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# ENTSO-E GENERATION AND LOAD TRANSPARENCY PROCESS IMPLEMENTATION GUIDE

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## 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 errors. Alignment of the models and attribute names with the CIM model following integrity check. Correction to the use of Business Type A04 Approved by Market Committee on 2014-02-04.
4	0	2015-01-08	This version takes into account the EMFIP corrigendum version 5. The following changes have been made: <ul style="list-style-type: none"> <li>• Generation and load document: Indicate in the generation and load document load dependency table for articles 14(c), 16(a) and 16(b and c) that the inBiddingZone.Domain should be used in the case of positive production and clarification for 16 (a).</li> </ul>

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## 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 ENTSO-E Harmonised Role Model.
4. A Common Identification System for the Energy Industry, The Energy Identification Coding Scheme – EIC.
5. The ENTSO-E Code List.
6. IEC 62325-301, Framework for energy market communications Common information model (CIM) Extensions for markets.
7. IEC 62325-351, Framework for energy market communications CIM European market model exchange profile.
8. IEC 62325-450, Profile and context modelling rules.
9. IEC 62361 part 100, Naming and design rules for CIM profiles to XML schema mapping.
10. The introduction of different time series possibilities (CurveType) within ENTSO-E electronic documents.
11. 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 Generation and Load data as defined in the EMFIP Business Requirements Specification.

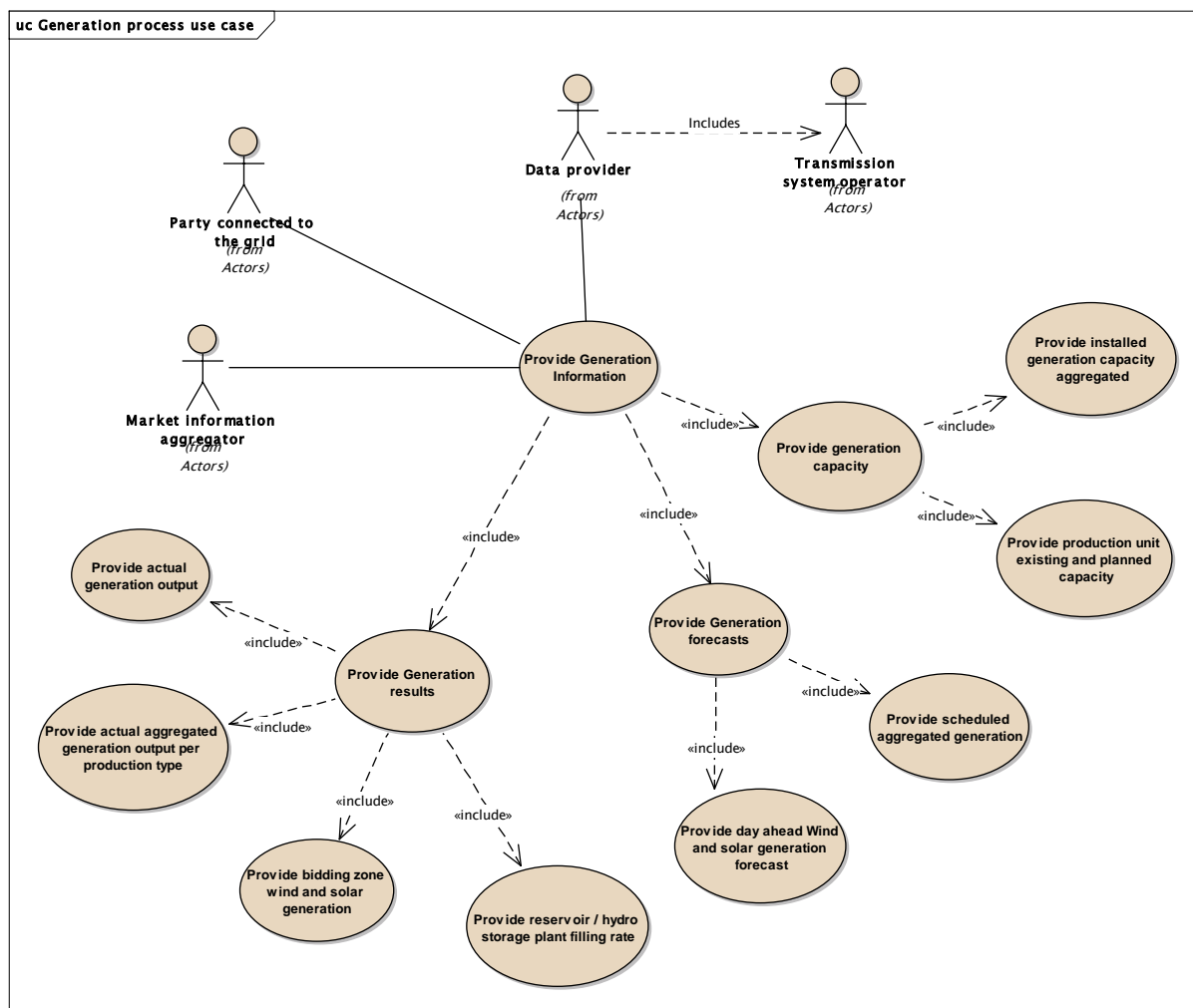
Its purpose is to facilitate the provision of Generation and Load (GL) information to a central information platform. This platform should enable the establishment of a coherent and consistent view of the European wholesale electricity market by all the market participants as well as to interested European 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 Generation and Load data between the European electricity market participants and the Transparency platform via the Data 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 GENERATION AND LOAD PROCESS OVERVIEW

### 2.1 BREAKDOWN OF THE GENERATION PROCESS



**FIGURE 1: INFORMATION EXCHANGE FOR THE PROVISION OF GENERATION INFORMATION**

The provision of generation information concerns 8 different categories of information as defined in the regulation:

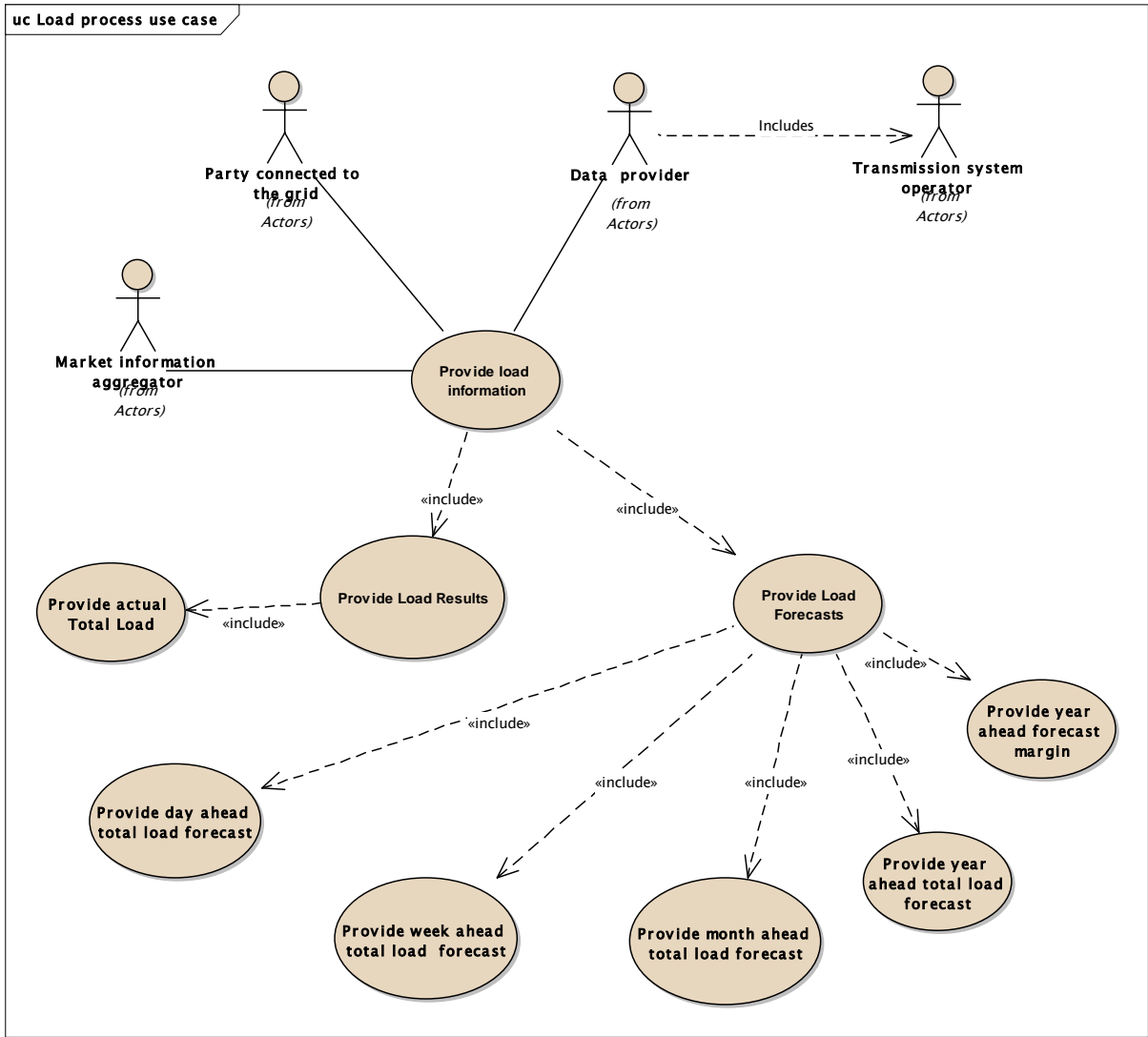
1. Installed generation capacity aggregated: The sum of installed generation capacity (MW) for existing production units per production type (article 14 [a]<sup>1</sup>).
2. Existing and planned production unit capacity: The installed generation capacity (MW) for each installed and planned production unit (article 14 [b]).

<sup>1</sup> All articles mentioned in this chapter can be found in [Reference 1]



- 141 3. Scheduled aggregated generation (MW): An estimate of the total scheduled  
142 generation per bidding zone, per each market time unit for the following day (article  
143 14 [c]).
- 144 4. Day ahead wind and solar generation forecast (MW): The forecast of the wind and  
145 solar power generation (MW) per bidding zone, per each market time unit of the  
146 following day (article 14 [d]).
- 147 5. Actual generation output (MW). The generation output detailed per generation unit  
148 (article 16 [a]).
- 149 6. Aggregated actual generation output per production type: The aggregated generation  
150 output (MW) per production type and per market time unit (article 16 [b]).
- 151 7. Bidding zone wind and solar generation: The estimated wind and solar power  
152 generation (MW) in each bidding zone per market time unit (article 16 [c]).
- 153 8. Reservoir / hydro storage plant filling rate: The weekly filling rate of all water reservoir  
154 and hydro storage plants (MWh) per bidding zone including the figure for the same  
155 week of the previous year (article 16 [d]).

## 2.2 BREAKDOWN OF THE LOAD PROCESS



**FIGURE 2: INFORMATION EXCHANGE FOR THE PROVISION OF LOAD INFORMATION**

The provision of load information concerns 6 different categories of information as defined in the regulation:

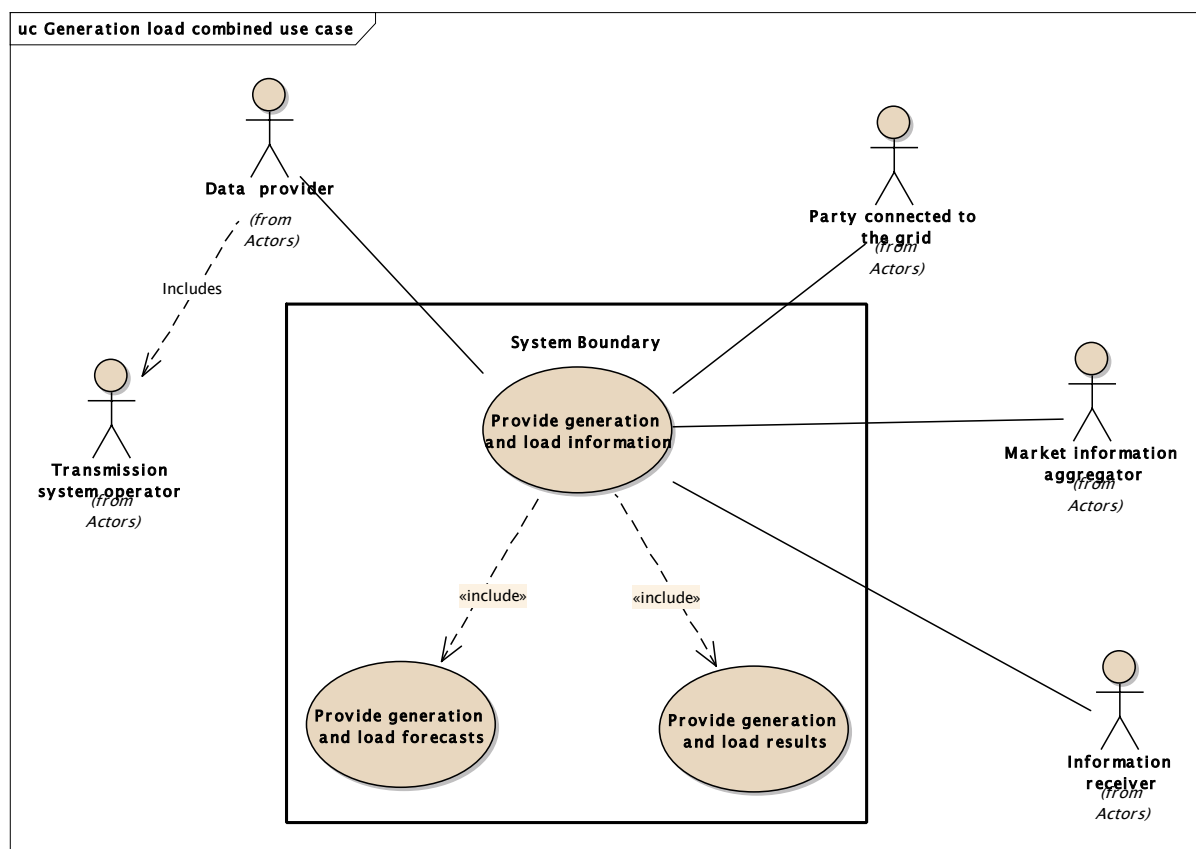
1. Total load: The total load per market time unit (article 6 [a]<sup>2</sup>).
2. Day ahead forecast: The day ahead forecast of the total load per market time unit (article 6 [b]).

<sup>2</sup> All articles mentioned in this chapter can be found in [Reference 1]

3. Week ahead forecast: A week-ahead forecast of the total load for every day of the following week which shall include a maximum and a minimum load value (article 6 [c]).
4. Month ahead forecast: A month ahead forecast of the total load for every week of the following month which shall include, for a given week, a maximum and a minimum load value (article 6 [d]).
5. Year ahead forecast: A year-ahead forecast of the total load for every week of the following year, which shall for a given week include a maximum and a minimum load value (article 6 [e]).
6. Year ahead forecast margin: The information is to be given per bidding zone evaluated at local market time unit (article 8).

## 2.3 MERGE OF GENERATION AND LOAD PROCESSES

The previous detailed processes for Generation and Load can be merged in the single use case as outlined in Figure 3 due to their very strong similarities in information requirements.



**FIGURE 3: INFORMATION EXCHANGE FOR THE PROVISION OF GENERATION AND LOAD INFORMATION**

183 Consequently the information exchanged for these two processes can be wrapped into a  
184 single generic information exchange structure. It is sufficient to differentiate between the  
185 “Load” or the “Generation” information in the electronic document through the use of a type  
186 that indicates whether it is related to “Generation” or “Load”.

### 3 GENERATION AND LOAD PROCESSING SEQUENCE

#### 3.1 GENERIC PROCESSING SEQUENCE

The generation and load process basically follows the periodicity that is required for the delivery of the information to the Transparency platform. Information has to be provided by the parties connected to the grid to the Data Provider (who may be a Transmission System Operator). The Data Provider assembles the information together and transmits it to the Market Information Aggregator for implementation on the Transparency Platform.

The “global” generic process sequence is outlined in Figure 4.

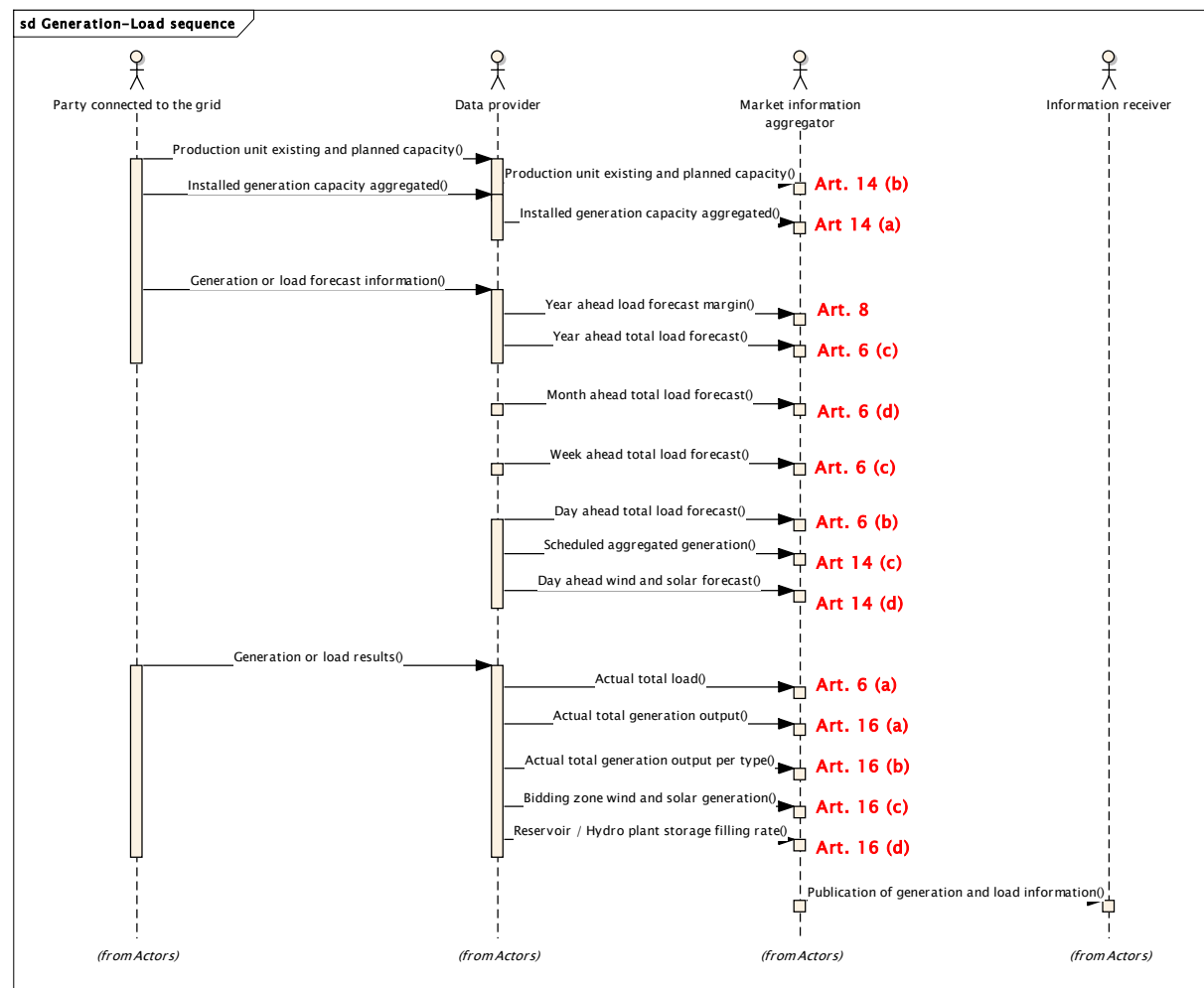


FIGURE 4: GENERIC GENERATION / LOAD PROCESS SEQUENCE<sup>3</sup>

<sup>3</sup> All articles mentioned in this diagram can be found in [Reference 1]

The provision of generation or load forecast information requires the information to be exchanged between the Party Connected to the Grid and the Data Provider.

The information is provided respecting the periodicity constraints for various forecast information. However local market rules may make use of other means to provide this information.

The Data Provider provides the following information to the Market Information Aggregator once it has been received from the Party Connected to the Grid:

- Wind and solar forecasts
- Generation capacity forecasts
- Load / generation forecasts
- Reservoir/ hydro storage plant filling rate.

In addition the Data Provider provides the following additional information to the Market Information aggregator:

- Generation unit output
- Production type output
- Actual total load.

As the information is received the Market Information Aggregator publishes it so that it is available for the market. Information Receivers may then look up or download the available information.

Following the reception of a generation and load 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.

## 4 GENERATION AND LOAD MARKET DOCUMENT IMPLEMENTATION

### 4.1 CONTEXTUAL MODEL

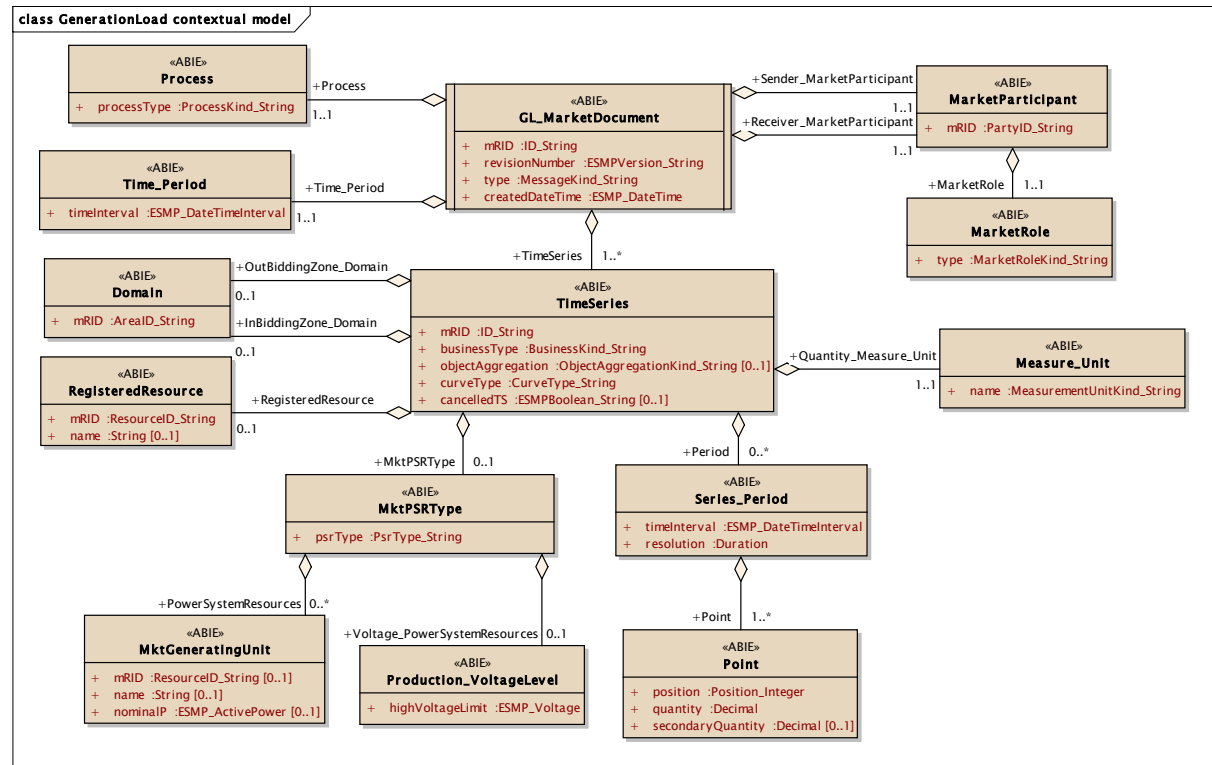


FIGURE 5: GENERATION AND LOAD CONTEXTUAL INFORMATION MODEL

## 4.2 INFORMATION MODEL

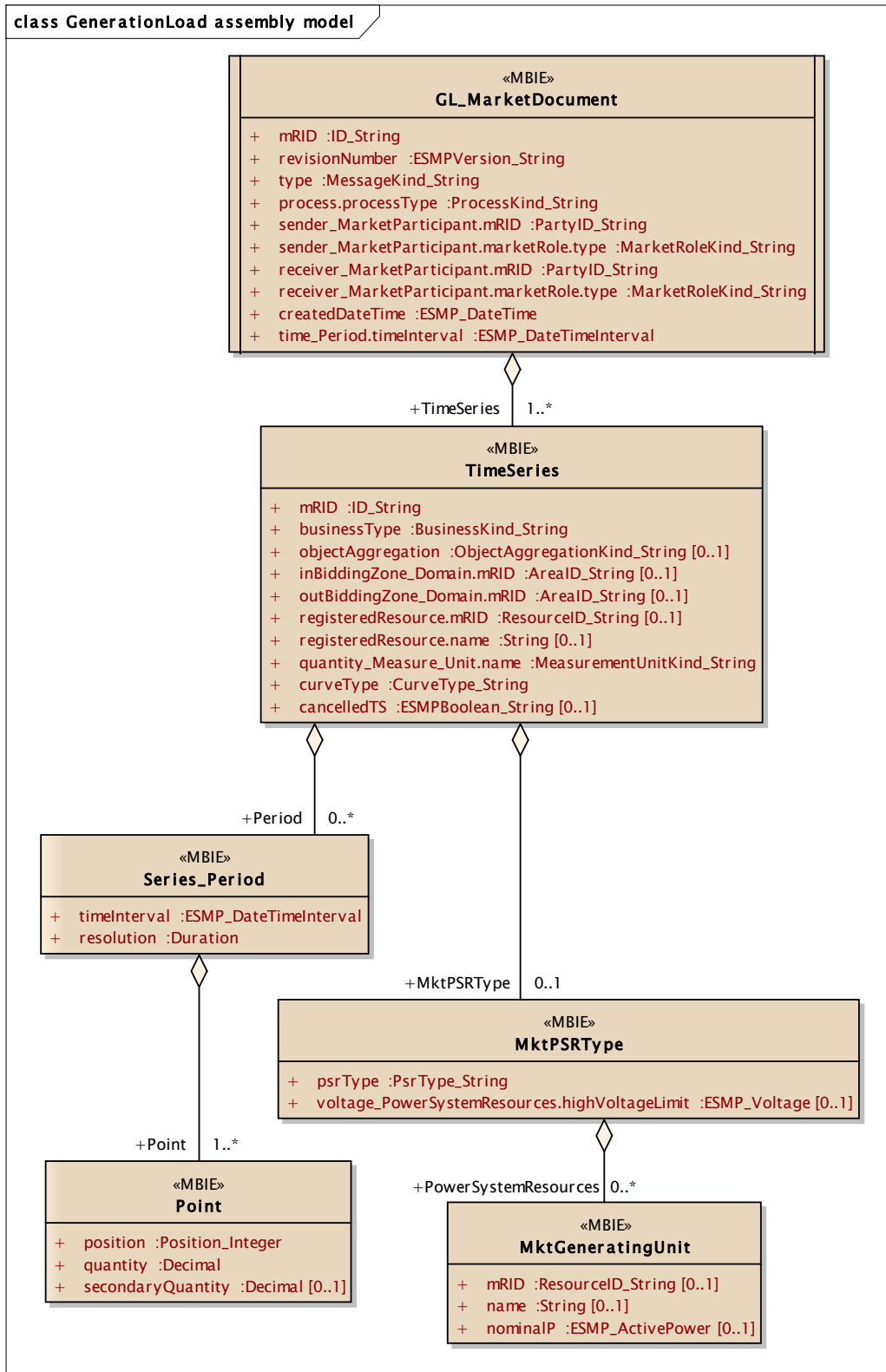


FIGURE 6: GENERATION AND LOAD ASSEMBLY MODEL



## 4.3 RULES GOVERNING THE GENERATION AND LOAD MARKET DOCUMENT

### 4.3.1 THE RETRANSMISSION OF HISTORICAL INFORMATION

Information for a given period in time (e.g. a day) may, depending of the nature of the information, be sent via several distinct transmissions (e.g. a document for each hour of the day). For example a separate electronic document could be sent every hour containing a quantity for the hour in question. Such documents will each have a distinct identification and version. The version could change in this case to correct the hour's quantity.

It may be necessary to retransmit at the end of the period the complete set of historical information. This is carried out through the creation of a new document covering the complete period (e.g. all the hours in the day) that includes all the quantities that have been previously sent with any corrections that are necessary.

Every document version has a creation date and time that could be effectively used as the document timestamp since a new version of a document cancels and replaces the previous version of the document.

### 4.3.2 MISSING INFORMATION

If for a given period there is missing information then the use of gaps as defined in [10] (*"The introduction of different time series possibilities (CurveType) within ENTSO-E electronic documents"*) shall be applied. A gap is identified through the use of two periods, where the end of the first period does not coincide with the period of the second. The difference between the two periods represents a gap where data is missing.

### 4.3.3 ABSENCE OF TIMES SERIES IN A DOCUMENT

An electronic document under certain circumstances may contain no time series. This signifies that in a download condition none of the requested information was available.

In a submission scenario it may be used to meet a submission deadline although no information is available.

### 4.3.4 DOCUMENT INSTANCE IMPLEMENTATION

The XML documents described in this implementation guide are to be used for the upload of information to the EMFIP platform; they may also be used for the download of information to market participants in order to enable automatic processing of the information within their systems.

Consequently attributes that describe basic configuration information (such as name, voltage level, etc.) have been included in the XML documents as optional attributes that may be used only in the case where information is downloaded from the platform. This information shall not be used in the case where information is uploaded to the platform.

## 4.3.5 DOCUMENT ATTRIBUTE DEPENDENCIES

### 4.3.5.1 GENERATION DEPENDENCY TABLE<sup>4</sup>

Article involved Attribute		Art. 14(a) Installed production capacity aggregated per production type	Art. 14(b) Production unit existing and planned capacity	Art. 14(c) Day-ahead aggregated generation	Art. 14(d) Day-ahead generation forecast for wind and solar
	type	A68: installed generation per type	A71: generation forecast	A71: generation forecast	A69: wind and solar forecast
	process.processType	A33: year ahead	A33: year ahead	A01: day-ahead	A01: day-ahead
TimeSeries	businessType	A37: installed generation	A37: installed generation	A01: production	A93: wind generation A94: solar generation
	inBiddingZone_Domain.mRID	Used	Used	Used (production positive)	Used
	outBiddingZone_Domain.mRID	Not used	Not used	Used (production negative)	Not used
	quantity_Measure_Unit.name	MAW	MAW	MAW	MAW
	objectAggregation	A08: resource type	A06: resource object	A01: area	A08: resource type
	registeredResource.mRID	Not used	Used	Not used	Not used
	registeredResource.name	Not used	Used only for download transmissions. Not used for upload transmissions	Not used	Not used
MktPSRType	psrType	Used	Used, if nominal for production unit is provided in download context	Not used	Used
	voltage_PowerSystemResources.hi ghVoltageLimit	Not used	Used only for download transmissions. Not used for upload transmissions	Not used	Not used
PowerSystem Resources	mRID	Not used	Not used	Not used	Not used
	name	Not used	Not used	Not used	Not used
	nominalP	Not used	Used only for download transmission for production unit nominal Not used for upload	Not used	Not used
Period	resolution	P1Y	P1Y	PT60M PT30M PT15M	PT60M PT30M PT15M
Point	secondaryQuantity	Not used	Not used	Not used	Not used

<sup>4</sup> All articles mentioned in this table can be found in [Reference 1]

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Article involved Attribute		Art. 16(a) Actual generation per unit	Art. 16(b and c) Aggregated generation per type	Art. 16(d) Reservoir, hydro storage filing rate
	type	A73: actual generation	A75: actual generation per type A74: wind and solar generation	A72: reservoir filing generation
	process.processType	A16: realised	A16: realised	A16: realised
TimeSeries	businessType	A01: production	A01: production A93: wind generation A94: solar generation	A01: production
	inBiddingZone_Domain.mRID	Used (production positive)	Used (production positive)	Used
	outBiddingZone_Domain.mRID	Used (production negative)	Used (production negative)	Not used
	quantity_Measure_Unit.name	MAW	MAW	MWH
	objectAggregation	A06: resource object	A08: resource type	A01: area
	registeredResource.mRID	Not used	Not used	Not used
	registeredResource.name	Not used	Not used	Not used
	psrType	Used	Used	Not used
MktP SRT	voltage_PowerSystemResources.hi ghVoltageLimit	Not used	Not used	Not used
PowerSystem Resources	mRID	Used	Not used	Not used
	name	Used only for download transmissions. Not used for upload transmissions.	Not used	Not used
	nominalP	Not used	Not used	Not used
Period	resolution	PT60M PT30M PT15M	PT60M PT30M PT15M	P7D
Point	secondaryQuantity	Not used	Not used	Not used

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### 4.3.5.2 LOAD DEPENDENCY TABLE<sup>5</sup>

Article involved Attribute		Art. 6(a) Actual total load	Art. 6(b) Day-ahead total load forecast	Art. 6(c) Week-ahead total load forecast
TimeSeries	type	A65: total load	A65: total load	A65: total load
	process.processType	A16: realised	A01: day-ahead	A31: week-ahead
	businessType	A04: consumption	A04: consumption	A04: consumption A60: minimum possible A61: maximum possible
	inBiddingZone_Domain.mRID	Not used	Not used	Not used
	outBiddingZone_Domain.mRID	Used	Used	Used
	quantity_Measure_Unit.name	MAW	MAW	MAW
	objectAggregation	A01: area	A01: area	A01: area
	registeredResource.mRID	Not used	Not used	Not used
	registeredResource.name	Not used	Not used	Not used
	psrType	Not used	Not used	Not used
MktPSR Type				
Period	resolution	PT60M PT30M PT15M	PT60M PT30M PT15M	P1D PT60M PT30M PT15M

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<sup>5</sup> All articles mentioned in this table can be found in [Reference 1]

Note: if the businessType corresponds to A04 then A60 and A61 shall not be used. If A04 is not used then A60 and A61 shall be used

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Article involved Attribute		Art. 6(d) Month-ahead total load forecast	Art. 6(e) Year-ahead total load forecast	Art. 8 Year-ahead forecast margin
	type	A65: total load	A65: total load	A70: load forecast margin
	process.processType	A32: month-ahead	A33: year-ahead	A33: year-ahead
TimeSeries	businessType	A04: consumption A60: minimum possible (note: this must be by week) A61: maximum possible (note: this must be by week)	A04: consumption A60: minimum possible (note: this must be by week) A61: maximum possible (note: this must be by week)	A91: positive forecast margin (if installed capacity > load forecast) A92: negative forecast (if load forecast > installed capacity)
	inBiddingZone_Domain.mRID	Not used	Not used	Not used
	outBiddingZone_Domain.mRID	Used	Used	Used
	quantity_Measure_Unit.name	MAW	MAW	MAW
	objectAggregation	A01: area	A01: area	A01: area
	registeredResource.mRID	Not used	Not used	Not used
	registeredResource.name	Not used	Not used	Not used
MktPSR Type	psrType	Not used	Not used	Not used
Period	resolution	P7D PT60M PT30M PT15M	P7D PT60M PT30M PT15M	P1Y

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## 4.4 GL MARKET DOCUMENT CLASS SPECIFICATION

### 4.4.1 MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	Unique identification of the document being exchanged within a business process flow.
<b>Description</b>	<p>A Generation and Load Market Document for a given set of time series and a given Period Time Interval must have a unique identification assigned by the sender of the document for all transmissions to the receiver.</p> <p>All additions, modifications, or suppressions for the time series and Period Time Interval must use the same identification.</p>
<b>Size</b>	The identification of a document may not exceed 35 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None

### 4.4.2 REVISIONNUMBER

ACTION	DESCRIPTION
<b>Definition of element</b>	Identification of the version that distinguishes one evolution of a document from another.
<b>Description</b>	<p>The document version is used to identify a given version of a time series set for a given Period Time Interval.</p> <p>The first version number for a given document identification shall normally be 1.</p> <p>The document version number must be incremented for each retransmission of a document that contains changes to the previous version.</p> <p>The receiving system should ensure that the version number for a document is superior to the previous version number received.</p>
<b>Size</b>	A version number may not exceed 3 numeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

### 4.4.3 TYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The coded type of a document. The document type describes the principal characteristic of the document.
<b>Description</b>	<p>The document type identifies the information flow characteristics.</p> <p><b>Permitted codes are:</b>  A65 = Total Load  A68 = Installed generation per type  A69 = Wind and solar forecast  A70 = Load forecast margin  A71 = Generation forecast  A72 = Reservoir filling information  A73 = Actual generation  A74 = Wind and solar generation  A75 = Actual generation per type  See dependency table for use.</p>
<b>Size</b>	The document type value may not exceed 3 alphanumeric characters (no blanks).
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

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#### 4.4.4 PROCESS.PROCESSTYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The Process associated with an electronic document header that is valid for the whole document. The identification of the nature of process that the document addresses.
<b>Description</b>	<p>The process type identifies the type of processing to be carried out on the information.</p> <p><b>Permitted codes are:</b>  A01 = Day ahead  A31 = Week ahead  A32 = Month ahead  A33 = Year ahead  A16 = Realised.  See dependency table for use.</p>
<b>Size</b>	The process type value may not exceed 3 alphanumeric characters (no blanks).
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

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#### 4.4.5 SENDER\_MARKETPARTICIPANT.MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	<p>The identification of a party in the energy market.</p> <p>--- The document owner.</p>
<b>Description</b>	<p>The sender of the document is identified by a unique coded identification. This code identifies the party that is responsible for the document content.</p> <p>The codification scheme used shall be :  A01 = EIC coding scheme.</p>
<b>Size</b>	<p>The maximum length of a sender's identification is 16 alphanumeric characters.</p> <p>The maximum length of the coding scheme code is 3 alphanumeric characters.</p>
<b>Applicability</b>	Both the identification and the coding scheme are mandatory.
<b>Dependence requirements</b>	None.



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#### 4.4.6 SENDER\_MARKETPARTICIPANT.MARKETROLE.TYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of the role played by a market player. --- The role associated with a MarketParticipant.
<b>Description</b>	The sender role, which identifies the role of the sender within the document.  <b>Permitted codes are:</b> A20 = Party Connected to the Grid A39 = Data Provider A04 = System Operator or TSO A32 = Market Information Aggregator
<b>Size</b>	The maximum length of a sender role is 3 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

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#### 4.4.7 RECEIVER\_MARKETPARTICIPANT.MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of a party in the energy market. --- The document recipient.
<b>Description</b>	The receiver of the document is identified by a unique coded identification.  The codification scheme used shall be: A01 = EIC coding scheme
<b>Size</b>	The maximum length of a receiver's identification is 16 alphanumeric characters.  The maximum length of the coding scheme code is 3 alphanumeric characters.
<b>Applicability</b>	Both the identification and the coding scheme are mandatory.
<b>Dependence requirements</b>	None.

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#### 4.4.8 RECEIVER\_MARKETPARTICIPANT.MARKETROLE.TYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of the role played by a market player. --- The role associated with a MarketParticipant.
<b>Description</b>	The receiver role, which identifies the role of the receiver within the document. <b>Permitted codes are:</b> A39 = Data Provider A32 = Market Information Aggregator A04 = System Operator or TSO A33 = Information Receiver
<b>Size</b>	The maximum length of a receiver role is 3 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

286

#### 4.4.9 CREATEDDATETIME

ACTION	DESCRIPTION
<b>Definition of element</b>	The date and time of the creation of the document.
<b>Description</b>	The date and time that the document was prepared for transmission by the application of the sender.
<b>Size</b>	The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

#### 4.4.10 TIME\_PERIOD.TIMEINTERVAL

ACTION	DESCRIPTION
<b>Definition of element</b>	The start and end date and time for a given interval. --- The time interval that is associated with an electronic document and which is valid for the whole document.
<b>Description</b>	This information provides the start and end date and time of the periodTime Interval. Note: 1. A week always starts on a Monday and ends on a Sunday 2. A week is assigned to a month if the Monday of the week in question is included in the month that the data is intended to cover.
<b>Size</b>	Both the start and the end date and time must be expressed in UTC as  YYYY-MM-DDTHH:MMZ
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

### 4.5 RULES GOVERNING THE TIME SERIES CLASS

A time series shall exist for each type of information content as defined in the dependency table.

If the information contained in a previously transmit time series is to be cancelled then a new version of the original document shall be sent with the time series in question completed with the information from the previous transmission in addition to the attribute cancelled being put to "cancelled". All the Periods below the time series shall be removed.

296

## 4.5.1 MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	A unique identification of the time series.
<b>Description</b>	<p>A unique identification within the document assigned by the sender.</p> <p>This must be unique for the whole document and guarantee the non-duplication of all the attributes of the time series class.</p>
<b>Size</b>	The maximum size of a time series identification is 35 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

297

## 4.5.2 BUSINESSTYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of the nature of the time series.
<b>Description</b>	<p>The nature of the time series for which the product is handled.</p> <p><b>Permitted codes are:</b>  A01 = Production.  A04 = Consumption.  A37 = Installed generation.  A38 = Available generation.  A60 = Minimum possible.  A61 = Maximum possible.  A91 = Positive forecast margin.  A92 = Negative forecast margin.  A93 = Wind generation.  A94 = Solar generation.  See dependency table for use.</p>
<b>Size</b>	The maximum length of this information is 3 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

298

### 4.5.3 OBJECTAGGREGATION

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of the domain that is the common dominator used to aggregate a time series.
<b>Description</b>	This identified to what extent the object is aggregated. Permitted Object Aggregation codes are: A01 = Area A06 = Resource Object A08 = Resource type See dependency table for use.
<b>Size</b>	The maximum length of this information is 3 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

299

### 4.5.4 INBIDDINGZONE\_DOMAIN.MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	A domain covering a number of related objects, such as market balance area, grid area, borders etc.  --- The bidding zone where energy is going associated with a TimeSeries.
<b>Description</b>	The identification of the bidding zone where energy is going for which the generation information is being provided. In the case of generation this indicates generation output. The codification scheme used shall be: A01 = EIC coding scheme.
<b>Size</b>	The maximum length of the area code is 16 alphanumeric characters.  The maximum length of the coding scheme code is 3 alphanumeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The information is provided in accordance with the dependency table.

300

#### 4.5.5 OUTBIDDINGZONE\_DOMAIN.MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	<p>A domain covering a number of related objects, such as market balance area, grid area, borders etc.</p> <p>--- The bidding zone where energy is taken from associated with a TimeSeries.</p>
<b>Description</b>	<p>The identification of the bidding zone where energy is going out from for which the load or generation information is being provided.</p> <p>In the case of generation this indicates the load used by the generation unit.</p> <p>The codification scheme used shall be:</p> <p>A01 = EIC coding scheme.</p>
<b>Size</b>	<p>The maximum length of the area code is 16 alphanumeric characters.</p> <p>The maximum length of the coding scheme code is 3 alphanumeric characters.</p>
<b>Applicability</b>	<p>This information is dependent.</p>
<b>Dependence requirements</b>	<p>The information is provided in accordance with the dependency table.</p>

301

## 4.5.6 REGISTEREDRESOURCE.MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	The unique identification of a resource.  --- The identification of a resource associated with a time series.
<b>Description</b>	The identification of the production unit for which the generation information is being provided.  The codification scheme used shall be: A01 = EIC coding scheme.
<b>Size</b>	The maximum length of the registered resource code is 16 alphanumeric characters.  The maximum length of the coding scheme code is 3 alphanumeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The identification is provided in accordance with the dependency table.

302

## 4.5.7 REGISTEREDRESOURCE.NAME

ACTION	DESCRIPTION
<b>Definition of element</b>	The name is any free human readable and possibly non unique text naming the object.  --- The identification of a resource associated with a time series
<b>Description</b>	The name of the production unit for which the generation information is being provided.
<b>Size</b>	The maximum length of the name is 35 alphanumeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The name is provided in accordance with the dependency table.

303

#### 4.5.8 QUANTITY\_MEASURE\_UNIT.NAME

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20).  --- The unit of measure associated with the quantities in a TimeSeries.
<b>Description</b>	The unit of measurement used for the quantities expressed within the time series.  The permitted unit of measure codes are: MAW = Megawatts MWH = Megawatt hours (only in the case of water reservoir and hydro storage plant reporting).
<b>Size</b>	The maximum length of this information is 3 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

304

#### 4.5.9 CURVE TYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The identification of the coded representation of the type of curve being described.
<b>Description</b>	This represents the coded identification of the curve that is described in the Period and Interval class.  Permitted CurveType codes are: A01 = Sequential fixed size block A03 = Variable sized block
<b>Size</b>	The maximum length of this information is 3 alphanumeric characters.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.



## 4.5.10 CANCELLEDTS

ACTION	DESCRIPTION
<b>Definition of element</b>	An indicator stating that the TimeSeries, identified by the mRID, is cancelled as well as all the values sent in a previous version of the TimeSeries in a previous document.
<b>Description</b>	The indication that the data for the time series has been withdrawn. This differentiates between a time series with no values and one with values that have to be revoked. The code for the indicator is as follows: A01 =Yes – the time series data has been withdrawn
<b>Size</b>	The maximum length of this information is 3 alphanumeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	If the data for a time series has been cancelled this attribute shall be specified.

## 4.6 RULES GOVERNING THE MKTPSRTYPE CLASS

There may be zero or one MktPsrType class for a time series. This provides the type of generation that is being reported as well as when necessary the voltage level.

### 4.6.1 PSRTYPE

ACTION	DESCRIPTION
<b>Definition of element</b>	The coded type of a power system resource.
<b>Description</b>	This represents the coded identification of the type of resource being described. Refer to the ENTSO-E codelist for the list of valid codes.
<b>Size</b>	The maximum length of this information is 3 alphanumeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The Resource Type is provided in accordance with the dependency table.

## 4.6.2 VOLTAGE\_POWERSYSTEMRESOURCES.HIGHVOLTAGELIMIT

ACTION	DESCRIPTION
<b>Definition of element</b>	The bus bar's high voltage limit --- Custom classification for this power system resource.
<b>Description</b>	This represents the voltage connection level of the production unit being described. This value shall always be provided in KVT.
<b>Size</b>	The maximum length of this information is 17 numeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The highVoltageLimit is provided in accordance with the dependency table.

## 4.7 RULES GOVERNING THE MKTGENERATINGUNIT CLASS

There may be several MktGeneratingUnit classes for a MktPSRType class. This provides the identification of generation unit that is being reported as well as when necessary the name and total active power of the unit.

### 4.7.1 MRID

ACTION	DESCRIPTION
<b>Definition of element</b>	The unique identification of a resource.
<b>Description</b>	The identification of the generation unit for which the generation information is being provided. The codification scheme used shall be: A01 = EIC coding scheme.
<b>Size</b>	The maximum length of the generation unit code is 16 alphanumeric characters. The maximum length of the coding scheme code is 3 alphanumeric characters.
<b>Dependence requirements</b>	The generation unit identification is provided in accordance with the dependency table.

#### 316 4.7.2 NAME

ACTION	DESCRIPTION
<b>Definition of element</b>	The name is any free human readable and possibly non unique text naming the object.
<b>Description</b>	This represents the name of the generation unit.
<b>Size</b>	The maximum length of this information is 35 alphanumeric characters.
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The generation unit name is provided in accordance with the dependency table.

#### 317 4.7.3 NOMINALP

ACTION	DESCRIPTION
<b>Definition of element</b>	The nominal power of the generating unit.
<b>Description</b>	<p>This represents the installed generation capacity for the generation unit being described. This value shall always be provided in MAW.</p> <p>A decimal point value may be used to express values that are inferior to the defined unit of measurement.</p> <p>The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (".").</p> <p>All quantities are non-signed values.</p>
<b>Size</b>	<p>The maximum length of this information is 17 numeric characters (decimal mark included).</p> <p>The number of decimal places identifying the fractional part of the quantity depends on local market rules.</p>
<b>Applicability</b>	This information is dependent.
<b>Dependence requirements</b>	The nominal power is provided in accordance with the dependency table.

### 318 4.8 RULES GOVERNING THE SERIES\_PERIOD CLASS

319 There may be several period classes for a time series. The overall time interval covered by  
320 the period shall be within the complete Period Time Interval.

321 The number of periods within a time series as characterized by the resolution must  
322 completely cover the period's time interval.

323 If a time series is suppressed then the period information is not provided.

A sender's minimal resolution must respect one of the resolutions as defined in the dependency table.

If there are no values available within a given period, then the period class shall stop where the date time has no value and a new period class shall be created with the date and time corresponding to the date and time where data exists.

Note 1: a given document instance may have the Time Intervals in the Series Period class that do not cover the complete Period Time Interval.

Note 2:

1. A week always starts on a Monday and ends on a Sunday
2. A week is assigned to a month if the Monday of the week in question is included in the month that the data is intended to cover.

#### 4.8.1 TIMEINTERVAL

ACTION	DESCRIPTION
<b>Definition of element</b>	The start and end time of the period.
<b>Description</b>	This information provides the start and end date and time of the period being reported.
<b>Size</b>	Both the start and the end date and time must be expressed in UTC as YYYY-MM-DDTHH:MMZ
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

## 4.8.2 RESOLUTION

ACTION	DESCRIPTION
<b>Definition of element</b>	Definition of the number of units of time that compose an individual step within a period.
<b>Description</b>	This information defines the resolution of a single period.
<b>Size</b>	<p>The Resolution is expressed in compliance with ISO 8601 and shall be equal to:</p> <ul style="list-style-type: none"> <li>• P1Y if the resolution is yearly</li> <li>• P1M if the resolution is monthly</li> <li>• P7D if the resolution is weekly</li> <li>• P1D if the resolution is daily</li> <li>• PT60M if the resolution is hourly</li> <li>• PT30M if the resolution is half hourly</li> <li>• PT15M if the resolution is quarter hourly</li> </ul> <p>See dependency table for use.</p>
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

## 4.9 RULES GOVERNING THE POINT CLASS

The Point class contains the relative position within a time interval period and the quantity associated with that position.

The position must respect the rules for position generation as defined in [10] (*"The introduction of different time series possibilities (CurveType) within ENTSO-E electronic documents"*).

Any leading zeros in a position shall be suppressed.

Negative values are not allowed in time series quantities.

Leading zeros in a quantity shall be suppressed before transmission.

346

## 4.9.1 POSITION

ACTION	DESCRIPTION
<b>Definition of element</b>	A sequential value representing the relative position within a given time interval.
<b>Description</b>	This information provides the relative position of a period within an interval.
<b>Size</b>	The relative position must be expressed as a numeric integer value beginning with 1. All leading zeros must be suppressed. The maximum number of characters is 6.
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

347

## 4.9.2 QUANTITY

ACTION	DESCRIPTION
<b>Definition of element</b>	The principal quantity identified for a point..
<b>Description</b>	<p>This information defines the quantity of the load or generation that is taken from or put into the area for the position within the interval period.</p> <p>A decimal point value may be used to express values that are inferior to the defined unit of measurement.</p> <p>The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (".").</p> <p>All quantities are non-signed values.</p>
<b>Size</b>	<p>The maximum length of this information is 17 numeric characters (decimal mark included).</p> <p>The number of decimal places identifying the fractional part of the quantity depends on local market rules.</p>
<b>Applicability</b>	This information is mandatory.
<b>Dependence requirements</b>	None.

348

### 4.9.3 SECONDARY QUANTITY

ACTION	DESCRIPTION
<b>Definition of element</b>	The secondary quantity identified for a point.
<b>Description</b>	<p>This information provides the same value for the previous year that is taken from or put into the area for the position within the interval period.</p> <p>A decimal point value may be used to express values that are inferior to the defined unit of measurement.</p> <p>The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (“.”).</p> <p>All quantities are non-signed values.</p>
<b>Size</b>	<p>The maximum length of this information is 17 numeric characters (decimal mark included).</p> <p>The number of decimal places identifying the fractional part of the quantity depends on local market rules.</p>
<b>Applicability</b>	This information is Dependant.
<b>Dependence requirements</b>	The secondary quantity is provided according to the dependency table.

349