



European Network of
Transmission System Operators
for Electricity

GENERATION LOAD DOCUMENT UML MODEL AND SCHEMA

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VERSION 1.1

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.
1	1	2022-02-01	XSD version 3.2: <ul style="list-style-type: none">Quantity_Measure_Unit.name attribute was renamed to Quantity_Measurement_Unit.name to be compliant with the ESMP.mRID of Document, Series and Timeseries (ID_String type) was enlarged from 35 to 60 characters. Approved by MC.

63

64 **Objective**

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

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

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

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

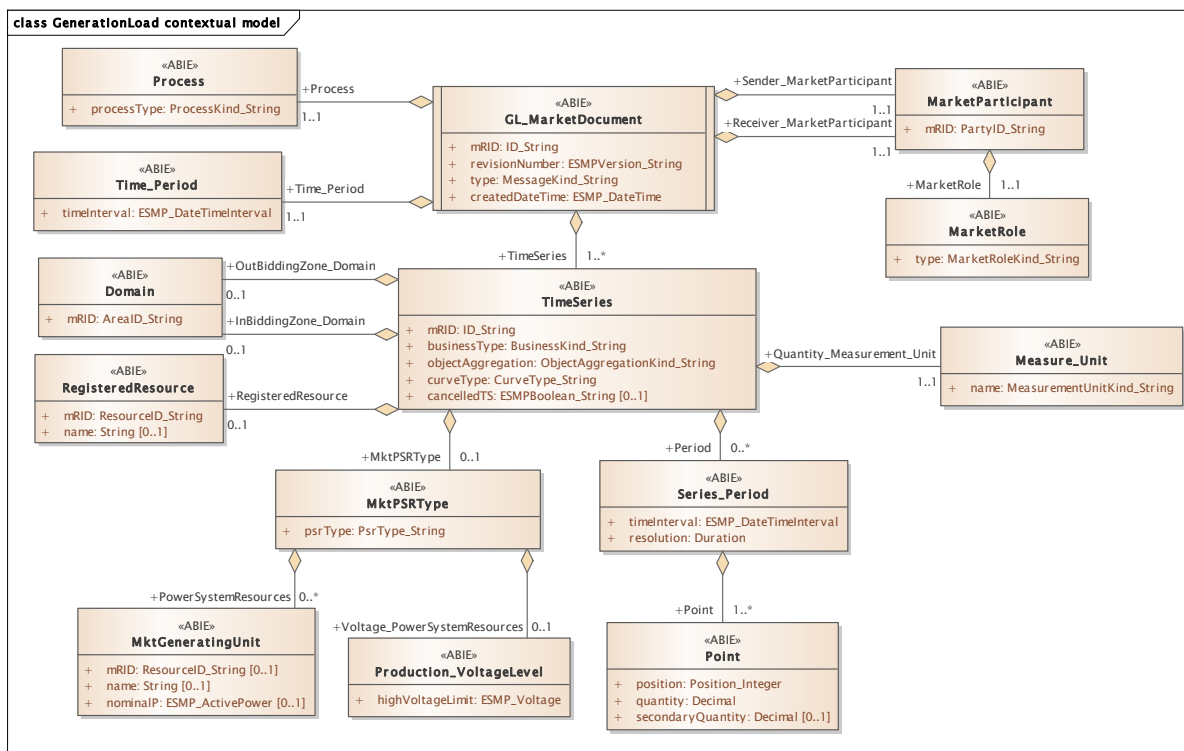
- 72 • Description of the business process;
- 73 • Use case of the business process;
- 74 • Sequence diagrams of the business process;
- 75 • List of the schema (XSD) to be used in the business process and versions of the
76 schema;
- 77 • For each schema, dependency tables providing the necessary information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

80 **GL_MarketDocument**

81 **2.1 GenerationLoad contextual model**

82 **2.1.1 Overview of the model**

83 Figure 1 shows the model.



84

85

Figure 1 - GenerationLoad contextual model

86

87

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

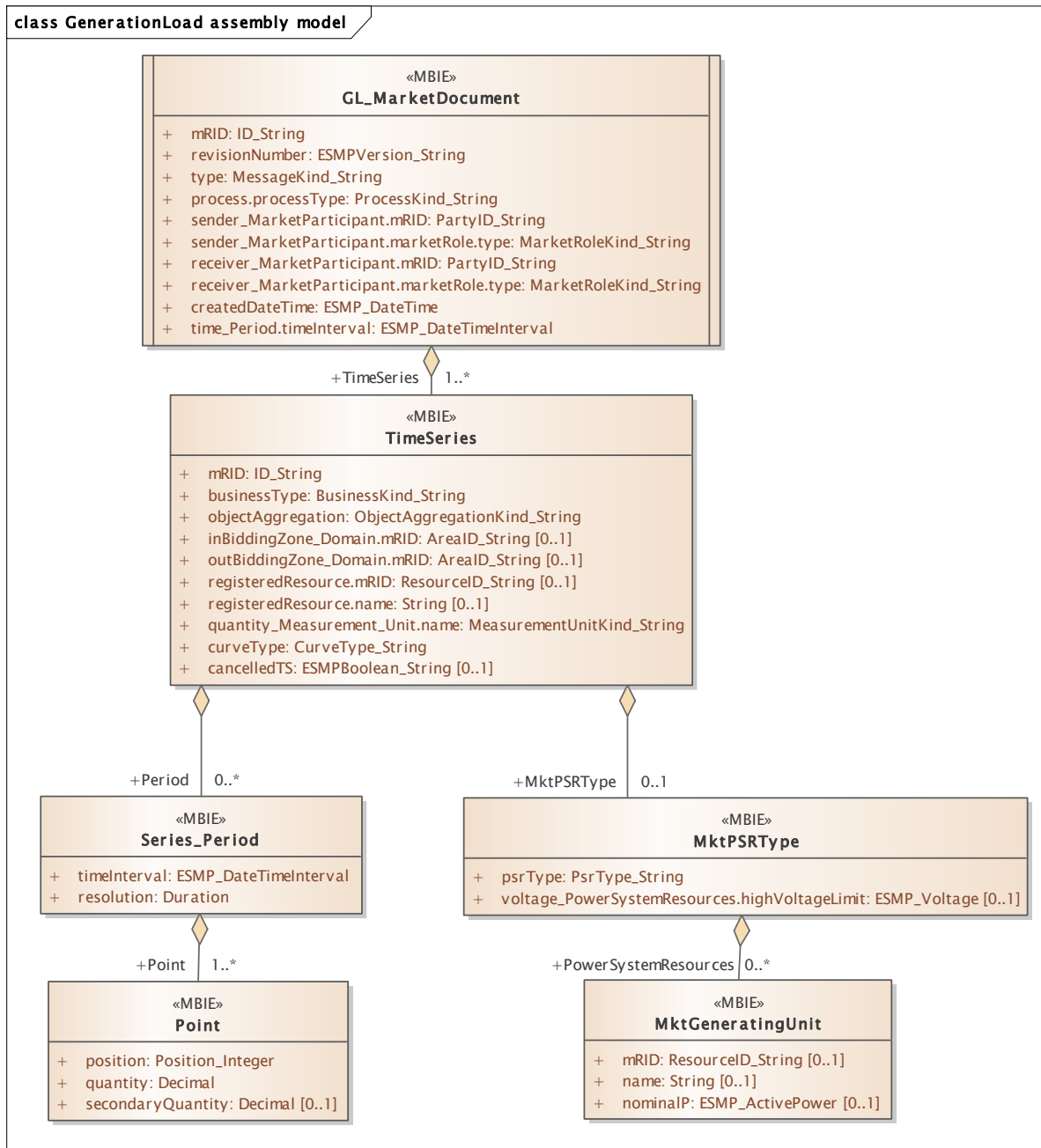
93

94

95 **2.2 GenerationLoad assembly model**

96 **2.2.1 Overview of the model**

97 Figure 2 shows the model.



98

99

Figure 2 - GenerationLoad assembly model

100

101

102 **2.2.2 IsBasedOn relationships from the European style market profile**

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

105 **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

106

107 **2.2.3 Detailed GenerationLoad assembly model**

108 **2.2.3.1 GL_MarketDocument root class**

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

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

- 113 • Daily, monthly, weekly and yearly generation and load forecasts
- 114 • Yearly forecast margin
- 115 • Actual load information
- 116 • Actual generation unit information
- 117 • Available and installed capacity
- 118 • Wind and solar information
- 119 • Pumped storage and reservoir capacity

120 Table 3 shows all attributes of GL_MarketDocument.

121 **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.

Order	mult.	Attribute name / Attribute type	Description
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.
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.

122

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

124 **Table 4 - Association ends of GenerationLoad assembly model::GL_MarketDocument**
125 **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..*]

126

127 2.2.3.2 MktGeneratingUnit

128 The information about a generating unit.

129 Table 5 shows all attributes of MktGeneratingUnit.

130 **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.

131

132 2.2.3.3 MktPSRType

133 The type of a power system resource

134 Table 6 shows all attributes of MktPSRType.

135 **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.

136

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

138 **Table 7 - Association ends of GenerationLoad assembly model::MktPSRType with other**
139 **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.[]

140

141 2.2.3.4 Point

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

143 Table 8 shows all attributes of Point.

144 **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.

145

146 2.2.3.5 Series_Period

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

148 Table 9 shows all attributes of Series_Period.

149 **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.

150

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

152 **Table 10 - Association ends of GenerationLoad assembly model::Series_Period with**
153 **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..*]

154

155 2.2.3.6 TimeSeries

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

157 Table 11 shows all attributes of TimeSeries.

158 **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_Measurement_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.

159

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

161 **Table 12 - Association ends of GenerationLoad assembly model::TimeSeries with other**
162 **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..*]

163

164 2.2.4 Datatypes

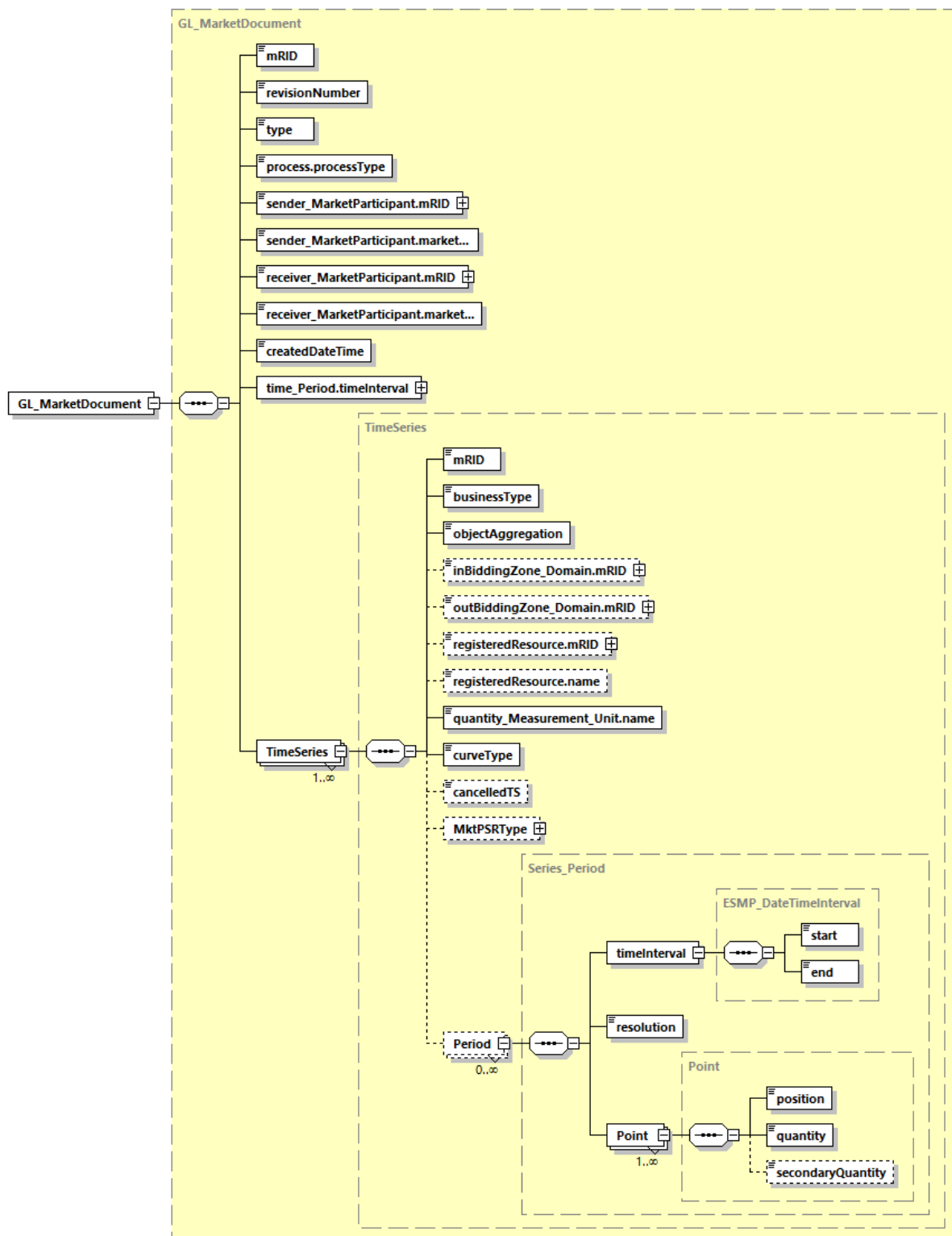
165 The list of datatypes used for the GenerationLoad assembly model is as follows:

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

- 185 • UnitSymbol datatype, codelist UnitSymbol
- 186 • YMDHM_DateTime datatype

187 **2.2.5 GL_MarketDocument XML schema structure**

188 Figure 3 provides the structure of the schema.



189

190

Generated by XMLSpy

www.altova.com

Figure 3 - GL_MarketDocument schema structure

191

192 **2.2.6 GL_MarketDocument XML schema**

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

194 urn:iec62325.351:tc57wg16:451-6:generationloaddocument:3:2

```

195 <?xml version="1.0" encoding="utf-8"?>
196 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
197 xmlns="urn:iec62325.351:tc57wg16:451-6:generationloaddocument:3:2"
198 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
199 xmlns:cimp="http://www.iec.ch/cimprofile"
200 xmlns:xs="http://www.w3.org/2001/XMLSchema"
201 targetNamespace="urn:iec62325.351:tc57wg16:451-6:generationloaddocument:3:2"
202 elementFormDefault="qualified" attributeFormDefault="unqualified">
203   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
204 entsoe-eu-wgedi-codelists.xsd"/>
205   <xs:element name="GL_MarketDocument" type="GL_MarketDocument"/>
206   <xs:simpleType name="ID_String"
207 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
208     <xs:restriction base="xs:string">
209       <xs:maxLength value="60"/>
210     </xs:restriction>
211   </xs:simpleType>
212   <xs:simpleType name="ESMPVersion_String"
213 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
214     <xs:restriction base="xs:string">
215       <xs:pattern value="[1-9]([0-9]){0,2}"/>
216     </xs:restriction>
217   </xs:simpleType>
218   <xs:simpleType name="MessageKind_String"
219 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
220     <xs:restriction base="ecl:MessageTypeList"/>
221   </xs:simpleType>
222   <xs:simpleType name="ProcessKind_String"
223 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
224     <xs:restriction base="ecl:ProcessTypeList"/>
225   </xs:simpleType>
226   <xs:simpleType name="PartyID_String-base"
227 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
228     <xs:restriction base="xs:string">
229       <xs:maxLength value="16"/>
230     </xs:restriction>
231   </xs:simpleType>
232   <xs:complexType name="PartyID_String"
233 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
234     <xs:simpleContent>
235       <xs:extension base="PartyID_String-base">
236         <xs:attribute name="codingScheme"
237 type="ecl:CodingSchemeTypeList" use="required"/>
238       </xs:extension>
239     </xs:simpleContent>
240   </xs:complexType>
241   <xs:simpleType name="MarketRoleKind_String"
242 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
243     <xs:restriction base="ecl:RoleTypeList"/>
244   </xs:simpleType>
245   <xs:simpleType name="ESMP_DateTime"
246 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
247     <xs:restriction base="xs:dateTime">

```



```

248         <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-
249 9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
250 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
251 9])Z)|(((13579)[26][02468][048]|13579[01345789](0)[48]|13579[01345789][2468][0
252 48]|02468[048][02468][048]|02468[1235679](0)[48]|02468[1235679][2468][048]|
253 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
254 5][0-9]:[0-5][0-
255 9])Z)|(((13579)[26][02468][1235679]|13579[01345789](0)[01235679]|13579[0134578
256 9][2468][1235679]|02468[048][02468][1235679]|02468[1235679](0)[01235679]|0246
257 8][1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
258 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
259     </xs:restriction>
260 </xs:simpleType>
261 <xs:simpleType name="YMDHM_DateTime"
262 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
263     <xs:restriction base="xs:string">
264         <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-
265 9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
266 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-
267 9])Z)|(((13579)[26][02468][048]|13579[01345789](0)[48]|13579[01345789][2468][0
268 48]|02468[048][02468][048]|02468[1235679](0)[48]|02468[1235679][2468][048]|
269 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
270 5][0-
271 9])Z)|(((13579)[26][02468][1235679]|13579[01345789](0)[01235679]|13579[0134578
272 9][2468][1235679]|02468[048][02468][1235679]|02468[1235679](0)[01235679]|0246
273 8][1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
274 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
275     </xs:restriction>
276 </xs:simpleType>
277 <xs:complexType name="ESMP_DateTimeInterval"
278 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
279     <xs:sequence>
280         <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
281 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
282 cim16#DateTimeInterval.start"/>
283         <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
284 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
285 cim16#DateTimeInterval.end"/>
286     </xs:sequence>
287 </xs:complexType>
288 <xs:complexType name="GL_MarketDocument"
289 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
290     <xs:sequence>
291         <xs:element name="mRID" type="ID_String" minOccurs="1"
292 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
293 cim16#IdentifiedObject.mRID"/>
294         <xs:element name="revisionNumber" type="ESMPVersion_String"
295 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
296 schema-cim16#Document.revisionNumber"/>
297         <xs:element name="type" type="MessageKind_String" minOccurs="1"
298 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
299 cim16#Document.type"/>
300         <xs:element name="process.processType"
301 type="ProcessKind_String" minOccurs="1" maxOccurs="1"
302 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
303 cim16#Process.processType"/>
304         <xs:element name="sender_MarketParticipant.mRID"
305 type="PartyID_String" minOccurs="1" maxOccurs="1"
306 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
307 cim16#IdentifiedObject.mRID"/>

```

```

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

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

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426         <xs:element name="secondaryQuantity" type="xs:decimal"
427 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
428 schema-cim16#Point.secondaryQuantity"/>
429     </xs:sequence>
430 </xs:complexType>
431 <xs:complexType name="Series_Period"
432 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
433     <xs:sequence>
434         <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
435 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
436 schema-cim16#Period.timeInterval"/>
437         <xs:element name="resolution" type="xs:duration" minOccurs="1"
438 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
439 cim16#Period.resolution"/>
440         <xs:element name="Point" type="Point" minOccurs="1"
441 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
442 cim16#Period.Point"/>
443     </xs:sequence>
444 </xs:complexType>
445 <xs:simpleType name="BusinessKind_String"
446 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
447     <xs:restriction base="ecl:BusinessTypeList"/>
448 </xs:simpleType>
449 <xs:simpleType name="ObjectAggregationKind_String"
450 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
451     <xs:restriction base="ecl:ObjectAggregationTypeList"/>
452 </xs:simpleType>
453 <xs:simpleType name="AreaID_String-base"
454 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
455     <xs:restriction base="xs:string">
456         <xs:maxLength value="18"/>
457     </xs:restriction>
458 </xs:simpleType>
459 <xs:complexType name="AreaID_String"
460 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
461     <xs:simpleContent>
462         <xs:extension base="AreaID_String-base">
463             <xs:attribute name="codingScheme"
464 type="ecl:CodingSchemeTypeList" use="required"/>
465         </xs:extension>
466     </xs:simpleContent>
467 </xs:complexType>
468 <xs:simpleType name="MeasurementUnitKind_String"
469 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
470     <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
471 </xs:simpleType>
472 <xs:simpleType name="CurveType_String"
473 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
474     <xs:restriction base="ecl:CurveTypeList"/>
475 </xs:simpleType>
476 <xs:simpleType name="ESMPBoolean_String"
477 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
478     <xs:restriction base="ecl:IndicatorTypeList"/>
479 </xs:simpleType>
480 <xs:complexType name="TimeSeries"
481 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
482     <xs:sequence>
483         <xs:element name="mRID" type="ID_String" minOccurs="1"
484 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
485 cim16#IdentifiedObject.mRID"/>
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486         <xs:element name="businessType" type="BusinessKind_String"
487 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
488 schema-cim16#TimeSeries.businessType"/>
489         <xs:element name="objectAggregation"
490 type="ObjectAggregationKind_String" minOccurs="1" maxOccurs="1"
491 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
492 cim16#TimeSeries.objectAggregation"/>
493         <xs:element name="inBiddingZone_Domain.mRID"
494 type="AreaID_String" minOccurs="0" maxOccurs="1"
495 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
496 cim16#IdentifiedObject.mRID"/>
497         <xs:element name="outBiddingZone_Domain.mRID"
498 type="AreaID_String" minOccurs="0" maxOccurs="1"
499 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
500 cim16#IdentifiedObject.mRID"/>
501         <xs:element name="registeredResource.mRID"
502 type="ResourceID_String" minOccurs="0" maxOccurs="1"
503 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
504 cim16#IdentifiedObject.mRID"/>
505         <xs:element name="registeredResource.name" type="xs:string"
506 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
507 schema-cim16#IdentifiedObject.name"/>
508         <xs:element name="quantity_Measurement_Unit.name"
509 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
510 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
511         <xs:element name="curveType" type="CurveType_String"
512 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
513 schema-cim16#TimeSeries.curveType"/>
514         <xs:element name="cancelledTS" type="ESMPBoolean_String"
515 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
516 schema-cim16#TimeSeries.cancelledTS"/>
517         <xs:element name="MktPSRType" type="MktPSRType" minOccurs="0"
518 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
519 cim16#TimeSeries.MktPSRType"/>
520         <xs:element name="Period" type="Series_Period" minOccurs="0"
521 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
522 cim16#TimeSeries.Period"/>
523     </xs:sequence>
524 </xs:complexType>
525 </xs:schema>
526
```