



European Network of
Transmission System Operators
for Electricity

CAPACITY AUCTION SPECIFICATION DOCUMENT UML MODEL AND SCHEMA

2018-05-08
DOCUMENT APPROVED
VERSION 1.0

2

Table of Contents

3	1	Objective	6
4	2	CapacityAuctionSpecification_MarketDocument	7
5	2.1	Capacity auction specification contextual model	7
6	2.1.1	Overview of the model	7
7	2.1.2	IsBasedOn relationships from the European style market profile	8
8			
9	2.2	Capacity auction specification assembly model	9
10	2.2.1	Overview of the model	9
11	2.2.2	IsBasedOn relationships from the European style market profile	10
12			
13	2.2.3	Detailed Capacity auction specification assembly model	10
14	2.2.3.1	CapacityAuctionSpecification_MarketDocument root class	10
15	2.2.3.2	AttributeInstanceComponent	11
16	2.2.3.3	Auction_TimeSeries	11
17	2.2.3.4	Point	14
18	2.2.3.5	Reason	14
19	2.2.3.6	RightsCharacteristics_Auction	14
20	2.2.3.7	Series_Period	15
21	2.2.4	Datatypes	15
22	2.2.5	CapacityAuctionSpecification_MarketDocument XML schema structure	16
23			
24	2.2.6	CapacityAuctionSpecification_MarketDocument XML schema	17
25	List of figures		
26		Figure 1 - Capacity auction specification contextual model	7
27		Figure 2 - Capacity auction specification assembly model	9
28		Figure 3 - CapacityAuctionSpecification_MarketDocument schema structure	16
29	List of tables		
30		Table 1 - IsBasedOn dependency	8
31		Table 2 - IsBasedOn dependency	10
32		Table 3 - Attributes of Capacity auction specification assembly model::CapacityAuctionSpecification_MarketDocument	10
33			
34		Table 4 - Association ends of Capacity auction specification assembly model::CapacityAuctionSpecification_MarketDocument with other classes	11
35			
36		Table 5 - Attributes of Capacity auction specification assembly model::AttributeInstanceComponent	11
37			
38		Table 6 - Attributes of Capacity auction specification assembly model::Auction_TimeSeries	12
39			
40		Table 7 - Association ends of Capacity auction specification assembly model::Auction_TimeSeries with other classes	13
41			
42		Table 8 - Attributes of Capacity auction specification assembly model::Point	14
43		Table 9 - Attributes of Capacity auction specification assembly model::Reason	14
44		Table 10 - Attributes of Capacity auction specification assembly model::RightsCharacteristics_Auction	14
45			
46		Table 11 - Attributes of Capacity auction specification assembly model::Series_Period	15

47	Table 12 - Association ends of Capacity auction specification assembly	
48	model::Series_Period with other classes	15
49		

50

Copyright notice:

51 **Copyright © ENTSO-E. All Rights Reserved.**

52 This document and its whole translations may be copied and furnished to others, and derivative
53 works that comment on or otherwise explain it or assist in its implementation may be prepared,
54 copied, published and distributed, in whole or in part, without restriction of any kind, provided
55 that the above copyright notice and this paragraph are included on all such copies and
56 derivative works. However, this document itself may not be modified in any way, except for
57 literal and whole translation into languages other than English and under all circumstances, the
58 copyright notice or references to ENTSO-E may not be removed.

59 This document and the information contained herein is provided on an "as is" basis.

60 **ENTSO-E DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT**
61 **LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT**
62 **INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR**
63 **FITNESS FOR A PARTICULAR PURPOSE.**

64

Maintenance notice:

65 This document is maintained by the ENTSO-E WG EDI. Comments or remarks are to be
66 provided at EDI.Library@entsoe.eu

67

Revision History

Version	Release	Date	Comments
0	1	2018-03-12	First drafting of the document.
1	0	2018-05-08	Document approved by MC

68

69 1 Objective

70 The purpose of this document is to provide the contextual and assembly UML models and the
71 schema of the CapacityAuctionSpecification_MarketDocument.

72 The schema of the CapacityAuctionSpecification_MarketDocument could be used in various
73 business processes.

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

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

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

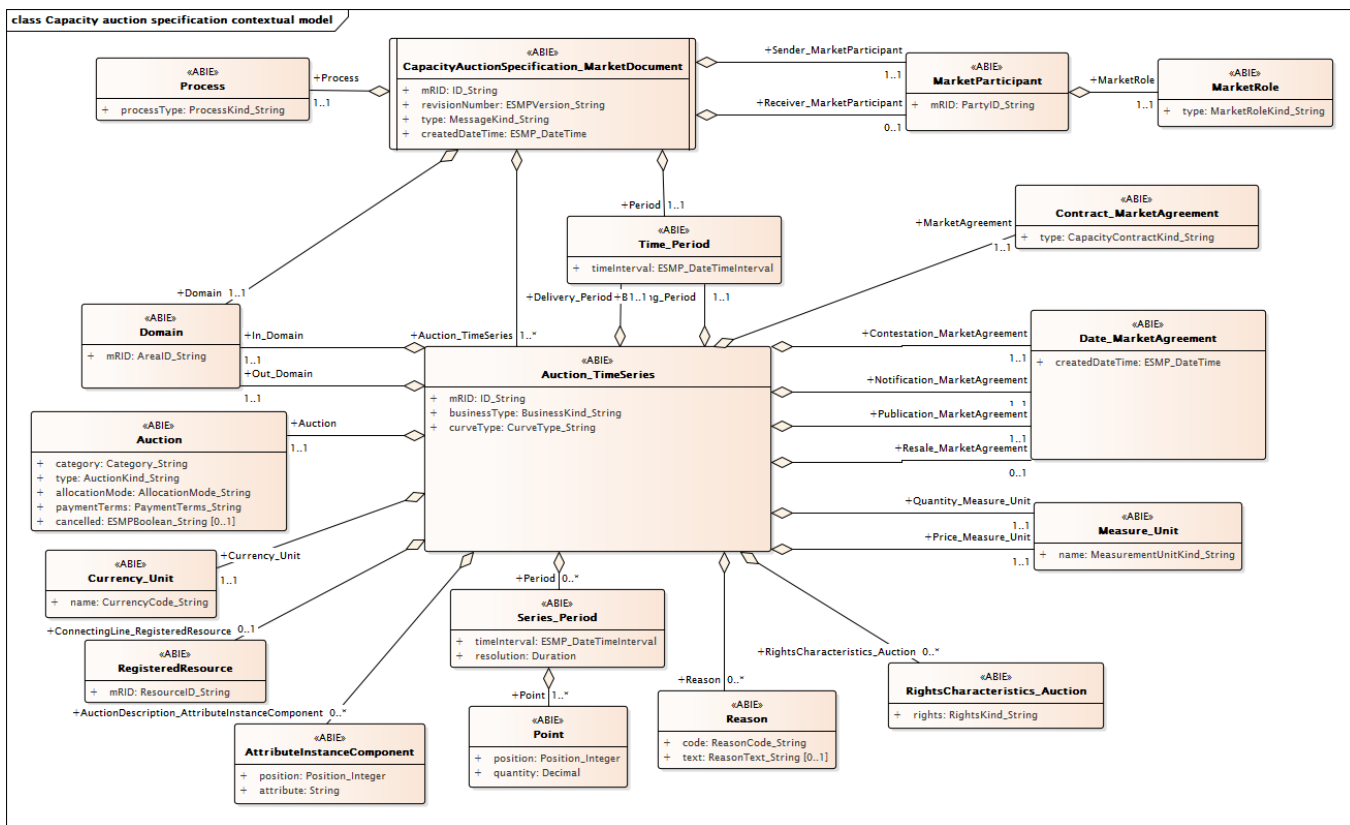
86

87 **2 CapacityAuctionSpecification_MarketDocument**

88 **2.1 Capacity auction specification contextual model**

89 **2.1.1 Overview of the model**

90 Figure 1 shows the model.



91

92 **Figure 1 - Capacity auction specification contextual model**

93

94

95 **2.1.2 IsBasedOn relationships from the European style market profile**

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

98

Table 1 - IsBasedOn dependency

Name	Complete IsBasedOn Path
AttributeInstanceComponent	TC57CIM::IEC62325::MarketManagement::AttributeInstanceComponent
Auction	TC57CIM::IEC62325::MarketManagement::Auction
Auction_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
CapacityAuctionSpecification_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Contract_MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
Currency_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Date_MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
Domain	TC57CIM::IEC62325::MarketManagement::Domain
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
RightsCharacteristics_Auction	TC57CIM::IEC62325::MarketManagement::Auction
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period

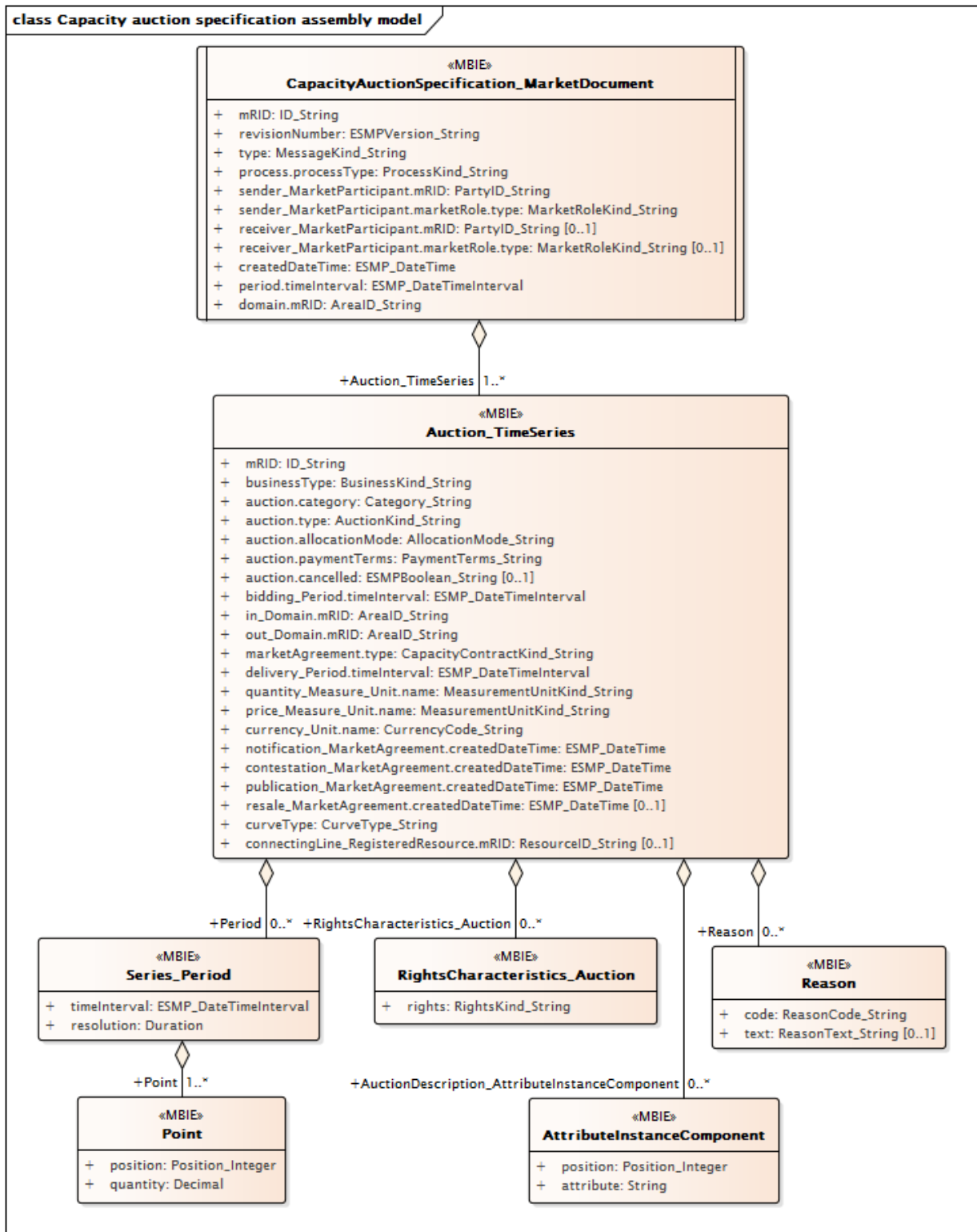
99

100

101 **2.2 Capacity auction specification assembly model**

102 **2.2.1 Overview of the model**

103 Figure 2 shows the model.



104

105

Figure 2 - Capacity auction specification assembly model

106

107 **2.2.2 IsBasedOn relationships from the European style market profile**

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

110 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
AttributeInstanceComponent	TC57CIM::IEC62325::MarketManagement::AttributeInstanceComponent
Auction_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
CapacityAuctionSpecification_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RightsCharacteristics_Auction	TC57CIM::IEC62325::MarketManagement::Auction
Series_Period	TC57CIM::IEC62325::MarketManagement::Period

111

112 **2.2.3 Detailed Capacity auction specification assembly model**

113 **2.2.3.1 CapacityAuctionSpecification_MarketDocument root class**

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

116 The CapacityAuctionSpecification_MarketDocument is issued by the Transmission Capacity
117 Allocator to any market participant interested in the reception of such information.

118 It provides information on the auction that will be carried out and in particular the unique
119 identification of the auction.

120 Table 3 shows all attributes of CapacityAuctionSpecification_MarketDocument.

121 **Table 3 - Attributes of Capacity auction specification assembly
122 model::CapacityAuctionSpecification_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.
4	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document owner.
5	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document owner.
6	[0..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient.
7	[0..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document recipient.

Order	mult.	Attribute name / Attribute type	Description
8	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
9	[1..1]	period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- The beginning and ending date and time of the period that the capacity auctions are covering.
10	[1..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The domain covered within the Capacity AuctionSpecification document, i.e. the border.

123

124 Table 4 shows all association ends of CapacityAuctionSpecification_MarketDocument with
125 other classes.

126 **Table 4 - Association ends of Capacity auction specification assembly**
127 **model::CapacityAuctionSpecification_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
11	[1..*]	Auction_TimeSeries Auction_TimeSeries	Association Based On: Capacity auction specification contextual model::Auction_TimeSeries.Auction_TimeSeries[1..*] ----- Capacity auction specification contextual model::CapacityAuctionSpecification_MarketDocument.[]

128

129 2.2.3.2 AttributeInstanceComponent

130 A class used to provide information about an attribute.

131 Table 5 shows all attributes of AttributeInstanceComponent.

132 **Table 5 - Attributes of Capacity auction specification assembly**
133 **model::AttributeInstanceComponent**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	position Position_Integer	The position provides the identification of each line within the textual description of an auction. A sequential value representing a relative sequence number.
1	[1..1]	attribute String	This provides the textual content of a line within a description (textual description of the auction and its market rules to clarify information that is not formally defined). The identification of an attribute for a given request component.

134

135 2.2.3.3 Auction_TimeSeries

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

137 The Auction_TimeSeries provide the necessary information about what is auctioned as
138 transmission capacity.

139 Table 6 shows all attributes of Auction_TimeSeries.

140
141

**Table 6 - Attributes of Capacity auction specification assembly
model::Auction_TimeSeries**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	The identification attributed by the auction office that uniquely identifies the auction. 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]	auction.category Category_String	The product category of an auction.
3	[1..1]	auction.type AuctionKind_String	The kind of the auction (e.g. implicit, explicit, ...).
4	[1..1]	auction.allocationMode AllocationMode_String	The identification of the method of allocation in an auction.
5	[1..1]	auction.paymentTerms PaymentTerms_String	The terms which dictate the determination of the bid payment price.
6	[0..1]	auction.cancelled ESMPBoolean_String	An indicator that signifies that the object, subject of the TimeSeries, has been cancelled.
7	[1..1]	bidding_Period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- The beginning and ending date and time of the bidding period within which capacity traders can submit a bid to the transmission capacity allocator.
8	[1..1]	in_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the energy is to be put.
9	[1..1]	out_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the energy is coming from.
10	[1..1]	marketAgreement.type CapacityContractKind_String	The specification of the kind of the agreement, e.g. long term, daily contract. --- The contract type defines the conditions under which the capacity will be allocated.
11	[1..1]	delivery_Period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- The beginning and ending date and time of the period when the capacity is to be used.
12	[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 in which the quantities in the time series are expressed, e.g. MAW.
13	[1..1]	price_Measure_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure in which the prices in the auction bids are to be expressed.
14	[1..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency in which the monetary amount is expressed.
15	[1..1]	notification_MarketAgreement.createdDateTime ESMP_DateTime	The date and time related to conditions of the agreement. The date and time of the creation of the agreement. --- The date and time that the participants will be notified of the results prior to the contestation period.

Order	mult.	Attribute name / Attribute type	Description
16	[1..1]	contestation_MarketAgreement.createdDateTime ESMP_DateTime	The date and time related to conditions of the agreement. The date and time of the creation of the agreement. --- The period in which contestations may be provided starts with the notification date time and ends with the contestation date and time. If there is no possibility of contestation both dates and times must be the same.
17	[1..1]	publication_MarketAgreement.createdDateTime ESMP_DateTime	The date and time related to conditions of the agreement. The date and time of the creation of the agreement. --- The date and time that the final auction results will be published to the market after the contestation period.
18	[0..1]	resale_MarketAgreement.createdDateTime ESMP_DateTime	The date and time related to conditions of the agreement. The date and time of the creation of the agreement. --- The date and time where the resale of capacity rights acquired in previous auctions for this auction will no longer be acceptable.
19	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
20	[0..1]	connectingLine_RegisteredResource.mRID ResourceID_String	The unique identification of a resource. --- The identification of a resource associated with a TimeSeries. The identification of a set of lines that connect two areas; the transmission capacity rights are related to this set of lines.

142

143 Table 7 shows all association ends of Auction_TimeSeries with other classes.

144 **Table 7 - Association ends of Capacity auction specification assembly**
145 **model::Auction_TimeSeries with other classes**

Order	mult.	Class name / Role	Description
21	[0..*]	Series_Period Period	Association Based On: Capacity auction specification contextual model::Series_Period.Period[0..*] ----- Capacity auction specification contextual model::Auction_TimeSeries.[]
22	[0..*]	AttributeInstanceComponent AuctionDescription_AttributeInstanceComponent	It provides the textual description of the auction and its market rules to clarify information that is not formally defined. Association Based On: Capacity auction specification contextual model::AttributeInstanceComponent.AuctionDescription_AttributeInstanceComponent[0..*] ----- Capacity auction specification contextual model::Auction_TimeSeries.[]
23	[0..*]	RightsCharacteristics_Auction RightsCharacteristics_Auction	The definition of the type of the rights that are to be auctioned. Association Based On: Capacity auction specification contextual model::RightsCharacteristics_Auction.RightsCharacteristics_Auction[0..*] ----- Capacity auction specification contextual model::Auction_TimeSeries.[]

Order	mult.	Class name / Role	Description
24	[0..*]	Reason Reason	It may provide any coded or textual information that is necessary to completely describe a change to the auction specification or its eventual cancellation. Association Based On: Capacity auction specification contextual model::Reason.Reason[0..*] ----- Capacity auction specification contextual model::Auction_TimeSeries.[]

146

147 2.2.3.4 Point

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

149 Table 8 shows all attributes of Point.

150 **Table 8 - Attributes of Capacity auction specification 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 quantity to be auctioned for the interval in question. The principal quantity identified for a point.

151

152 2.2.3.5 Reason

153 The motivation of an act.

154 Table 9 shows all attributes of Reason.

155 **Table 9 - Attributes of Capacity auction specification assembly model::Reason**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	code ReasonCode_String	The motivation of an act in coded form.
1	[0..1]	text ReasonText_String	The textual explanation corresponding to the reason code.

156

157 2.2.3.6 RightsCharacteristics_Auction

158 The identification of a formal specification of an energy product that is offered for sale.

159 Table 10 shows all attributes of RightsCharacteristics_Auction.

160 **Table 10 - Attributes of Capacity auction specification assembly model::RightsCharacteristics_Auction**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	rights RightsKind_String	The rights of use that is accorded to what is acquired in an auction.

162

163 **2.2.3.7 Series_Period**

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

165 Table 11 shows all attributes of Series_Period.

166 **Table 11 - Attributes of Capacity auction specification 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.

167

168 Table 12 shows all association ends of Series_Period with other classes.

169 **Table 12 - Association ends of Capacity auction specification assembly
170 model::Series_Period with other classes**

Order	mult.	Class name / Role	Description
2	[1..*]	Point Point	Association Based On: Capacity auction specification contextual model::Point.Point[1..*] ----- Capacity auction specification contextual model::Series_Period.[]

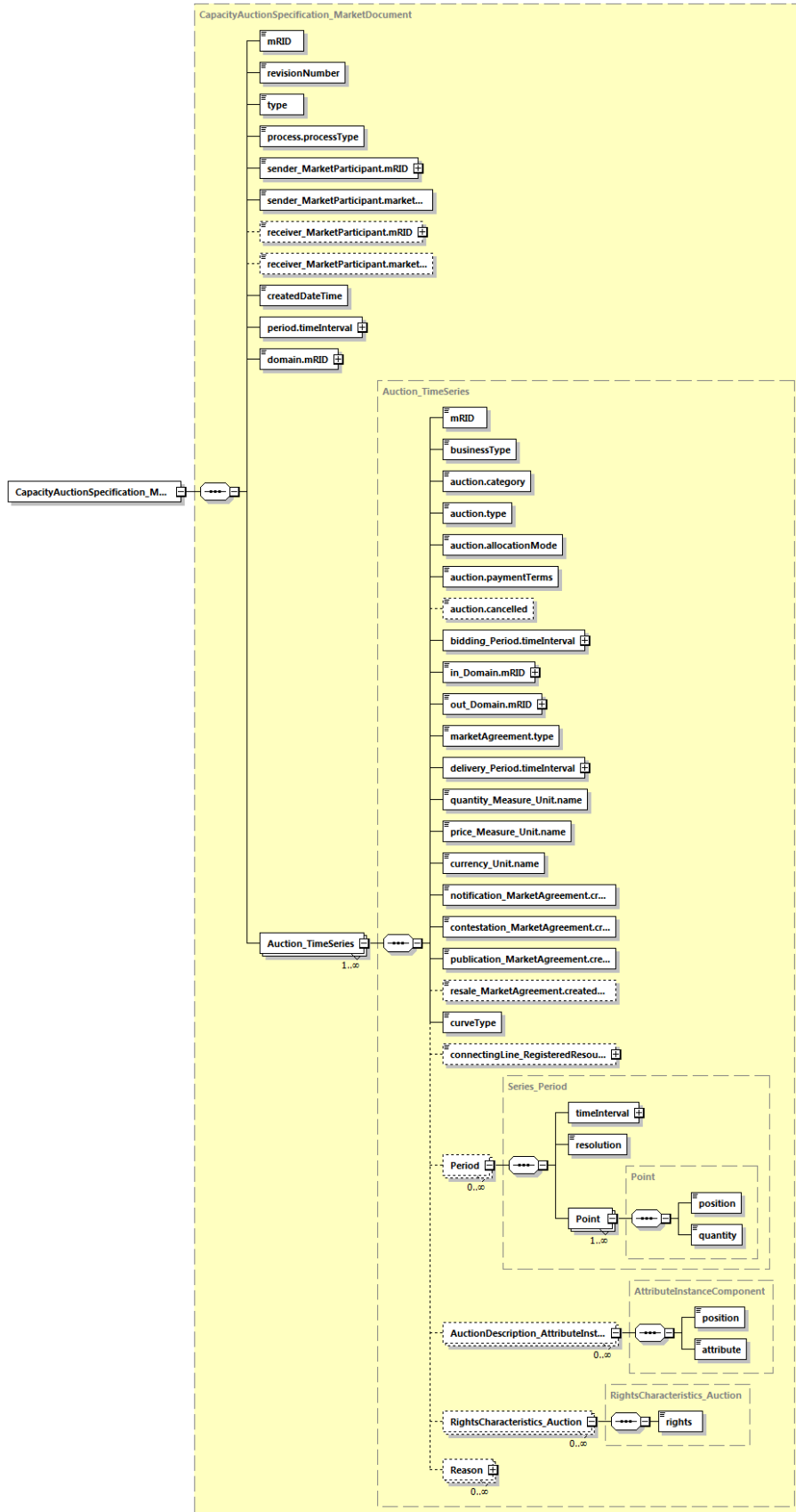
171

172 **2.2.4 Datatypes**

173 The list of datatypes used for the Capacity auction specification assembly model is as follows:

- 174 • ESMP_DateTimeInterval compound
- 175 • AllocationMode_String datatype, codelist AllocationModeTypeList
- 176 • AreaID_String datatype, codelist CodingSchemeTypeList
- 177 • AuctionKind_String datatype, codelist AuctionTypeList
- 178 • BusinessKind_String datatype, codelist BusinessTypeList
- 179 • CapacityContractKind_String datatype, codelist ContractTypeList
- 180 • Category_String datatype, codelist CategoryTypeList
- 181 • CurrencyCode_String datatype, codelist CurrencyTypeList
- 182 • CurveType_String datatype, codelist CurveTypeList
- 183 • ESMP_DateTime datatype
- 184 • ESMPBoolean_String datatype, codelist IndicatorTypeList
- 185 • ESMPVersion_String datatype
- 186 • ID_String datatype
- 187 • MarketRoleKind_String datatype, codelist RoleTypeList
- 188 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 189 • MessageKind_String datatype, codelist MessageTypeList
- 190 • PartyID_String datatype, codelist CodingSchemeTypeList
- 191 • PaymentTerms_String datatype, codelist PaymentTermsTypeList
- 192 • Position_Integer datatype
- 193 • ProcessKind_String datatype, codelist ProcessTypeList
- 194 • ReasonCode_String datatype, codelist ReasonCodeTypeList
- 195 • ReasonText_String datatype
- 196 • ResourceID_String datatype, codelist CodingSchemeTypeList
- 197 • RightsKind_String datatype, codelist RightsTypeList
- 198 • YMDHM_DateTime datatype
- 199

200 **2.2.5 CapacityAuctionSpecification_MarketDocument XML schema structure**
 201



Generated by XMLSpy www.altova.com

Figure 3 - CapacityAuctionSpecification_MarketDocument schema structure

202
 203
 204

205 2.2.6 CapacityAuctionSpecification_MarketDocument XML schema

206

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

208 urn:iec62325.351:tc57wg16:451-3:capacityspecificationdocument:7:1

```

209 <?xml version="1.0" encoding="utf-8"?>
210 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
211 xmlns="iec62325.351:tc57wg16:451-3:capacityspecificationdocument:7:1"
212 xmlns:cimp="http://www.iec.ch/cimprofile" xmlns:xs="http://www.w3.org/2001/XMLSchema"
213 targetNamespace="iec62325.351:tc57wg16:451-3:capacityspecificationdocument:7:1"
214 elementFormDefault="qualified" attributeFormDefault="unqualified">
215   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-entsoe-eu-wgedi-
216 codelists.xsd"/>
217   <xs:element name="CapacityAuctionSpecification_MarketDocument"
218 type="CapacityAuctionSpecification_MarketDocument"/>
219   <xs:simpleType name="Position_Integer" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
220 schema-cim16#Integer">
221     <xs:restriction base="xs:integer">
222       <xs:maxInclusive value="999999"/>
223       <xs:minInclusive value="1"/>
224     </xs:restriction>
225   </xs:simpleType>
226   <xs:complexType name="AttributeInstanceComponent"
227 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#AttributeInstanceComponent">
228     <xs:sequence>
229       <xs:element name="position" type="Position_Integer" minOccurs="1"
230 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
231 cim16#AttributeInstanceComponent.position"/>
232       <xs:element name="attribute" type="xs:string" minOccurs="1" maxOccurs="1"
233 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#AttributeInstanceComponent.attribute"/>
234     </xs:sequence>
235   </xs:complexType>
236   <xs:simpleType name="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
237 cim16#String">
238     <xs:restriction base="xs:string">
239       <xs:maxLength value="35"/>
240     </xs:restriction>
241   </xs:simpleType>
242   <xs:simpleType name="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
243 schema-cim16#String">
244     <xs:restriction base="ecl:BusinessTypeList"/>
245   </xs:simpleType>
246   <xs:simpleType name="Category_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
247 schema-cim16#String">
248     <xs:restriction base="ecl:CategoryTypeList"/>
249   </xs:simpleType>
250   <xs:simpleType name="AuctionKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
251 schema-cim16#String">
252     <xs:restriction base="ecl:AuctionTypeList"/>
253   </xs:simpleType>
254   <xs:simpleType name="AllocationMode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
255 schema-cim16#String">
256     <xs:restriction base="ecl:AllocationModeTypeList"/>
257   </xs:simpleType>
258   <xs:simpleType name="PaymentTerms_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
259 schema-cim16#String">
260     <xs:restriction base="ecl:PaymentTermsTypeList"/>
261   </xs:simpleType>
262   <xs:simpleType name="ESMPBoolean_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
263 schema-cim16#String">
264     <xs:restriction base="ecl:IndicatorTypeList"/>
265   </xs:simpleType>
266   <xs:simpleType name="AreaID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
267 schema-cim16#String">
268     <xs:restriction base="xs:string">
269       <xs:maxLength value="18"/>
270     </xs:restriction>
271   </xs:simpleType>
272   <xs:complexType name="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
273 cim16#String">
274     <xs:simpleContent>
275       <xs:extension base="AreaID_String-base">

```

```

276                                     <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
277 use="required"/>
278                                     </xs:extension>
279                                 </xs:simpleContent>
280                             </xs:complexType>
281                             <xs:simpleType name="CapacityContractKind_String"
282 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
283                                 <xs:restriction base="ecl:ContractTypeList"/>
284                             </xs:simpleType>
285                             <xs:simpleType name="MeasurementUnitKind_String"
286 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
287                                 <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
288                             </xs:simpleType>
289                             <xs:simpleType name="CurrencyCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
290 schema-cim16#String">
291                                 <xs:restriction base="ecl:CurrencyTypeList"/>
292                             </xs:simpleType>
293                             <xs:simpleType name="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
294 cim16#DateTime">
295                                 <xs:restriction base="xs:dateTime">
296                                     <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-9]|[12][0-
297 9]|3[01])|([0-9]{4})[\-](0[469]|(11))[\-](0[1-9]|[12][0-9]|30))T((0[1][0-9]|2[0-3]):[0-5][0-9]:[0-
298 5][0-
299 9])Z|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]|02468][048][0246
300 8][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0-9][0-9][13579][26])[\-](02)[\-](0[1-
301 9]|1[0-9]|2[0-9])T((0[1][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
302 9])Z|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][2468][1235679]|02
303 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0-9][0-
304 9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-9]|2[0-8])T((0[1][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z"/>
305                                 </xs:restriction>
306                             </xs:simpleType>
307                             <xs:simpleType name="CurveType_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
308 schema-cim16#String">
309                                 <xs:restriction base="ecl:CurveTypeList"/>
310                             </xs:simpleType>
311                             <xs:simpleType name="ResourceID_String-base"
312 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
313                                 <xs:restriction base="xs:string">
314                                     <xs:maxLength value="60"/>
315                                 </xs:restriction>
316                             </xs:simpleType>
317                             <xs:complexType name="ResourceID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
318 schema-cim16#String">
319                                 <xs:simpleContent>
320                                     <xs:extension base="ResourceID_String-base">
321                                         <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
322 use="required"/>
323                                     </xs:extension>
324                                 </xs:simpleContent>
325                             </xs:complexType>
326                             <xs:simpleType name="YMDHM_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
327 cim16#DateTime">
328                                 <xs:restriction base="xs:string">
329                                     <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-9]|[12][0-
330 9]|3[01])|([0-9]{4})[\-](0[469]|(11))[\-](0[1-9]|[12][0-9]|30))T((0[1][0-9]|2[0-3]):[0-5][0-
331 9])Z|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]|02468][048][0246
332 8][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0-9][0-9][13579][26])[\-](02)[\-](0[1-
333 9]|1[0-9]|2[0-9])T((0[1][0-9]|2[0-3]):[0-5][0-
334 9])Z|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][2468][1235679]|02
335 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0-9][0-
336 9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-9]|2[0-8])T((0[1][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z"/>
337                                 </xs:restriction>
338                             </xs:simpleType>
339                             <xs:complexType name="ESMP_DateTimeInterval"
340 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
341                                 <xs:sequence>
342                                     <xs:element name="start" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
343 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.start"/>
344                                     <xs:element name="end" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
345 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.end"/>
346                                 </xs:sequence>
347                             </xs:complexType>
348                             <xs:complexType name="Auction_TimeSeries" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
349 schema-cim16#TimeSeries">
350                                 <xs:sequence>

```

```

351         <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
352 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
353         <xs:element name="businessType" type="BusinessKind_String" minOccurs="1"
354 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
355 cim16#TimeSeries.businessType"/>
356         <xs:element name="auction.category" type="Category_String" minOccurs="1"
357 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction.category"/>
358         <xs:element name="auction.type" type="AuctionKind_String" minOccurs="1"
359 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction.type"/>
360         <xs:element name="auction.allocationMode" type="AllocationMode_String"
361 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
362 cim16#Auction.allocationMode"/>
363         <xs:element name="auction.paymentTerms" type="PaymentTerms_String"
364 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
365 cim16#Auction.paymentTerms"/>
366         <xs:element name="auction.cancelled" type="ESMPBoolean_String" minOccurs="0"
367 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction.cancelled"/>
368         <xs:element name="bidding_Period.timeInterval" type="ESMP_DateTimeInterval"
369 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
370 cim16#Period.timeInterval"/>
371         <xs:element name="in_Domain.mRID" type="AreaID_String" minOccurs="1"
372 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
373         <xs:element name="out_Domain.mRID" type="AreaID_String" minOccurs="1"
374 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
375         <xs:element name="marketAgreement.type" type="CapacityContractKind_String"
376 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
377 cim16#Document.type"/>
378         <xs:element name="delivery_Period.timeInterval" type="ESMP_DateTimeInterval"
379 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
380 cim16#Period.timeInterval"/>
381         <xs:element name="quantity_Measure_Unit.name"
382 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
383 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
384         <xs:element name="price_Measure_Unit.name" type="MeasurementUnitKind_String"
385 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
386 cim16#Unit.name"/>
387         <xs:element name="currency_Unit.name" type="CurrencyCode_String" minOccurs="1"
388 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
389         <xs:element name="notification_MarketAgreement.createdDateTime"
390 type="ESMP_DateTime" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
391 schema-cim16#Document.createdDateTime"/>
392         <xs:element name="contestation_MarketAgreement.createdDateTime"
393 type="ESMP_DateTime" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
394 schema-cim16#Document.createdDateTime"/>
395         <xs:element name="publication_MarketAgreement.createdDateTime"
396 type="ESMP_DateTime" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
397 schema-cim16#Document.createdDateTime"/>
398         <xs:element name="resale_MarketAgreement.createdDateTime" type="ESMP_DateTime"
399 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
400 cim16#Document.createdDateTime"/>
401         <xs:element name="curveType" type="CurveType_String" minOccurs="1"
402 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.curveType"/>
403         <xs:element name="connectingLine_RegisteredResource.mRID"
404 type="ResourceID_String" minOccurs="0" maxOccurs="1"
405 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
406         <xs:element name="Period" type="Series_Period" minOccurs="0"
407 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
408 cim16#TimeSeries.Period"/>
409         <xs:element name="AuctionDescription_AttributeInstanceComponent"
410 type="AttributeInstanceComponent" minOccurs="0" maxOccurs="unbounded"
411 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
412 cim16#TimeSeries.AuctionDescription_AttributeInstanceComponent"/>
413         <xs:element name="RightsCharacteristics_Auction"
414 type="RightsCharacteristics_Auction" minOccurs="0" maxOccurs="unbounded"
415 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
416 cim16#TimeSeries.RightsCharacteristics_Auction"/>
417         <xs:element name="Reason" type="Reason" minOccurs="0" maxOccurs="unbounded"
418 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.Reason"/>
419     </xs:sequence>
420 </xs:complexType>
421 <xs:simpleType name="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
422 schema-cim16#String">
423     <xs:restriction base="xs:string">
424         <xs:pattern value="[1-9]([0-9]){0,2}"/>
425     </xs:restriction>

```

```

426         </xs:simpleType>
427         <xs:simpleType name="MessageKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
428 schema-cim16#String">
429             <xs:restriction base="ecl:MessageTypeList"/>
430         </xs:simpleType>
431         <xs:simpleType name="ProcessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
432 schema-cim16#String">
433             <xs:restriction base="ecl:ProcessTypeList"/>
434         </xs:simpleType>
435         <xs:simpleType name="PartyID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
436 schema-cim16#String">
437             <xs:restriction base="xs:string">
438                 <xs:maxLength value="16"/>
439             </xs:restriction>
440         </xs:simpleType>
441         <xs:complexType name="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
442 schema-cim16#String">
443             <xs:simpleContent>
444                 <xs:extension base="PartyID_String-base">
445                     <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
446 use="required"/>
447                 </xs:extension>
448             </xs:simpleContent>
449         </xs:complexType>
450         <xs:simpleType name="MarketRoleKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
451 schema-cim16#String">
452             <xs:restriction base="ecl:RoleTypeList"/>
453         </xs:simpleType>
454         <xs:complexType name="CapacityAuctionSpecification_MarketDocument"
455 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
456             <xs:sequence>
457                 <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
458 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
459                 <xs:element name="revisionNumber" type="ESMPVersion_String" minOccurs="1"
460 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
461 cim16#Document.revisionNumber"/>
462                 <xs:element name="type" type="MessageKind_String" minOccurs="1" maxOccurs="1"
463 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
464                 <xs:element name="process.processType" type="ProcessKind_String" minOccurs="1"
465 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Process.processType"/>
466                 <xs:element name="sender_MarketParticipant.mRID" type="PartyID_String"
467 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
468 cim16#IdentifiedObject.mRID"/>
469                 <xs:element name="sender_MarketParticipant.marketRole.type"
470 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
471 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
472                 <xs:element name="receiver_MarketParticipant.mRID" type="PartyID_String"
473 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
474 cim16#IdentifiedObject.mRID"/>
475                 <xs:element name="receiver_MarketParticipant.marketRole.type"
476 type="MarketRoleKind_String" minOccurs="0" maxOccurs="1"
477 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
478                 <xs:element name="createdDateTime" type="ESMP_DateTime" minOccurs="1"
479 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
480 cim16#Document.createdDateTime"/>
481                 <xs:element name="period.timeInterval" type="ESMP_DateTimeInterval"
482 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
483 cim16#Period.timeInterval"/>
484                 <xs:element name="domain.mRID" type="AreaID_String" minOccurs="1"
485 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
486                 <xs:element name="Auction_TimeSeries" type="Auction_TimeSeries" minOccurs="1"
487 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
488 cim16#MarketDocument.Auction_TimeSeries"/>
489             </xs:sequence>
490         </xs:complexType>
491         <xs:complexType name="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
492 cim16#Point">
493             <xs:sequence>
494                 <xs:element name="position" type="Position_Integer" minOccurs="1"
495 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.position"/>
496                 <xs:element name="quantity" type="xs:decimal" minOccurs="1" maxOccurs="1"
497 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.quantity"/>
498             </xs:sequence>
499         </xs:complexType>

```

```

500     <xs:simpleType name="ReasonCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
501 schema-cim16#String">
502         <xs:restriction base="ecl:ReasonCodeTypeList"/>
503     </xs:simpleType>
504     <xs:simpleType name="ReasonText_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
505 schema-cim16#String">
506         <xs:restriction base="xs:string">
507             <xs:maxLength value="512"/>
508         </xs:restriction>
509     </xs:simpleType>
510     <xs:complexType name="Reason" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
511 cim16#Reason">
512         <xs:sequence>
513             <xs:element name="code" type="ReasonCode_String" minOccurs="1" maxOccurs="1"
514 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.code"/>
515             <xs:element name="text" type="ReasonText_String" minOccurs="0" maxOccurs="1"
516 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.text"/>
517         </xs:sequence>
518     </xs:complexType>
519     <xs:simpleType name="RightsKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
520 schema-cim16#String">
521         <xs:restriction base="ecl:RightsTypeList"/>
522     </xs:simpleType>
523     <xs:complexType name="RightsCharacteristics_Auction"
524 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction">
525         <xs:sequence>
526             <xs:element name="rights" type="RightsKind_String" minOccurs="1" maxOccurs="1"
527 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction.rights"/>
528         </xs:sequence>
529     </xs:complexType>
530     <xs:complexType name="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
531 cim16#Period">
532         <xs:sequence>
533             <xs:element name="timeInterval" type="ESMP_DateTimeInterval" minOccurs="1"
534 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval"/>
535             <xs:element name="resolution" type="xs:duration" minOccurs="1" maxOccurs="1"
536 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution"/>
537             <xs:element name="Point" type="Point" minOccurs="1" maxOccurs="unbounded"
538 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point"/>
539         </xs:sequence>
540     </xs:complexType>
541 </xs:schema>
    
```