



European Network of
Transmission System Operators
for Electricity

GENERATION LOAD DOCUMENT UML MODEL AND SCHEMA

2017-01-27
VERSION 1.0

2

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Revision History

Version	Release	Date	Comments
0	0	2017-01-27	First drafting of the document.
1	0	2017-01-30	Version to be submitted to Market Committee following WG EDI meeting in March 2017.

65

66 1 Objective

67 The purpose of this document is to provide the contextual and assembly UML models and the
68 schema of the GL_MarketDocument.

69 The schema of the GL_MarketDocument could be used in various business processes.

70 It is not the purpose of this document to describe all the use cases, sequence diagrams,
71 business processes, etc. for which this schema is to be used.

72 This document shall only be referenced in an implementation guide of a specific business
73 process. The content of the business process implementation guide shall be as follows:

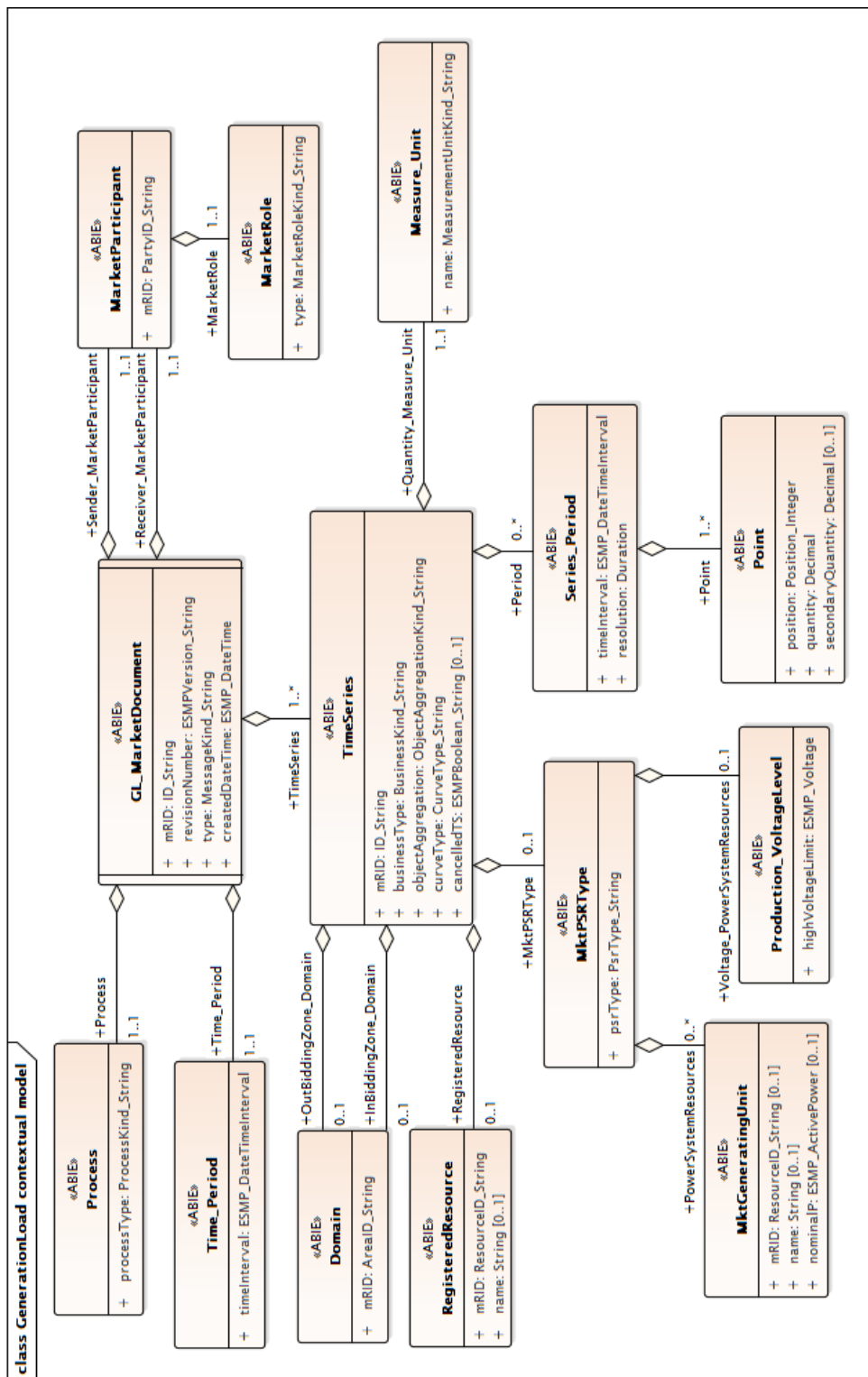
- 74 • Description of the business process;
- 75 • Use case of the business process;
- 76 • Sequence diagrams of the business process;
- 77 • List of the schema (XSD) to be used in the business process and versions of the
78 schema;
- 79 • For each schema, dependency tables providing the necessary information for the
80 generation of the XML instances, i.e. when the optional attributes are to be used, which
81 codes from which ENTSO-E codelist are to be used.

82 **2 GL_MarketDocument**

83 **2.1 GenerationLoad contextual model**

84 **2.1.1 Overview of the model**

85 Figure 1 shows the model.



86

87

Figure 1 - GenerationLoad contextual model

88 **2.1.2 IsBasedOn relationships from the European style market profile**

89 Table 1 shows the traceability dependency of the classes used in this package towards the
 90 upper level.

91 **Table 1 - IsBasedOn dependency**

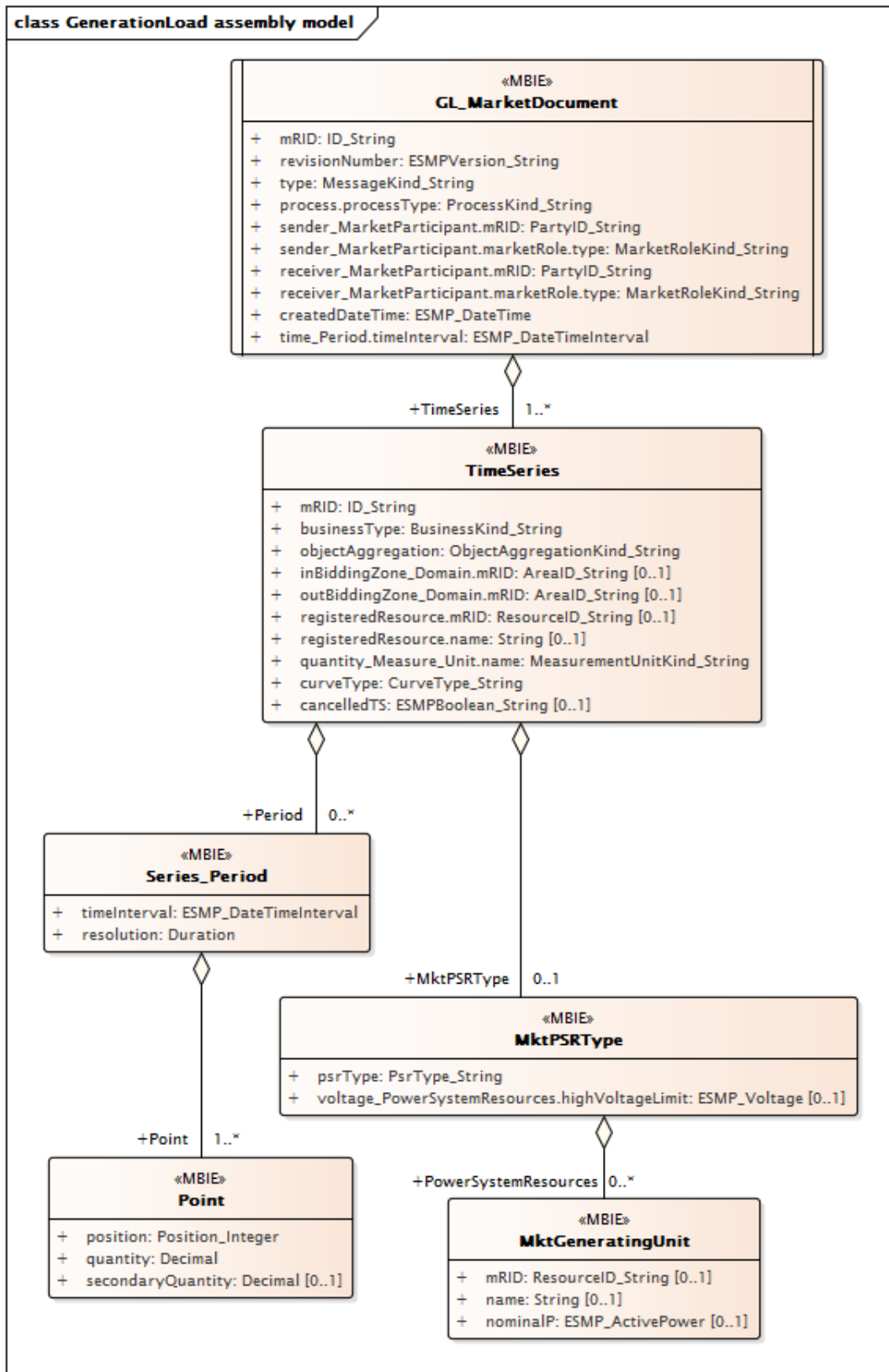
Name	Complete IsBasedOn Path
Domain	TC57CIM::IEC62325::MarketManagement::Domain
GL_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktGeneratingUnit	TC57CIM::IEC62325::MarketCommon::MktGeneratingUnit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
Production_VoltageLevel	TC57CIM::IEC61970::Base::Core::VoltageLevel
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

92

93 **2.2 GenerationLoad assembly model**

94 **2.2.1 Overview of the model**

95 Figure 2 shows the model.



96

97

Figure 2 - GenerationLoad assembly model

98 **2.2.2 IsBasedOn relationships from the European style market profile**

99 Table 2 shows the traceability dependency of the classes used in this package towards the
100 upper level.

101 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
GL_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
MktGeneratingUnit	TC57CIM::IEC62325::MarketCommon::MktGeneratingUnit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Point	TC57CIM::IEC62325::MarketManagement::Point
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

102

103 **2.2.3 Detailed GenerationLoad assembly model**

104 **2.2.3.1 GL_MarketDocument root class**

105 An electronic document containing the information necessary to satisfy the requirements of a
106 given business process.

107 This electronic document enables the transmission of the following forms of generation and
108 load information for given periods:

- 109 • Daily, monthly, weekly and yearly generation and load forecasts
- 110 • Yearly forecast margin
- 111 • Actual load information
- 112 • Actual generation unit information
- 113 • Available and installed capacity
- 114 • Wind and solar information
- 115 • Pumped storage and reservoir capacity

116 Table 3 shows all attributes of GL_MarketDocument.

117 **Table 3 - Attributes of GenerationLoad assembly model::GL_MarketDocument**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	The unique identification of the document being exchanged within a business process flow.
1	[1..1]	revisionNumber ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.
2	[1..1]	type MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.
3	[1..1]	process.processType ProcessKind_String	The identification of the nature of process that the document addresses. The identified processes are year ahead, month ahead, week ahead, day ahead and realised.
4	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document owner.
5	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The document owner. --- The role associated with a MarketParticipant.

Order	mult.	Attribute name / Attribute type	Description
6	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document recipient.
7	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The document recipient. --- The role associated with a MarketParticipant.
8	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
9	[1..1]	time_Period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. As a convention for these data exchanges: - a week starts on a Monday and ends on a Sunday; - 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. --- The time interval that is associated with an electronic document and which is valid for the whole document.

118

119 Table 4 shows all association ends of GL_MarketDocument with other classes.

120 **Table 4 - Association ends of GenerationLoad assembly model::GL_MarketDocument**
121 **with other classes**

Order	mult.	Class name / Role	Description
10	[1..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: GenerationLoad contextual model::GL_MarketDocument.[] ----- GenerationLoad contextual model::TimeSeries.TimeSeries[1..*]

122

123 2.2.3.2 MktGeneratingUnit

124 The information about a generating unit.

125 Table 5 shows all attributes of MktGeneratingUnit.

126 **Table 5 - Attributes of GenerationLoad assembly model::MktGeneratingUnit**

Order	mult.	Attribute name / Attribute type	Description
0	[0..1]	mRID ResourceID_String	The unique identification of a resource.
1	[0..1]	name String	The name is any free human readable and possibly non unique text naming the object.
2	[0..1]	nominalP ESMP_ActivePower	The nominal power of the generating unit. This represents the installed generation capacity for the generation unit being described.

127

128 2.2.3.3 MktPSRType

129 The type of a power system resource

130 Table 6 shows all attributes of MktPSRType.

131 **Table 6 - Attributes of GenerationLoad assembly model::MktPSRType**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	psrType PsrType_String	The coded type of a power system resource.
1	[0..1]	voltage_PowerSystemResources.highVoltageLimit ESMP_Voltage	The bus bar's high voltage limit --- The voltage level of the RegisteredResource.

132

133 Table 7 shows all association ends of MktPSRType with other classes.

134 **Table 7 - Association ends of GenerationLoad assembly model::MktPSRType with other**
135 **classes**

Order	mult.	Class name / Role	Description
2	[0..*]	MktGeneratingUnit PowerSystemResources	The generating unit(s) of the production unit identified by the RegisteredResource. Association Based On: GenerationLoad contextual model::MktGeneratingUnit.PowerSystemResources[0..*] ----- GenerationLoad contextual model::MktPSRType.[]

136

137 2.2.3.4 Point

138 The identification of the values being addressed within a specific interval of time.

139 Table 8 shows all attributes of Point.

140 **Table 8 - Attributes of GenerationLoad assembly model::Point**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	position Position_Integer	A sequential value representing the relative position within a given time interval.
1	[1..1]	quantity Decimal	The principal quantity identified for a point. --- 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.
2	[0..1]	secondaryQuantity Decimal	The secondary quantity identified for a point. --- This quantity corresponds to the value for the previous year that is taken from or put into the area for the position within the interval period.

141

142 2.2.3.5 Series_Period

143 The identification of the period of time corresponding to a given time interval and resolution.

144 Table 9 shows all attributes of Series_Period.

145 **Table 9 - Attributes of GenerationLoad assembly model::Series_Period**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	timeInterval ESMP_DateTimeInterval	The start and end time of the period.
1	[1..1]	resolution Duration	The definition of the number of units of time that compose an individual step within a period.

146

147 Table 10 shows all association ends of Series_Period with other classes.

148 **Table 10 - Association ends of GenerationLoad assembly model::Series_Period with**
149 **other classes**

Order	mult.	Class name / Role	Description
2	[1..*]	Point Point	The Point information associated with a given Series_Period.within a TimeSeries. Association Based On: GenerationLoad contextual model::Series_Period.[] ----- GenerationLoad contextual model::Point.Point[1..*]

150

151 2.2.3.6 TimeSeries

152 A set of time-ordered quantities being exchanged in relation to a product.

153 Table 11 shows all attributes of TimeSeries.

154 **Table 11 - Attributes of GenerationLoad assembly model::TimeSeries**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series.
1	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
2	[1..1]	objectAggregation ObjectAggregationKind_String	The identification of the domain that is the common denominator used to aggregate a time series. The identified object aggregations are: - area; - resource object; - resource type.
3	[0..1]	inBiddingZone_Domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the bidding zone where energy is going associated with a TimeSeries.
4	[0..1]	outBiddingZone_Domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the bidding zone where energy is taken from associated with a TimeSeries. In the case of generation, this indicates the load used by the generation unit (consumption).
5	[0..1]	registeredResource.mRID ResourceID_String	The unique identification of a resource. --- The identification of a resource associated with a time series.
6	[0..1]	registeredResource.name String	The name is any free human readable and possibly non unique text naming the object. The name of the production unit for which the generation information is provided. --- The identification of a resource associated with a time series.
7	[1..1]	quantity_Measure_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in the Point class (quantity and secondaryQuantity).
8	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.

Order	mult.	Attribute name / Attribute type	Description
9	[0..1]	cancelledTS ESMPBoolean_String	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. When this indicator has a Yes value, the meaning is 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 been revoked.

155

156 Table 12 shows all association ends of TimeSeries with other classes.

157 **Table 12 - Association ends of GenerationLoad assembly model::TimeSeries with other**
158 **classes**

Order	mult.	Class name / Role	Description
10	[0..1]	MktPSRType MktPSRType	The identification of the type of the RegisteredResource associated with a TimeSeries. Association Based On: GenerationLoad contextual model::TimeSeries.[] ----- GenerationLoad contextual model::MktPSRType.MktPSRType[0..1]
11	[0..*]	Series_Period Period	The time interval and resolution for a period associated with a TimeSeries Association Based On: GenerationLoad contextual model::TimeSeries.[] ----- GenerationLoad contextual model::Series_Period.Period[0..*]

159

160 2.2.4 Datatypes

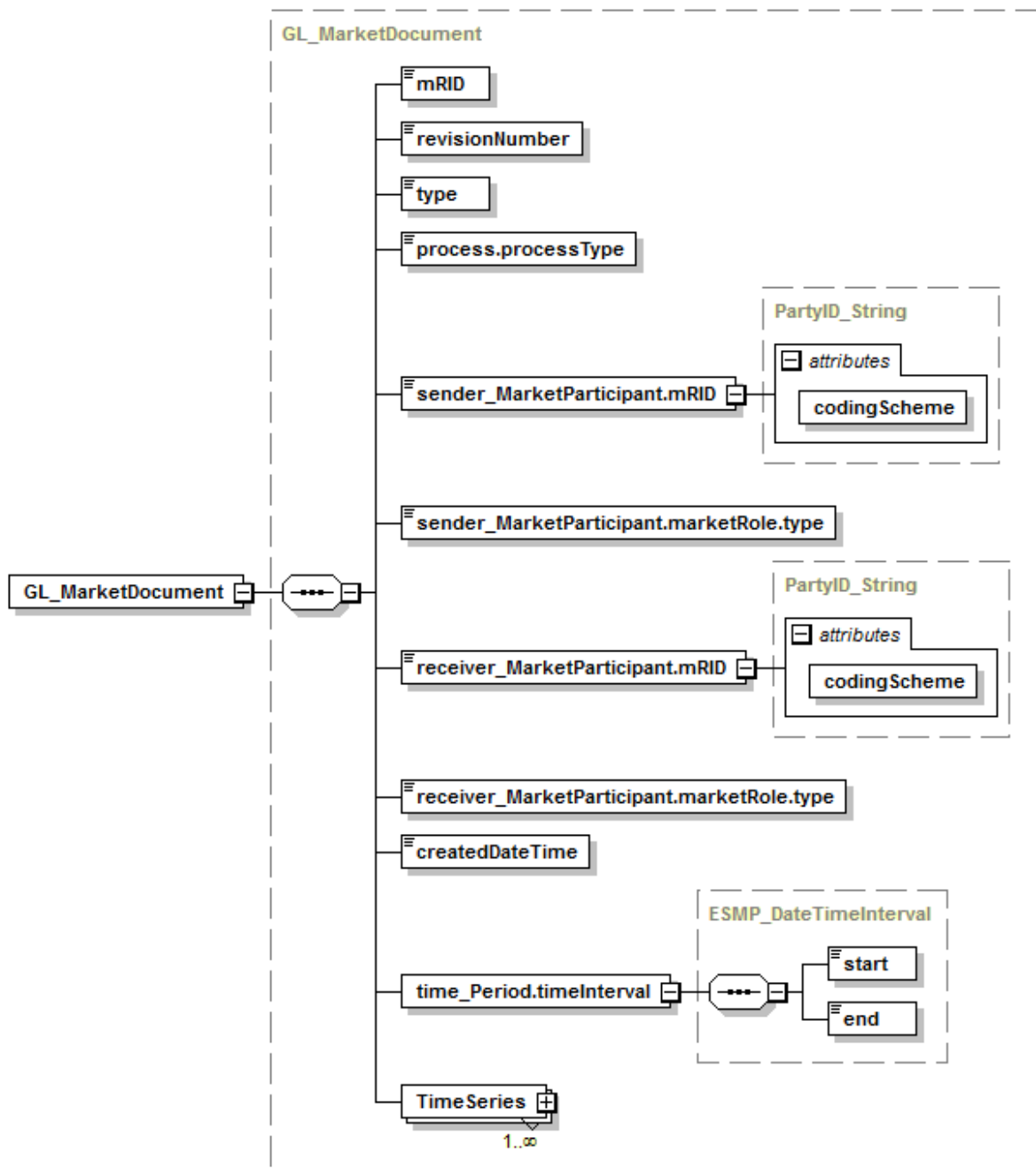
161 The list of datatypes used for the GenerationLoad assembly model is as follows:

- 162 • ESMP_DateTimeInterval compound
- 163 • AreaID_String datatype, codelist CodingSchemeTypeList
- 164 • BusinessKind_String datatype, codelist BusinessTypeList
- 165 • CurveType_String datatype, codelist CurveTypeList
- 166 • ESMP_ActivePower datatype
- 167 • ESMP_DateTime datatype
- 168 • ESMP_Voltage datatype
- 169 • ESMPBoolean_String datatype, codelist IndicatorTypeList
- 170 • ESMPVersion_String datatype
- 171 • ID_String datatype
- 172 • MarketRoleKind_String datatype, codelist RoleTypeList
- 173 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 174 • MessageKind_String datatype, codelist MessageTypeList
- 175 • ObjectAggregationKind_String datatype, codelist ObjectAggregationTypeList
- 176 • PartyID_String datatype, codelist CodingSchemeTypeList
- 177 • Position_Integer datatype
- 178 • ProcessKind_String datatype, codelist ProcessTypeList
- 179 • PsrType_String datatype, codelist AssetTypeList

- 180 • ResourceID_String datatype, codelist CodingSchemeTypeList
- 181 • UnitSymbol datatype, codelist UnitSymbol
- 182 • YMDHM_DateTime datatype

183 **2.2.5 GL_MarketDocument XML schema structure**

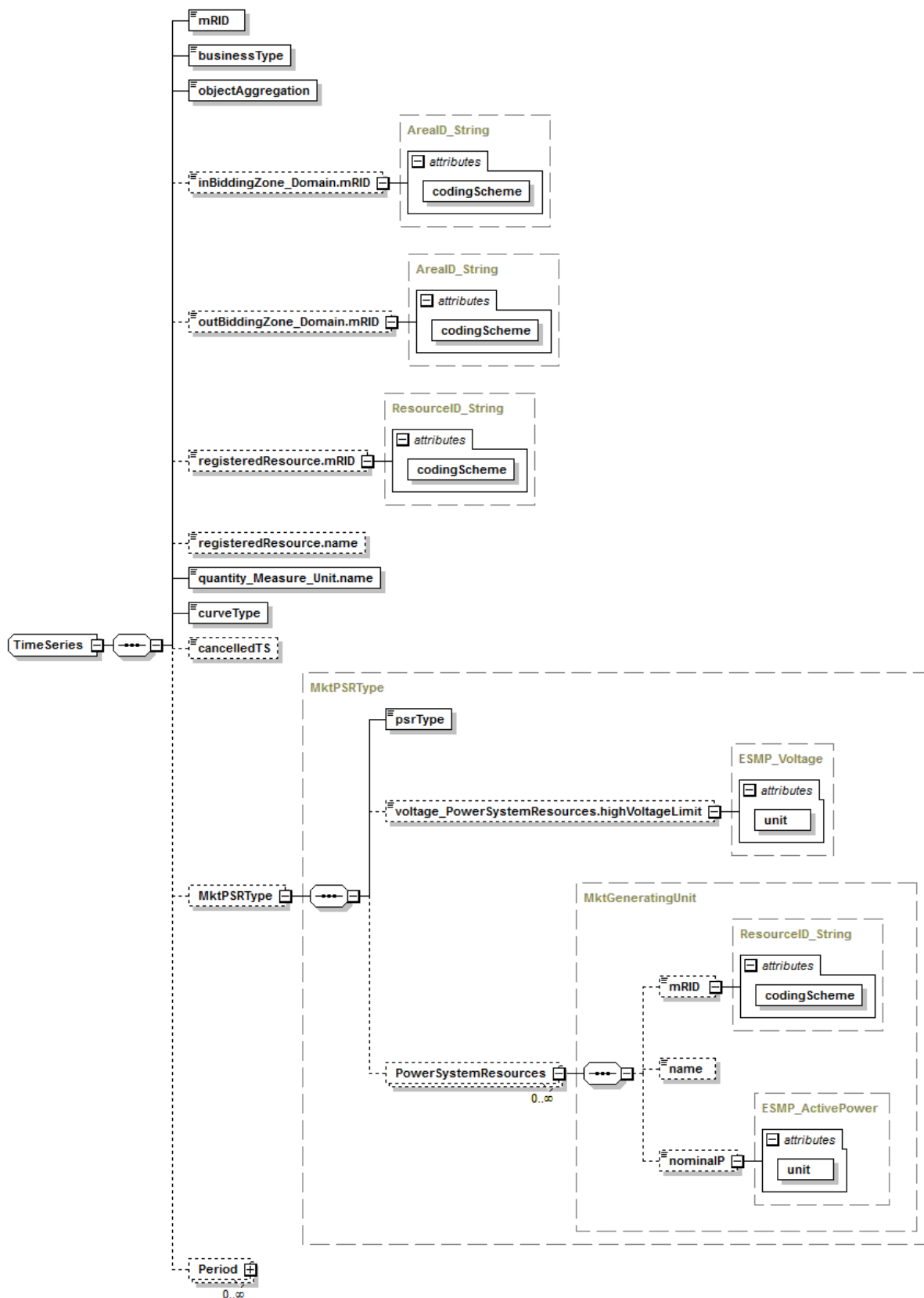
184 Figure 3 to Figure 5 provide the structure of the schema.



185

186

Figure 3 - GL_MarketDocument schema structure 1/3



187

188

Figure 4 - GL_MarketDocument schema structure 2/3

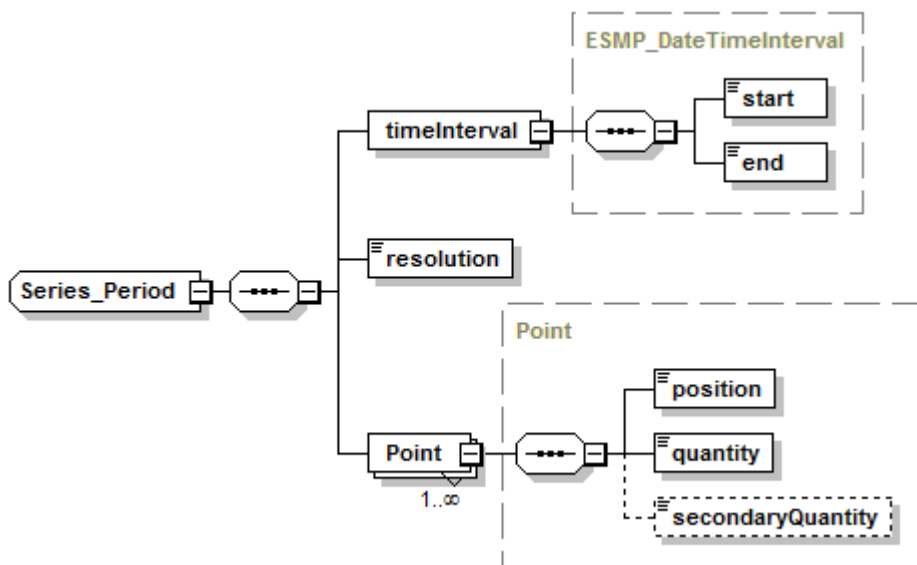


Figure 5 - GL_MarketDocument schema structure 3/3

2.2.6 GL_MarketDocument XML schema

The schema to be used to validate XML instances is to be identified by:

urn:iec62325.351:tc57wg16:451-6:generationloaddocument:3:1

```

194 <?xml version="1.0" encoding="utf-8"?>
195 <xs:schema xmlns:cl="urn:entsoe.eu:wgedi:codelists"
196 xmlns:sawsdl="http://www.w3.org/ns/sawsdl" xmlns="urn:iec62325.351:tc57wg16:451-
197 6:generationloaddocument:3:1" xmlns:cimp="http://www.iec.ch/cimprofile"
198 xmlns:xs="http://www.w3.org/2001/XMLSchema"
199 targetNamespace="urn:iec62325.351:tc57wg16:451-6:generationloaddocument:3:1"
200 elementFormDefault="qualified" attributeFormDefault="unqualified">
201   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
202   entsoe-eu-wgedi-codelists.xsd"/>
203   <xs:element name="GL_MarketDocument" type="GL_MarketDocument"/>
204   <xs:simpleType name="ID_String"
205   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
206     <xs:restriction base="xs:string">
207       <xs:maxLength value="35"/>
208     </xs:restriction>
209   </xs:simpleType>
210   <xs:simpleType name="ESMPVersion_String"
211   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
212     <xs:restriction base="xs:string">
213       <xs:pattern value="[1-9]([0-9]){0,2}"/>
214     </xs:restriction>
215   </xs:simpleType>
216   <xs:simpleType name="MessageKind_String"
217   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
218     <xs:restriction base="cl:MessageTypeList"/>
219   </xs:simpleType>
220   <xs:simpleType name="ProcessKind_String"
221   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
222     <xs:restriction base="cl:ProcessTypeList"/>
223   </xs:simpleType>
224   <xs:simpleType name="PartyID_String-base"
225   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
226     <xs:restriction base="xs:string">
227       <xs:maxLength value="16"/>
228     </xs:restriction>
229   </xs:simpleType>
230   <xs:complexType name="PartyID_String"
231   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
232     <xs:simpleContent>

```

```

233         <xs:extension base="PartyID_String-base">
234             <xs:attribute name="CodingScheme"
235 type="cl:CodingSchemeTypeList" use="required"/>
236         </xs:extension>
237     </xs:simpleContent>
238 </xs:complexType>
239 <xs:simpleType name="MarketRoleKind_String"
240 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
241     <xs:restriction base="cl:RoleTypeList"/>
242 </xs:simpleType>
243 <xs:simpleType name="ESMP_DateTime"
244 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
245     <xs:restriction base="xs:dateTime">
246         <xs:pattern value="((([0-9]{4}) [\-] (0[13578]|1[02]) [\-] (0[1-
247 9]|12)[0-9]|3[01])|((0-9){4}) [\-] ((0[469])|(11)) [\-] (0[1-9]|12)[0-9]|30))T((([01][0-
248 9]|2[0-3]):[0-5][0-9]:[0-5][0-
249 9])Z)|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]
250 |02468][048][02468][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0-
251 9][0-9][13579][26]) [\-] (02) [\-] (0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-5][0-
252 9]:[0-5][0-
253 9])Z)|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][
254 2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][123
255 5679][2468][1235679]|0-9][0-9][13579][01345789]) [\-] (02) [\-] (0[1-9]|1[0-9]|2[0-
256 8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
257     </xs:restriction>
258 </xs:simpleType>
259 <xs:simpleType name="YMDHM_DateTime"
260 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
261     <xs:restriction base="xs:string">
262         <xs:pattern value="((([0-9]{4}) [\-] (0[13578]|1[02]) [\-] (0[1-
263 9]|12)[0-9]|3[01])|((0-9){4}) [\-] ((0[469])|(11)) [\-] (0[1-9]|12)[0-9]|30))T((([01][0-
264 9]|2[0-3]):[0-5][0-
265 9])Z)|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]
266 |02468][048][02468][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0-
267 9][0-9][13579][26]) [\-] (02) [\-] (0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-5][0-
268 9])Z)|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][
269 2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][123
270 5679][2468][1235679]|0-9][0-9][13579][01345789]) [\-] (02) [\-] (0[1-9]|1[0-9]|2[0-
271 8])T((([01][0-9]|2[0-3]):[0-5][0-9])Z)"/>
272     </xs:restriction>
273 </xs:simpleType>
274 <xs:complexType name="ESMP_DateTimeInterval"
275 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
276     <xs:sequence>
277         <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
278 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
279 cim16#DateTimeInterval.start"/>
280         <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
281 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
282 cim16#DateTimeInterval.end"/>
283     </xs:sequence>
284 </xs:complexType>
285 <xs:complexType name="GL_MarketDocument"
286 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
287     <xs:sequence>
288         <xs:element name="mRID" type="ID_String" minOccurs="1"
289 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
290 cim16#IdentifiedObject.mRID"/>
291         <xs:element name="revisionNumber" type="ESMPVersion_String"
292 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
293 schema-cim16#Document.revisionNumber"/>
294         <xs:element name="type" type="MessageKind_String" minOccurs="1"
295 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
296 cim16#Document.type"/>
297         <xs:element name="process.processType" type="ProcessKind_String"
298 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
299 schema-cim16#Process.processType"/>
300         <xs:element name="sender_MarketParticipant.mRID"
301 type="PartyID_String" minOccurs="1" maxOccurs="1"

```

```

302 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
303 cim16#IdentifiedObject.mRID"/>
304 <xs:element name="sender_MarketParticipant.marketRole.type"
305 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
306 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
307 <xs:element name="receiver_MarketParticipant.mRID"
308 type="PartyID_String" minOccurs="1" maxOccurs="1"
309 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
310 cim16#IdentifiedObject.mRID"/>
311 <xs:element name="receiver_MarketParticipant.marketRole.type"
312 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
313 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
314 <xs:element name="createdDateTime" type="ESMP_DateTime"
315 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
316 schema-cim16#Document.createdDateTime"/>
317 <xs:element name="time_Period.timeInterval"
318 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
319 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
320 cim16#Period.timeInterval"/>
321 <xs:element name="TimeSeries" type="TimeSeries" minOccurs="1"
322 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
323 cim16#MarketDocument.TimeSeries"/>
324 </xs:sequence>
325 </xs:complexType>
326 <xs:simpleType name="ResourceID_String-base"
327 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
328 <xs:restriction base="xs:string">
329 <xs:maxLength value="60"/>
330 </xs:restriction>
331 </xs:simpleType>
332 <xs:complexType name="ResourceID_String"
333 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
334 <xs:simpleContent>
335 <xs:extension base="ResourceID_String-base">
336 <xs:attribute name="codingScheme"
337 type="cl:CodingSchemeTypeList" use="required"/>
338 </xs:extension>
339 </xs:simpleContent>
340 </xs:complexType>
341 <xs:simpleType name="ESMP_ActivePower-base"
342 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#ActivePower">
343 <xs:restriction base="xs:float">
344 <xs:pattern value="([0-9]*\.\?[0-9]*)"/>
345 </xs:restriction>
346 </xs:simpleType>
347 <xs:complexType name="ESMP_ActivePower"
348 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#ActivePower">
349 <xs:simpleContent>
350 <xs:extension base="ESMP_ActivePower-base">
351 <xs:attribute name="unit" type="cl:UnitSymbol"
352 use="required" fixed="MAW"/>
353 </xs:extension>
354 </xs:simpleContent>
355 </xs:complexType>
356 <xs:complexType name="MktGeneratingUnit"
357 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MktGeneratingUnit">
358 <xs:sequence>
359 <xs:element name="mRID" type="ResourceID_String" minOccurs="0"
360 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
361 cim16#IdentifiedObject.mRID"/>
362 <xs:element name="name" type="xs:string" minOccurs="0"
363 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
364 cim16#IdentifiedObject.name"/>
365 <xs:element name="nominalP" type="ESMP_ActivePower" minOccurs="0"
366 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
367 cim16#GeneratingUnit.nominalP"/>
368 </xs:sequence>
369 </xs:complexType>

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370     <xs:simpleType name="PsrType_String"
371 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
372     <xs:restriction base="cl:AssetTypeList"/>
373     </xs:simpleType>
374     <xs:simpleType name="ESMP_Voltage-base"
375 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Voltage">
376     <xs:restriction base="xs:float">
377     <xs:pattern value="([0-9]*\.\?[0-9]*)"/>
378     </xs:restriction>
379     </xs:simpleType>
380     <xs:complexType name="ESMP_Voltage"
381 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Voltage">
382     <xs:simpleContent>
383     <xs:extension base="ESMP_Voltage-base">
384     <xs:attribute name="unit" type="cl:UnitSymbol"
385 use="required" fixed="KVT"/>
386     </xs:extension>
387     </xs:simpleContent>
388     </xs:complexType>
389     <xs:complexType name="MktPSRType"
390 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MktPSRType">
391     <xs:sequence>
392     <xs:element name="psrType" type="PsrType_String" minOccurs="1"
393 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
394 cim16#MktPSRType.psrType"/>
395     <xs:element name="voltage_PowerSystemResources.highVoltageLimit"
396 type="ESMP_Voltage" minOccurs="0" maxOccurs="1"
397 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
398 cim16#VoltageLevel.highVoltageLimit"/>
399     <xs:element name="PowerSystemResources" type="MktGeneratingUnit"
400 minOccurs="0" maxOccurs="unbounded"
401 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
402 cim16#MktPSRType.PowerSystemResources"/>
403     </xs:sequence>
404     </xs:complexType>
405     <xs:simpleType name="Position_Integer"
406 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
407     <xs:restriction base="xs:integer">
408     <xs:maxInclusive value="999999"/>
409     <xs:minInclusive value="1"/>
410     </xs:restriction>
411     </xs:simpleType>
412     <xs:complexType name="Point"
413 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
414     <xs:sequence>
415     <xs:element name="position" type="Position_Integer" minOccurs="1"
416 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
417 cim16#Point.position"/>
418     <xs:element name="quantity" type="xs:decimal" minOccurs="1"
419 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
420 cim16#Point.quantity"/>
421     <xs:element name="secondaryQuantity" type="xs:decimal"
422 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
423 schema-cim16#Point.secondaryQuantity"/>
424     </xs:sequence>
425     </xs:complexType>
426     <xs:complexType name="Series_Period"
427 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
428     <xs:sequence>
429     <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
430 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
431 schema-cim16#Period.timeInterval"/>
432     <xs:element name="resolution" type="xs:duration" minOccurs="1"
433 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
434 cim16#Period.resolution"/>
435     <xs:element name="Point" type="Point" minOccurs="1"
436 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
437 cim16#Period.Point"/>
438     </xs:sequence>

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439         </xs:complexType>
440         <xs:simpleType name="BusinessKind_String"
441 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
442             <xs:restriction base="cl:BusinessTypeList"/>
443         </xs:simpleType>
444         <xs:simpleType name="ObjectAggregationKind_String"
445 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
446             <xs:restriction base="cl:ObjectAggregationTypeList"/>
447         </xs:simpleType>
448         <xs:simpleType name="AreaID_String-base"
449 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
450             <xs:restriction base="xs:string">
451                 <xs:maxLength value="18"/>
452             </xs:restriction>
453         </xs:simpleType>
454         <xs:complexType name="AreaID_String"
455 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
456             <xs:simpleContent>
457                 <xs:extension base="AreaID_String-base">
458                     <xs:attribute name="codingScheme"
459 type="cl:CodingSchemeTypeList" use="required"/>
460                 </xs:extension>
461             </xs:simpleContent>
462         </xs:complexType>
463         <xs:simpleType name="MeasurementUnitKind_String"
464 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
465             <xs:restriction base="cl:UnitOfMeasureTypeList"/>
466         </xs:simpleType>
467         <xs:simpleType name="CurveType_String"
468 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
469             <xs:restriction base="cl:CurveTypeList"/>
470         </xs:simpleType>
471         <xs:simpleType name="ESMPBoolean_String"
472 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
473             <xs:restriction base="cl:IndicatorTypeList"/>
474         </xs:simpleType>
475         <xs:complexType name="TimeSeries"
476 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
477             <xs:sequence>
478                 <xs:element name="mRID" type="ID_String" minOccurs="1"
479 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
480 cim16#IdentifiedObject.mRID"/>
481                 <xs:element name="businessType" type="BusinessKind_String"
482 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
483 schema-cim16#TimeSeries.businessType"/>
484                 <xs:element name="objectAggregation"
485 type="ObjectAggregationKind_String" minOccurs="1" maxOccurs="1"
486 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
487 cim16#TimeSeries.objectAggregation"/>
488                 <xs:element name="inBiddingZone_Domain.mRID" type="AreaID_String"
489 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
490 schema-cim16#IdentifiedObject.mRID"/>
491                 <xs:element name="outBiddingZone_Domain.mRID"
492 type="AreaID_String" minOccurs="0" maxOccurs="1"
493 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
494 cim16#IdentifiedObject.mRID"/>
495                 <xs:element name="registeredResource.mRID"
496 type="ResourceID_String" minOccurs="0" maxOccurs="1"
497 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
498 cim16#IdentifiedObject.mRID"/>
499                 <xs:element name="registeredResource.name" type="xs:string"
500 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
501 schema-cim16#IdentifiedObject.name"/>
502                 <xs:element name="quantity_Measure_Unit.name"
503 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
504 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
505                 <xs:element name="curveType" type="CurveType_String"
506 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
507 schema-cim16#TimeSeries.curveType"/>

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508         <xs:element name="cancelledTS" type="ESMPBoolean_String"
509 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
510 schema-cim16#TimeSeries.cancelledTS"/>
511         <xs:element name="MktPSRType" type="MktPSRType" minOccurs="0"
512 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
513 cim16#TimeSeries.MktPSRType"/>
514         <xs:element name="Period" type="Series_Period" minOccurs="0"
515 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
516 cim16#TimeSeries.Period"/>
517     </xs:sequence>
518 </xs:complexType>
519 </xs:schema>
```