



ENTSO-E BALANCING TRANSPARENCY PROCESS IMPLEMENTATION GUIDE

2023-09-14

APPROVED
VERSION 4 RELEASE 12

Table of Contents

2			
3	1	INTRODUCTION	8
4	2	THE BALANCING PROCESS OVERVIEW	9
5	2.1	BREAKDOWN OF THE BALANCING PROCESS	9
6	3	THE BALANCING TRANSPARENCY PROCESS SEQUENCE	10
7	3.1	GENERIC PROCESSING SEQUENCE	10
8	3.2	APPLICABLE ESMP DOCUMENTS	10
9	4	BALANCING MARKET DOCUMENT IMPLEMENTATION RULES GOVERNING THE	
10		BALANCING MARKET DOCUMENT	12
11	4.1.1	THE TRANSMISSION OF BALANCING INFORMATION	12
12	4.1.2	CODING SCHEME	12
13	4.1.3	STATUS INFORMATION	12
14	4.1.4	RULES GOVERNING THE SERIES_PERIOD CLASS	12
15	4.1.5	DOCUMENT ATTRIBUTE DEPENDENCIES.....	12
16			
17		TABLE OF FIGURES	
18		FIGURE 1: INFORMATION EXCHANGE FOR THE PROVISION OF BALANCING INFORMATION.....	9
19		FIGURE 2: GENERIC BALANCING PROCESS SEQUENCE.....	10
20		FIGURE 3: BALANCING DOCUMENT DEPENDENCY TABLE	17
21			

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This document is maintained by the ENTSO-E CIM WG. Comments or remarks are to be provided at cim@entsoe.eu

Revision History

Version	Release	Date	Comments
1	0	2013-06-24	First version.
2	0	2013-09-12	Version taking into account the comments issued during the Public Consultation.
3	0	2014-01-24	Version taking into account comments in addition to correcting some typing error. Alignment of the models and attribute names with the CIM model following integrity check. Reposition of docStatus Addition of periodTimeInterval Dependency table alignment. Approved by Market Committee on 2014-02-04.
4	0	2015-01-08	Reference to ENTSO-E XML namespace reference document version 2 release 0 and recommendation.
4	1	2015-04-23	Maintenance request (EMFIP21) on the “imbalance volume” relative to Article 17(h). The quantity value is either positive or negative. Changes have been made in Figure 3 column Article 17(h)
4	2	2015-09-23	Maintenance request (EMFIP16) on the “source of reserve” relative to Article 17(b) to 17(g). In some case the source of the reserve is not identified, i.e. generation or load, thus the AssetType A03 (resource object, i.e. a resource that can either produce or consume energy) is to be used.
4	3	2016-04-28	Maintenance request EMFIP29: In the dependency table §0, article 17.1.h attribute flowDirection.direction is set to “Used”. In state in the “Description” explanation that “A01 = Up” is to convey surplus and “A02 = Down” is to convey deficit.
4	4	2016-09-02	Maintenance request EMFIP32: In the dependency table §4.3.3, article 17.1.d attribute secondaryQuantity is set to “Not used”. Maintenance request EMFIP35: In the dependency table §4.3.3, article 17.1.j attribute currency_Unit.name is set to “Used, if prices included”, secondaryQuantity is set to “May be used”, minimum_Price.amount is set to “May be used” and maximum_Price.amount is set to “May be used” Maintenance request EMFIP37: For article 17.1.h, removed all references to signed values in attribute Quantity.

4	5	2018-03-09	<p>Maintenance request EMFIP42:</p> <p>New attributes standard_MarketProduct and original_MarketProduct following EDI meeting 63</p> <p>New business type attributes in dependency table in chapter 4.3.3, column for article 17.1.j</p> <p>In dependency table in chapter 4.3.3, introduce two new rows for the attributes holding the Market Product.</p> <p>New subchapter under chapter 4.5 describing MarketProduct</p>
4	6	2018-11-08	<p>Maintenance request EMFIP50.</p> <p>Detailed the applicable price categories in the dependency table. Removed references to transparency regulation articles 17.1.d, 17.1.e and 17.1.j for which reporting will be phased out. Diagrams updated accordingly. Introduced use of SecondaryQuantity when reporting data under article 17.1.h. Approved by MC.</p>
4	7	2020-05-29	<p>Maintenance request EMFIP65:</p> <p>Introduced in chapter 4.5.7 the possibility to use Code A03 = Symmetric when reporting no imbalance under transparency regulation article 17.1.h.</p> <p>Balancing market document contextual and assembly models were removed from IG. A reference to the Balancing document UML model and schema (Available in EDI library) was included instead.</p>
4	8	2021-04-20	<p>Maintenance request EMFIP66:</p> <p>Update to TR. 17.1.f; in chapters 4.1.3 and 4.2.4 introduced additional process types to distinguish mFRR direct and scheduled activation. Update to resolution in chapter 4.4.2 to support higher resolution when reporting of prices for aFRR standard product.</p> <p>Approved by MC.</p>
4	9	2021-06-17	<p>Maintenance request EMFIP69:</p> <p>Merged data submissions for TR 17.1.b&c. Attributes MarketAgreement.type made optional. Existing attribute allocationDecision_DateAndOrTime made mandatory. Standard or original market products may be specified when applicable.</p> <p>Maintenance request EMFIP73:</p> <p>Aligned publication of TR 17.1.g with methodology for harmonised imbalance settlement. Attribute mktPSRType.psrType no longer used, since no distinction</p>

			shall be made between prices for generation or consumption. Use of attribute imbalance_Price.category made optional in case of single imbalance pricing. A new attribute called priceDescriptor.type was introduced to convey additional components applied during price calculation.
4	10	2021-08-16	Maintenance request EMFIP74 and EMFIP75: Cross-border marginal price (CBMP) introduced as a new price type for publications under TR art. 17.1.f. Dependency table in chapter 4.1.3 and Description in chapter 4.5.9 updated accordingly. docStatus “Withdrawn” may be used to withdraw data submitted erroneously. Chapters 4.1.2 and 4.2.10 updated accordingly.
4	11	2022-06-23	Maintenance request EMFIP80: Update to TR. 17.1.f; in chapters 4.1.3 and 4.2.4 introduced additional process types to distinguish prices for aFRR standard product depending on whether bids were selected centrally by European platform or locally by TSO. Added missing table of schema versions and removed chapters describing schemas and their attributes.
4	12	2023-09-14	Maintenance request EMFIP85: Update to TR. 17.1.f; introduced the possibility to exclude the quantity attribute. ICTC approved

Reference Documents

1. Commission Regulation 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. (note: all articles mentioned in the current document come from this regulation).
2. Central Information Transparency Platform - Business Requirements Specification.
3. The Harmonised ENTSO-E Role Model.
4. A Common Identification System for the Energy Industry, The Energy Identification Coding Scheme – EIC.
5. The ENTSO-E Code List.
6. The introduction of different time series possibilities (CurveType) within ENTSO-E electronic documents.
7. IEC 62325-301, Framework for energy market communications Common information model (CIM) Extensions for markets.
8. IEC 62325-351, Framework for energy market communications CIM European market model exchange profile
9. IEC 62325-450, Profile and context modelling rules.
10. IEC 62361 part 100, Naming and design rules for CIM profiles to XML schema mapping.
11. IEC 62325-451-1, Framework for energy market communications The acknowledgement document.
12. Balancing document UML model and schema.
13. ENTSO-E XML namespace reference document version 2 release 0. This reference shall ensure to have compliant electronic document instance files; and in particular to apply the following recommendations:
 - **In order to enable flexibility, it is recommended that the schema location instruction (and xsi definition) in the schema compliant instance should not be used.**

1 INTRODUCTION

This implementation guide is one of the implementation guides drafted by ENTSO-E to enable the establishment of a common level of fundamental data transparency as per the Regulation on transparency and provision of information in European electricity markets.

This implementation guide focuses on defining the information to be exchanged for the publication of the balancing data as defined in the central transparency platform Business Requirements Specification.

Its purpose is to facilitate the provision of balancing information to a central information platform. This platform should enable the establishment of a coherent and consistent view of the European wholesale electricity market by all the market participants as well as to interested European consumers.

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 actors in the electrical industry in Europe.

This guide provides a standard for enabling a uniform layout for the transmission of balancing data between the European electricity market participants and the Transparency platform via the Market Information Provider (who may be the Transmission System Operator). The information model within the guide shall ensure that a common interface can be provided between different software solutions.

2 THE BALANCING PROCESS OVERVIEW

2.1 BREAKDOWN OF THE BALANCING PROCESS

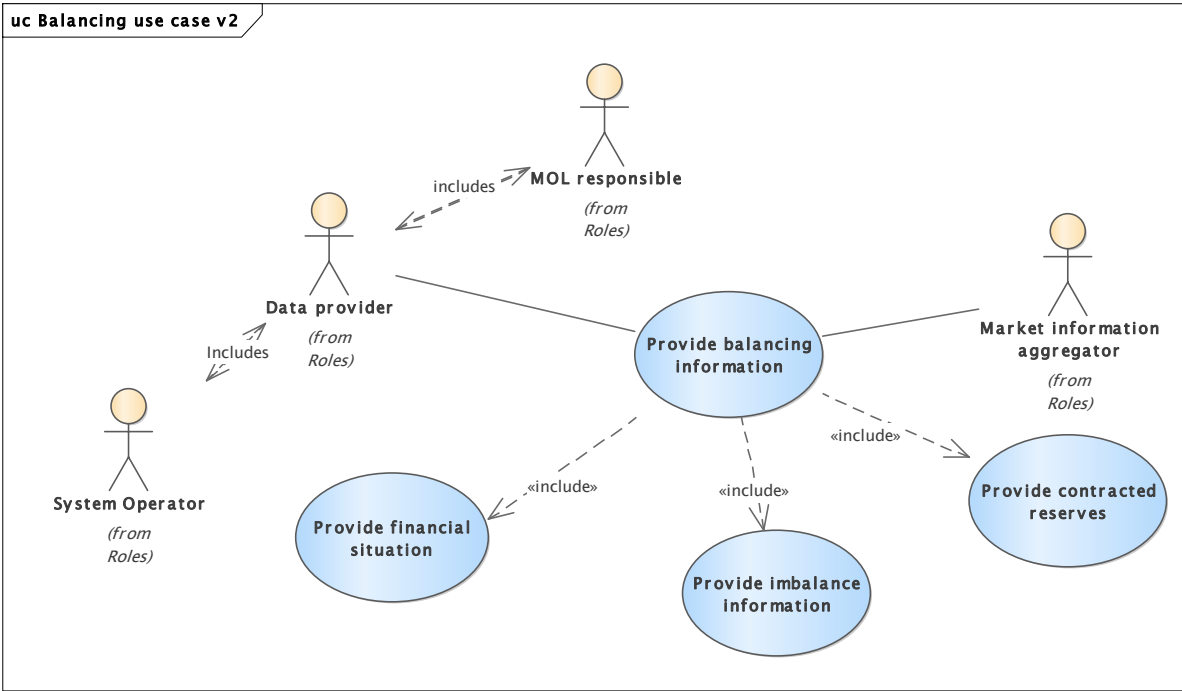


FIGURE 1: INFORMATION EXCHANGE FOR THE PROVISION OF BALANCING INFORMATION

The provision of balancing information is relatively straightforward and can be shown as a single use case that includes separate use cases covering the information requirements within a given time interval. The dialogue is essentially between the data provider and the market information aggregator. The data provider could be the system operator, the market operator MOL Responsible or the Reserve Allocator, etc...

The balancing information submission requirements can be outlined as follows:

1. Provide contractual reserves.
2. Provide imbalance volumes and prices.
3. Provide financial situation.

The platform makes the information provided available to the public as soon as any information is received.

3 THE BALANCING TRANSPARENCY PROCESS SEQUENCE

3.1 GENERIC PROCESSING SEQUENCE

The balancing transparency process can be basically divided into four groups of information requirements; procurement requirements, prices of activated balancing energy, imbalance situation and financial settlement. The sequence diagram in figure 2 outlines the information flows necessary to satisfy the identified requirements.

Following the reception of a balancing market document, the acknowledgement business process as per IEC 62325-451-1 shall be applied. In particular, the Data provider shall receive an acknowledgement stating whether the document has been accepted or rejected and the reasons for the rejection.

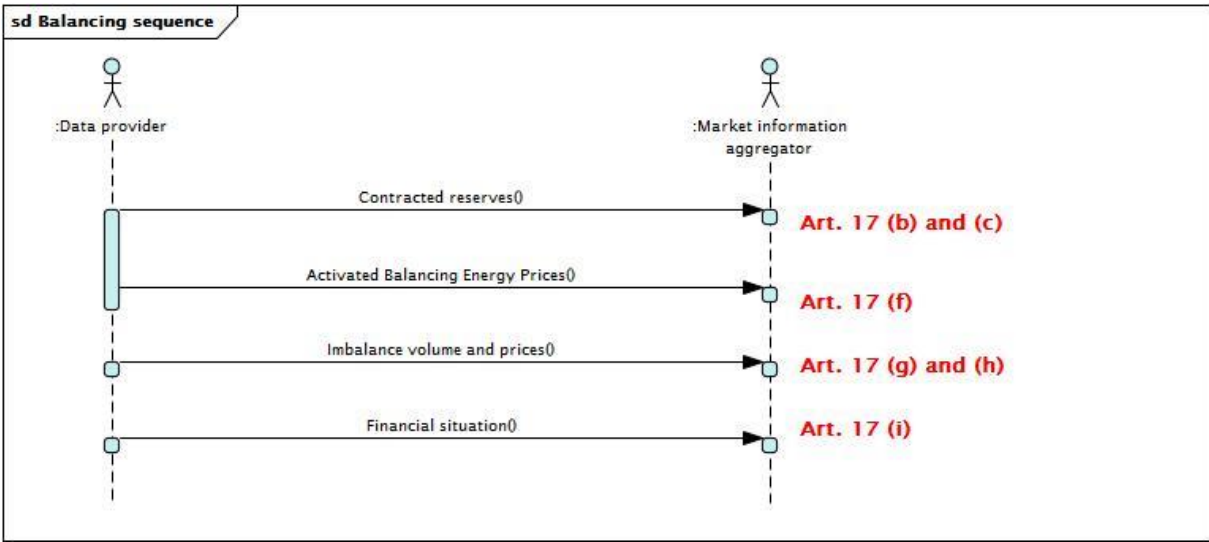


FIGURE 2: GENERIC BALANCING PROCESS SEQUENCE

3.2 APPLICABLE ESMP DOCUMENTS

This implementation guide assumes the use of the following EDI documents and contextual and assembly models (also referred to as XSD or schema versions):

Table 1 – Applicable ESMP documents

ESMP document		version
Balancing document	market	urn:iec62325.351:tc57wg16:451-6:balancingdocument:4:4

All schemas are available for download from the ENTSO-E website.

4 BALANCING MARKET DOCUMENT IMPLEMENTATION RULES GOVERNING THE BALANCING MARKET DOCUMENT

4.1.1 THE TRANSMISSION OF BALANCING INFORMATION

Each transmission of balancing information as indicated in the sequence in figure 2 should be transmitted in a single document. Any changes necessary to the information transmitted should be adjusted through the use of a new version of the document in question. This is particularly true in the case of the transmission of the imbalance volumes and the settlement information.

The latest revision of a document provides the current state of the information contained in the document.

Volumes (article 17.1.b) and prices (article 17.1.c) of balancing reserves under contract shall be submitted in the same document. In case prices and volumes are not available for publication at the same time, the prices shall be submitted as an update to the document containing the volumes, or vice versa. When submitted as an update, both volumes and prices must be included in the document.

4.1.2 CODING SCHEME

A01 = EIC coding scheme is the single supported coding scheme.

4.1.3 STATUS INFORMATION

A balancing document shall have a docStatus class instance in the case where the information provided is final for articles 17 (g), 17 (h) and 17 (i). Exceptionally, the value A13 = Withdrawn may be used to withdraw data submitted erroneously.

4.1.4 RULES GOVERNING THE SERIES_PERIOD CLASS

There may be more than one series_period class for a time series. The interval of the series_period must fall within the time interval declared in the document header.

The total number and positions of points within the series period must correspond to the curve type and the series period's resolution and time interval.

4.1.5 DOCUMENT ATTRIBUTE DEPENDENCIES

Article involved	Art. 17(b)&(c)
Attribute	
Type	A81: contracted reserve

Article involved Attribute		Art. 17(b)&(c)
	process.processType	A46 = Replacement reserve (RR) A47 = Manual frequency restoration reserves (mFRR) A51 = automatic frequency restoration reserve (aFRR) A52 = frequency containment reserve (FCR)
	sender_MarketParticipant.marketRole.type	A35 = MOL Responsible A04 = System Operator A32 = Market Information Aggregator
	receiver_MarketParticipant.marketRole.type	A32 = Market Information Aggregator A04 = System Operator A35 = MOL Responsible A33 = Information Receiver
	area_Domain.mRID	scheduling area
	allocationDecision_DateAndOrderTime.dateTime	Used
	period.timeInterval	The start and end date and time of the period the balancing market document is covering
TimeSeries	businessType	B95 = procured capacity
	acquiring_Domain.mRID	Not used
	connecting_Domain.mRID	Not used
	type_MarketAgreement.type	May be used: A13 = Hourly A01 = Daily A02 = Weekly A03 = Monthly A04 = Yearly A06 = Long term contract
	standard_MarketProduct	May be used ⁽¹⁾
	original_MarketProduct	May be used ⁽¹⁾
	mktPSRType.psrType	Used: A03 = Resource object A04 = Generation A05 = Load
	flowDirection.direction	Used: A01 = Up A02 = Down A03 = Up and down (i.e. symmetric)
	currency_Unit.name	Used when prices included
	quantity_Measure_Unit.name	Used when volumes included: MAW
	price_Measure_Unit.name	Used when prices included: MAW
	curveType	A01 = Sequential fixed block A03 = Variable sized blocks
	cancelledTS	May be used: A01 = Yes – the time series data has been withdrawn
	auction.mRID	Not used
Series_Period	Period	Used
	timeInterval	Used
Point	resolution	PT60M PT30M PT15M
	Quantity	Used when volume included. Non-signed value.
	secondaryQuantity	Not used
	activation_Price.amount	Not used
	procurement_Price.amount	Used when prices included
	minimum_Price.amount	Not used

Article involved Attribute		Art. 17(b)&(c)
	maximum_Price.amount	Not used
	imbalance_Price.amount	Not used
	imbalance_Price.category	Used for download transmission: A06 = Average bid price A07= Single marginal bid price
	financial_Price.amount	Not used
	financial_Price.direction	Not used
	priceDescriptor.type	Not used

150

151

Article involved Attribute		Art. 17(f)	Art. 17 (g)
	Type	A84: activated balancing price	A85: imbalance prices
	process.processType	A16: realised A60: Scheduled activation mFRR A61: Direct activation mFRR A67: Central selection aFRR A68: Local selection aFRR	A16: realised
	sender_MarketParticipant.marketRole.type	A35 = MOL Responsible A04 = System Operator A32 = Market Information Aggregator	
	receiver_MarketParticipant.marketRole.type	A32 = Market Information Aggregator A04 = System Operator A35 = MOL Responsible A33 = Information Receiver	
	area_Domain.mRID	imbalance price or scheduling area	
	allocationDecision_DateAndOrderTime.dateTime	Not used	
	period.timeInterval	The start and end date and time of the period the balancing market document is covering	
TimeSeries	businessType	A95: frequency containment reserve A96: automatic frequency restoration reserve A97: manual frequency restoration reserve A98: replacement reserve	A19: balance energy deviation
	acquiring_Domain.mRID	Not used	Not used
	connecting_Domain.mRID	Not used	Not used
	type_MarketAgreement.type	Not used	Not used
	standard_MarketProduct	May be used ⁽¹⁾	Not used
	original_MarketProduct	May be used ⁽¹⁾	Not used
	mktPSRType.psrType	May be used: A03 = Resource object A04 = Generation A05= Load	Not used
	flowDirection.direction	Used: A01 = Up A02 = Down	Not used
	currency_Unit.name	Used	Used

Article involved Attribute		Art. 17(f)	Art. 17 (g)
	quantity_Measure_Unit.name	Not used	Not used
	price_Measure_Unit.name	MWH	MWH
	curveType	A01 = Sequential fixed block A03 = Variable sized blocks	A01 = Sequential fixed block A03 = Variable sized blocks
	cancelledTS	May be used: A01 = Yes – the time series data has been withdrawn	May be used: A01 = Yes – the time series data has been withdrawn
	auction.mRID	Not used	Not used
	period	Used	Used
Series_Period	timeInterval	Used	Used
	resolution	PT60M PT30M PT15M PT4S PT1S	PT60M PT30M PT15M
Point	Quantity	Not used	Not used
	secondaryQuantity	Not used	Not used
	activation_Price.amount	Used except when process type A67 and no price is available for the given position	Not used
	procurement_Price.amount	Not used	Not used
	minimum_Price.amount	Not used	Not used
	maximum_Price.amount	Not used	Not used
	imbalance_Price.amount	Not used	Used
	imbalance_Price.category	Used for download transmission: A06 = Average bid price A07 = Single marginal bid price A08 = Cross border marginal price	May be used A04 = Excess balance A05 = insufficient balance
	financial_Price.amount	Not used	May be used
	financial_Price.direction	Not used	Not used
	priceDescriptor.type	Not used	May be used A01 = scarcity A02 = incentive A03 = financial neutrality

152

Article involved Attribute		Art. 17(h)	Art. 17(i)
	Type	A86: imbalance volume	A87: financial situation
	process.processType	A16: realised	A16: realised
	sender_MarketParticipant.marketRole.type	A35 = MOL Responsible A04 = System Operator A32 = Market Information Aggregator	
	receiver_MarketParticipant.marketRole.type	A32 = Market Information Aggregator A04 = System Operator A35 = MOL Responsible A33 = Information Receiver	
	area_Domain.mRID	imbalance or scheduling area	control area
	allocationDecision_DateAndOrTime.dateTime	Not used	Not used
	period.timeInterval	The start and end date and time of the period the balancing market document is covering	
TimeSeries	businessType	A19: balance energy deviation	A99: financial information
	acquiring_Domain.mRID	Not used	Not used
	connecting_Domain.mRID	Not used	Not used
	type_MarketAgreement.type	Not used	Not used
	standard_MarketProduct	Not used	Not used
	original_MarketProduct	Not used	Not used
	mktPSRType.psrType	Not used	Not used
	flowDirection.direction	Used: A01 = Up in case of surplus A02 = Down in case of deficit A03 = Symmetric may be used together with zero quantity to convey that there was no imbalance	Not used
	currency_Unit.name	Not used	Used
	quantity_Measure_Unit.name	MWH	Not used
	price_Measure_Unit.name	Not used	Not used
	curveType	A01 = Sequential fixed block A03 = Variable sized blocks	A01 = Sequential fixed block A03 = Variable sized blocks
	cancelledTS	May be used: A01 = Yes – the time series data has been withdrawn	May be used: A01 = Yes – the time series data has been withdrawn
	auction.mRID	Not used	Not used
Series_Period	Period	Used	Used
	timeInterval	Used	Used
	resolution	PT60M PT30M PT15M	P1M
Point	quantity	Used. Non-signed value.	Not used

Article involved	Attribute	Art. 17(h)	Art. 17(i)
	secondaryQuantity	Used: The difference between measured and scheduled flows on all interconnectors: MV – SV. Signed value.	Not used
	activation_Price.amount	Not used	Not used
	procurement_Price.amount	Not used	Not used
	minimum_Price.amount	Not used	Not used
	maximum_Price.amount	Not used	Not used
	imbalance_Price.amount	Not used	Not used
	imbalance_Price.category	Not used	Not used
	financial_Price.amount	Not used	Used
	financial_Price.direction	Not used	Used A01 = Expenditure A02 = Income
	priceDescriptor.type	Not used	Not used

FIGURE 3: BALANCING DOCUMENT DEPENDENCY TABLE

⁽¹⁾ At the discretion of the data provider, the Market Product may be included when reporting under article 17.1.f or articles 17.1.b&c. In such case, either standard or original product attribute may be populated, but not both at the same time.