipient. --- The role associated with a MarketParticipant.
createdDateTime	The date and time of the creation of the document.

Table 7 provides the dependencies for the status request market document relevant for the reporting process.

The attribute instance component defines the nature of the request through the use of two attributes:

- “attribute” that contains a keyword identifying the name of an attribute that is used to identify what is being specified. In the context of the reporting process the following attributes shall be used: “type”, “domain.mRID”; “dataset.mRID”, “referenced.dateTime”, “processType” and/or “businessType”.
- “attributeValue” that provides the content of the specified attribute. It is a string value that represents a copy of the element tag of the electronic document for which the status is being requested.

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598 **Table 7 – Status request market document dependency table**

	Document type	Domain status request	Requested time interval	Dataset status request	referenced date time	ProcessType	BusinessType
	AttributeInstanceComponent						
attribute	The attribute value shall equal “type”	The attribute value shall equal “domain.mRID”	The attribute value shall equal “requested_Period.timeInterval	The attribute value shall equal “dataset.mRID”	The attribute value shall equal “referenced.dateTime”	The attribute value shall equal “ProcessType”	The attribute value shall equal “BusinessType
attributeValue	*The identification of the type that is covered in the reporting information market document. It shall correspond to one of the following:* *B18 (RSMD) = status information* *B19(RIMD) = reporting information* *The status information shall provide information about the result of the verification process on a scheduling area border.* *The reporting information shall provide information about the scheduling data based on “positively verified” schedules.*	*The identification of the domain that is covered in the status request document. Depending on the reporting context it will correspond to one of the following:* *For status information:* • *A Scheduling area border;* *For Reporting information:* • *A Scheduling area;* • *A Scheduling area border;* • *A Load-frequency control area;* • *A Load-frequency control area border;* • *A Load-frequency control block area;* • *A Load-frequency control block area border;* • *A Synchronous area.* *The identification shall be an EIC Y code.*	*The identification of the period that is to be covered in the reply, for example a given schedule day.* *The time interval is mandatory.* *The time interval shall conform to the following pattern:* *YYYY-MM-DDThh:mmZ/ YYYY-MM-DDThh:mmZ*	*The identification of an individually predefined data set in a data base system (e. g. the verification system).* *This attribute shall only be set in combination with Document type B19 (RIMD)* *Only reporting information will be provided* *The identification shall be up to 35 alphanumeric characters.* *This name shall not be provided if a domain is present.* *This name shall be provided if a domain is not present*	*For Reporting information only:* *The point of time for which the data is requested from the data base system (e. g. the verification system).* *The date and time shall conform to the following pattern:* *YYYY-MM-DDThh:mm:ssZ* *This name shall only be provided if required.*	*A01 = Provide Day ahead values only.* *A18 = Provide latest available verification data based on day ahead and intraday*	*Optional attribute. If not present, all business types of the requested domain(s) are reported.* *Not present if a dataset identification is present.* *For example* *A44 = Compensation program schedule* *B61 = Aggregated netted external market schedule* *B62 = Aggregated netted external TSO schedule* *B63 = Aggregated netted external schedule* *B64= Netted area AC position* *B65 = Netted area position*

		This name shall not be provided if a dataset identification is present. *This name shall be provided if a dataset identification is not present.*					

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