



European Network of
Transmission System Operators
for Electricity

**PLANNED RESOURCE SCHEDULE
DOCUMENT
UML MODEL AND SCHEMA**

2020-11-04
APPROVED DOCUMENT
VERSION 1.1

2

Table of Contents

3	1	Objective	6
4	2	PlannedResourceSchedule_MarketDocument	7
5	2.1	Planned resource schedule 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	Planned resource schedule 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 Planned resource schedule assembly model	10
14	2.2.3.1	PlannedResourceSchedule_MarketDocument root class	10
15	2.2.3.2	PlannedResource_TimeSeries	11
16	2.2.3.3	Point	12
17	2.2.3.4	Reason	13
18	2.2.3.5	Series_Period	13
19	2.2.3.6	UnavailableReserve_TimeSeries	14
20	2.2.4	Datatypes	15
21	2.2.5	PlannedResourceSchedule_MarketDocument XML schema structure	16
22			
23	2.2.6	PlannedResourceSchedule_MarketDocument XML schema	17
24		List of figures	
25		Figure 1 - Planned resource schedule contextual model	7
26		Figure 2 - Planned resource schedule assembly model	9
27		Figure 3 - PlannedResourceSchedule_MarketDocument schema structure	16
28		List of tables	
29		Table 1 - IsBasedOn dependency	8
30		Table 2 - IsBasedOn dependency	10
31		Table 3 - Attributes of Planned resource schedule assembly model::PlannedResourceSchedule_MarketDocument	10
32			
33		Table 4 - Association ends of Planned resource schedule assembly model::PlannedResourceSchedule_MarketDocument with other classes	11
34			
35		Table 5 - Attributes of Planned resource schedule assembly model::PlannedResource_TimeSeries	11
36			
37		Table 6 - Association ends of Planned resource schedule assembly model::PlannedResource_TimeSeries with other classes	12
38			
39		Table 7 - Attributes of Planned resource schedule assembly model::Point	13
40		Table 8 - Association ends of Planned resource schedule assembly model::Point with other classes	13
41			
42		Table 9 - Attributes of Planned resource schedule assembly model::Reason	13
43		Table 10 - Attributes of Planned resource schedule assembly model::Series_Period	13
44		Table 11 - Association ends of Planned resource schedule assembly model::Series_Period with other classes	14
45			
46		Table 12 - Attributes of Planned resource schedule assembly model::UnavailableReserve_TimeSeries	14
47			

48	Table 13 - Association ends of Planned resource schedule assembly	
49	model::UnavailableReserve_TimeSeries with other classes	15
50		

51

Copyright notice:

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

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

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

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

65

Maintenance notice:

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

68

Revision History

Version	Release	Date	Comments
0	1	2019-01-14	First draft of the document.
1	0	2019-02-12	Approved by MC.
1	1	2020-11-04	Changes in Planned Resource Schedule Document version 6.1: <ul style="list-style-type: none">• A reason class is linked to Timeseries with 0..* cardinality• A MktPSRType class is linked to Timeseries with 0..1 cardinality. Approved by MC.

69

70 1 Objective

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

73 The schema of the PlannedResourceSchedule_MarketDocument could be used in various
74 business processes.

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

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

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

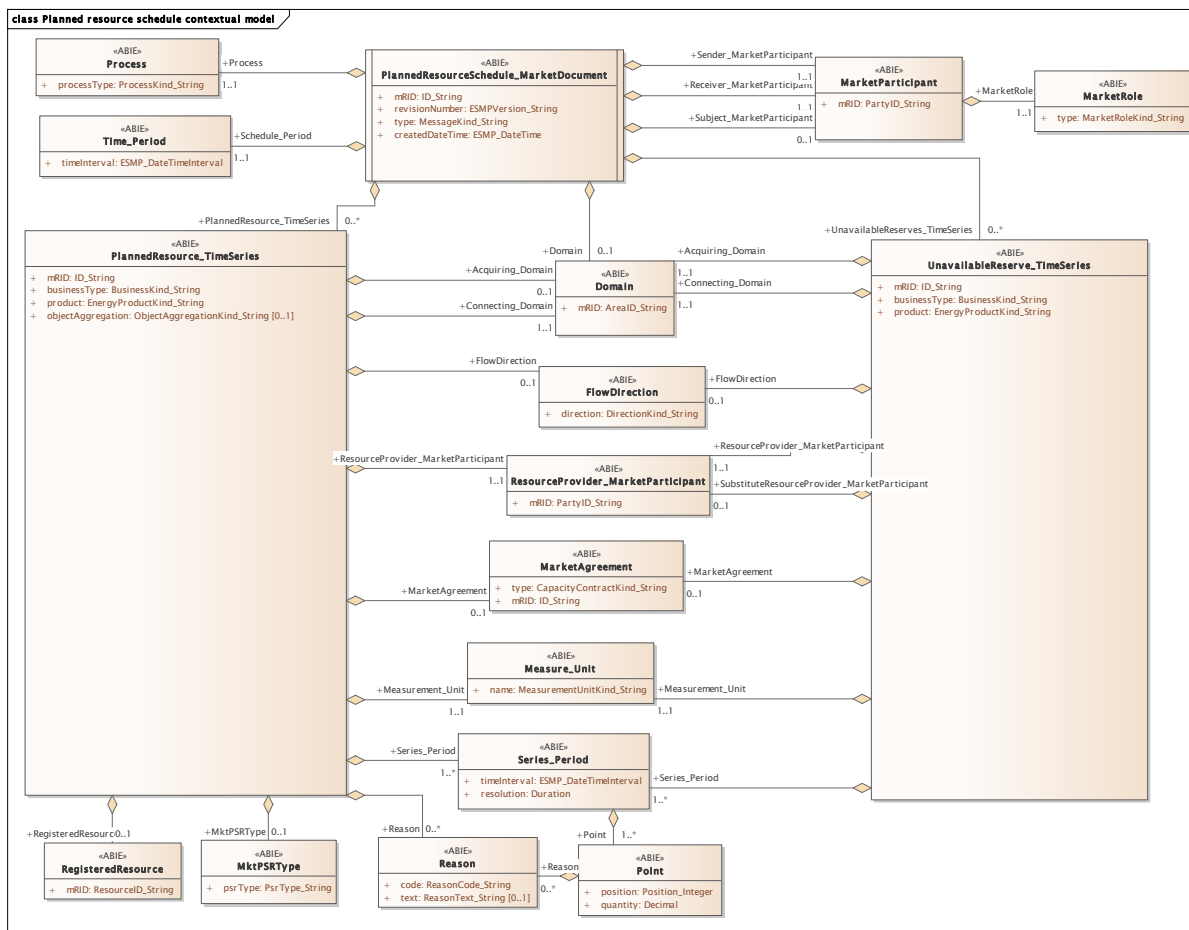
87

88 **2 PlannedResourceSchedule_MarketDocument**

89 **2.1 Planned resource schedule contextual model**

90 **2.1.1 Overview of the model**

91 Figure 1 shows the model.



92

93

Figure 1 - Planned resource schedule contextual model

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
Domain	TC57CIM::IEC62325::MarketManagement::Domain
FlowDirection	TC57CIM::IEC62325::MarketManagement::FlowDirection
MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
PlannedResource_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
PlannedResourceSchedule_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
ResourceProvider_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
UnavailableReserve_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

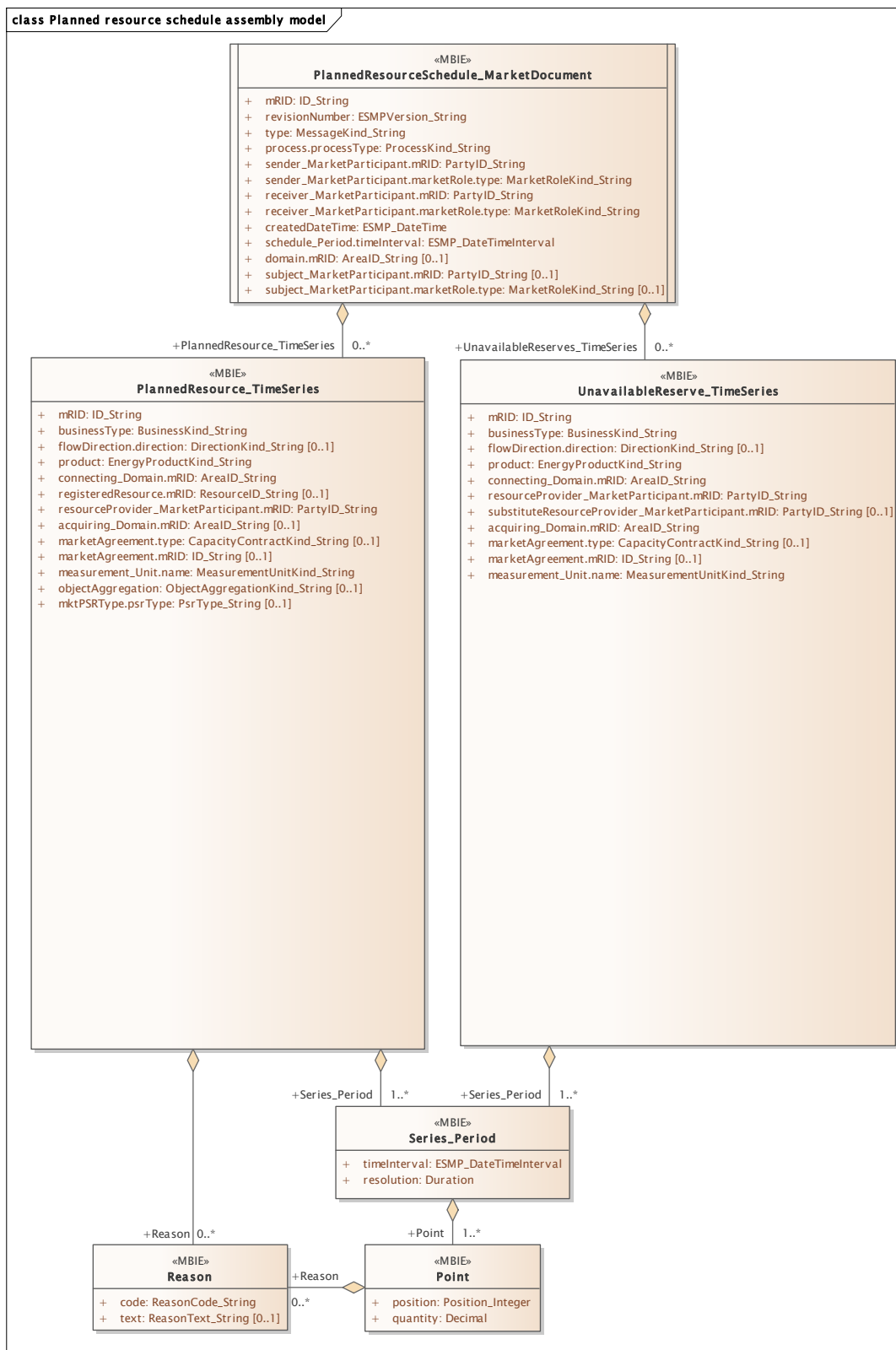
99

100

101 2.2 Planned resource schedule assembly model

102 2.2.1 Overview of the model

103 Figure 2 shows the model.



104

105

Figure 2 - Planned resource schedule assembly model

106 **2.2.2 IsBasedOn relationships from the European style market profile**

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

109 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
PlannedResource_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
PlannedResourceSchedule_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
UnavailableReserve_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

110

111 **2.2.3 Detailed Planned resource schedule assembly model**

112 **2.2.3.1 PlannedResourceSchedule_MarketDocument root class**

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

115 Table 3 shows all attributes of PlannedResourceSchedule_MarketDocument.

116 **Table 3 - Attributes of Planned resource schedule assembly
117 model::PlannedResourceSchedule_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 process dealt with in the document.
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.
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]	schedule_Period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval.

Order	mult.	Attribute name / Attribute type	Description
10	[0..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The Domain associated with an electronic document header.
11	[0..1]	subject_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The party that is the subject of the documents time series.
12	[0..1]	subject_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The party that is the subject of the documents time series. --- The role associated with a MarketParticipant.

118

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

121 **Table 4 - Association ends of Planned resource schedule assembly**
122 **model::PlannedResourceSchedule_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
13	[0..*]	PlannedResource_TimeSeries PlannedResource_TimeSeries	The planned resource schedule time series. MXM to be detailed. Association Based On: Planned resource schedule contextual model::PlannedResourceSchedule_MarketDocument.[] ----- Planned resource schedule contextual model::PlannedResource_TimeSeries.PlannedResource_TimeSeries[0..*]
14	[0..*]	UnavailableReserve_TimeSeries UnavailableReserves_TimeSeries	The time series that is associated with an electronic document. mxm TO BE DETAILED Association Based On: Planned resource schedule contextual model::PlannedResourceSchedule_MarketDocument.[] ----- Planned resource schedule contextual model::UnavailableReserve_TimeSeries.UnavailableReserves_TimeSeries[0..*]

123

124 2.2.3.2 PlannedResource_TimeSeries

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

126 Table 5 shows all attributes of PlannedResource_TimeSeries.

127 **Table 5 - Attributes of Planned resource schedule assembly**
128 **model::PlannedResource_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	[0..1]	flowDirection.direction DirectionKind_String	The coded identification of the direction of energy flow. --- The flow direction associated with a TimeSeries.
3	[1..1]	product EnergyProductKind_String	The identification of the nature of an energy product such as power, energy, reactive power, etc.

Order	mult.	Attribute name / Attribute type	Description
4	[1..1]	connecting_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain associated with a TimeSeries.
5	[0..1]	registeredResource.mRID ResourceID_String	The unique identification of a resource. --- The identification of a resource associated with a TimeSeries.
6	[1..1]	resourceProvider_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of a market participant associated with a TimeSeries.
7	[0..1]	acquiring_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain associated with a TimeSeries.
8	[0..1]	marketAgreement.type CapacityContractKind_String	The specification of the kind of the agreement, e.g. long term, daily contract. --- The identification of an agreement associated with a TimeSeries.
9	[0..1]	marketAgreement.mRID ID_String	The unique identification of the agreement. --- The identification of an agreement associated with a TimeSeries.
10	[1..1]	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 a TimeSeries.
11	[0..1]	objectAggregation ObjectAggregationKind_String	The identification of the domain that is the common denominator used to aggregate a time series.
12	[0..1]	mktPSRType.psrType PsrType_String	The coded type of a power system resource. --- The identification of the type of resource associated with a TimeSeries.

129

130 Table 6 shows all association ends of PlannedResource_TimeSeries with other classes.

131 **Table 6 - Association ends of Planned resource schedule assembly**
132 **model::PlannedResource_TimeSeries with other classes**

Order	mult.	Class name / Role	Description
13	[1..*]	Series_Period Series_Period	The time interval and resolution for a period associated with a TimeSeries. Association Based On: Planned resource schedule contextual model::PlannedResource_TimeSeries.[] ----- Planned resource schedule contextual model::Series_Period.Series_Period[1..*]
14	[0..*]	Reason Reason	The reason information associated with a TimeSeries providing motivation information. Association Based On: Planned resource schedule contextual model::Reason.Reason[0..*] ----- Planned resource schedule contextual model::PlannedResource_TimeSeries.[]

133

134 2.2.3.3 Point

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

136 Table 7 shows all attributes of Point.

137 **Table 7 - Attributes of Planned resource schedule 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.

138

139 Table 8 shows all association ends of Point with other classes.

140 **Table 8 - Association ends of Planned resource schedule assembly model::Point with**
141 **other classes**

Order	mult.	Class name / Role	Description
4	[0..*]	Reason Reason	The Reason information associated with a Point providing motivation information. Association Based On: Planned resource schedule contextual model::Point.[] ----- Planned resource schedule contextual model::Reason.Reason[0..*]

142

143 2.2.3.4 Reason

144 The motivation of an act.

145 Table 9 shows all attributes of Reason.

146 **Table 9 - Attributes of Planned resource schedule 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.

147

148 2.2.3.5 Series_Period

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

150 Table 10 shows all attributes of Series_Period.

151 **Table 10 - Attributes of Planned resource schedule 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.

152

153 Table 11 shows all association ends of Series_Period with other classes.

154
155

**Table 11 - Association ends of Planned resource schedule assembly
model::Series_Period with 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: Planned resource schedule contextual model::Series_Period.[] ----- Planned resource schedule contextual model::Point.Point[1..*]

156

157 **2.2.3.6 UnavailableReserve_TimeSeries**

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

159 Table 12 shows all attributes of UnavailableReserve_TimeSeries.

160 **Table 12 - Attributes of Planned resource schedule assembly**
161 **model::UnavailableReserve_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	[0..1]	flowDirection.direction DirectionKind_String	The coded identification of the direction of energy flow. --- The flow direction associated with a TimeSeries.
3	[1..1]	product EnergyProductKind_String	The identification of the nature of an energy product such as power, energy, reactive power, etc.
4	[1..1]	connecting_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain associated with a TimeSeries.
5	[1..1]	resourceProvider_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of a market participant associated with a TimeSeries.
6	[0..1]	substituteResourceProvider_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of a market participant associated with a TimeSeries.
7	[1..1]	acquiring_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain associated with a TimeSeries.
8	[0..1]	marketAgreement.type CapacityContractKind_String	The specification of the kind of the agreement, e.g. long term, daily contract. --- The identification of an agreement associated with a TimeSeries.
9	[0..1]	marketAgreement.mRID ID_String	The unique identification of the agreement. --- The identification of an agreement associated with a TimeSeries.
10	[1..1]	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 a TimeSeries.

162

163 Table 13 shows all association ends of UnavailableReserve_TimeSeries with other classes.

164
165

**Table 13 - Association ends of Planned resource schedule assembly
model::UnavailableReserve_TimeSeries with other classes**

Order	mult.	Class name / Role	Description
11	[1..*]	Series_Period Series_Period	The time interval and resolution for a period associated with a TimeSeries. Association Based On: Planned resource schedule contextual model::UnavailableReserve_TimeSeries.[] ----- Planned resource schedule contextual model::Series_Period.Series_Period[1..*]

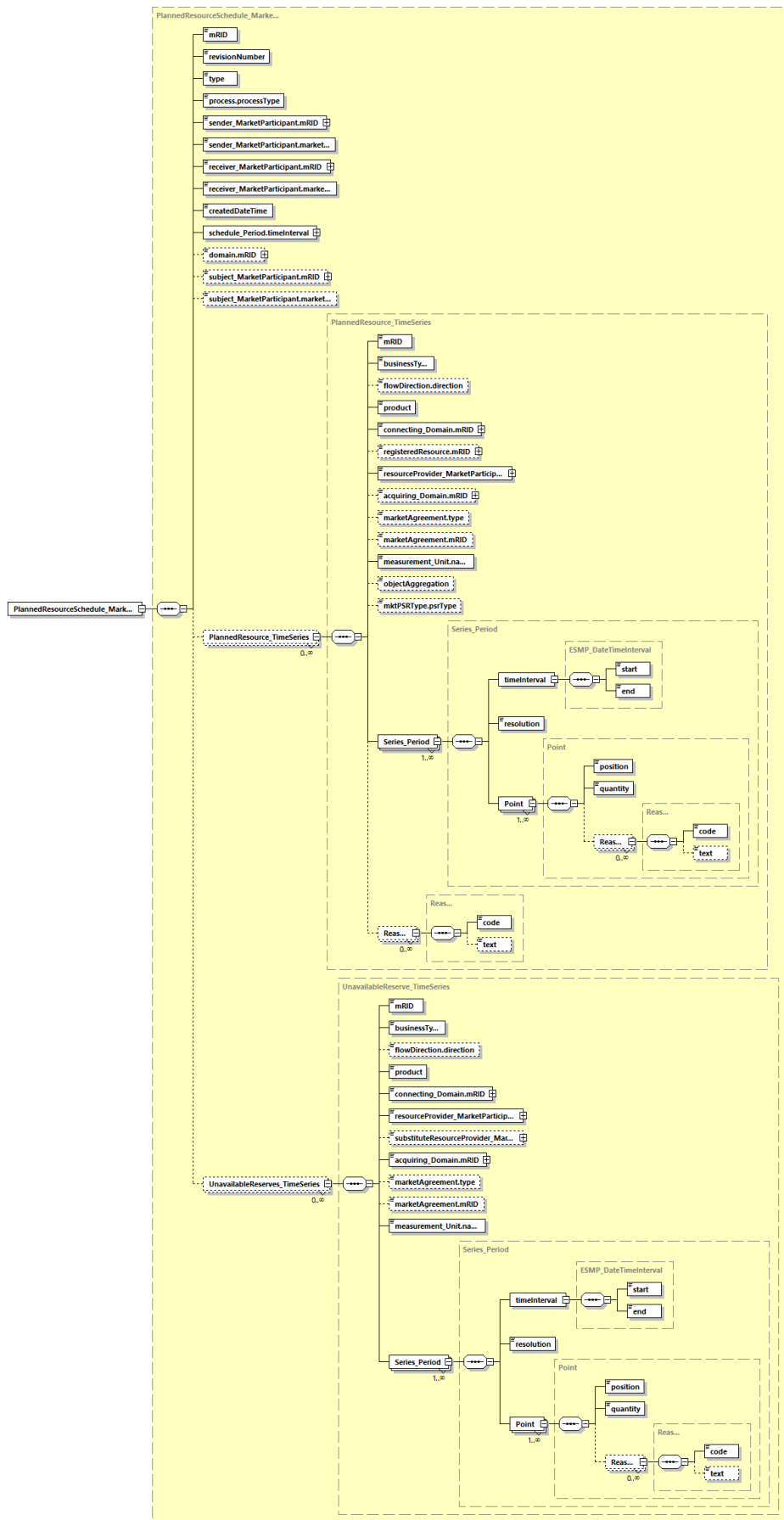
166

167 2.2.4 Datatypes

168 The list of datatypes used for the Planned resource schedule assembly model is as follows:

- 169 • ESMP_DateTimeInterval compound
- 170 • ArealD_String datatype, codelist CodingSchemeTypeList
- 171 • BusinessKind_String datatype, codelist BusinessTypeList
- 172 • CapacityContractKind_String datatype, codelist ContractTypeList
- 173 • DirectionKind_String datatype, codelist DirectionTypeList
- 174 • EnergyProductKind_String datatype, codelist EnergyProductTypeList
- 175 • ESMP_DateTime datatype
- 176 • ESMPVersion_String datatype
- 177 • ID_String datatype
- 178 • MarketRoleKind_String datatype, codelist RoleTypeList
- 179 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 180 • MessageKind_String datatype, codelist MessageTypeList
- 181 • ObjectAggregationKind_String datatype, codelist ObjectAggregationTypeList
- 182 • PartyID_String datatype, codelist CodingSchemeTypeList
- 183 • Position_Integer datatype
- 184 • ProcessKind_String datatype, codelist ProcessTypeList
- 185 • PsrType_String datatype, codelist AssetTypeList
- 186 • ReasonCode_String datatype, codelist ReasonCodeTypeList
- 187 • ReasonText_String datatype
- 188 • ResourceID_String datatype, codelist CodingSchemeTypeList
- 189 • YMDHM_DateTime datatype
- 190

191 2.2.5 PlannedResourceSchedule_MarketDocument XML schema structure



192
193

Figure 3 - PlannedResourceSchedule_MarketDocument schema structure
– Page 16 of 23 –

194 2.2.6 PlannedResourceSchedule_MarketDocument XML schema

195

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

197 urn:iec62325.351:tc57wg16:451-7:plannedresourcescheduledocument:6:1

```
198 <?xml version="1.0" encoding="utf-8"?>
199 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
200 xmlns="urn:iec62325.351:tc57wg16:451-7:plannedresourcescheduledocument:6:1"
201 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
202 xmlns:cimp="http://www.iec.ch/cimprofile"
203 xmlns:xs="http://www.w3.org/2001/XMLSchema"
204 targetNamespace="urn:iec62325.351:tc57wg16:451-
205 7:plannedresourcescheduledocument:6:1" elementFormDefault="qualified"
206 attributeFormDefault="unqualified">
207   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
208 entsoe-eu-wgedi-codelists.xsd"/>
209   <xs:element name="PlannedResourceSchedule_MarketDocument"
210 type="PlannedResourceSchedule_MarketDocument"/>
211   <xs:simpleType name="ID_String"
212 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
213     <xs:restriction base="xs:string">
214       <xs:maxLength value="60"/>
215     </xs:restriction>
216   </xs:simpleType>
217   <xs:simpleType name="BusinessKind_String"
218 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
219     <xs:restriction base="ecl:BusinessTypeList"/>
220   </xs:simpleType>
221   <xs:simpleType name="DirectionKind_String"
222 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
223     <xs:restriction base="ecl:DirectionTypeList"/>
224   </xs:simpleType>
225   <xs:simpleType name="EnergyProductKind_String"
226 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
227     <xs:restriction base="ecl:EnergyProductTypeList"/>
228   </xs:simpleType>
229   <xs:simpleType name="AreaID_String-base"
230 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
231     <xs:restriction base="xs:string">
232       <xs:maxLength value="18"/>
233     </xs:restriction>
234   </xs:simpleType>
235   <xs:complexType name="AreaID_String"
236 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
237     <xs:simpleContent>
238       <xs:extension base="AreaID_String-base">
239         <xs:attribute name="codingScheme"
240 type="ecl:CodingSchemeTypeList" use="required"/>
241       </xs:extension>
242     </xs:simpleContent>
243   </xs:complexType>
244   <xs:simpleType name="ResourceID_String-base"
245 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
246     <xs:restriction base="xs:string">
247       <xs:maxLength value="60"/>
248     </xs:restriction>
249   </xs:simpleType>
```

```
250     <xs:complexType name="ResourceID_String"
251 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
252     <xs:simpleContent>
253         <xs:extension base="ResourceID_String-base">
254             <xs:attribute name="codingScheme"
255 type="ecl:CodingSchemeTypeList" use="required"/>
256         </xs:extension>
257     </xs:simpleContent>
258 </xs:complexType>
259 <xs:simpleType name="PartyID_String-base"
260 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
261     <xs:restriction base="xs:string">
262         <xs:maxLength value="16"/>
263     </xs:restriction>
264 </xs:simpleType>
265 <xs:complexType name="PartyID_String"
266 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
267     <xs:simpleContent>
268         <xs:extension base="PartyID_String-base">
269             <xs:attribute name="codingScheme"
270 type="ecl:CodingSchemeTypeList" use="required"/>
271         </xs:extension>
272     </xs:simpleContent>
273 </xs:complexType>
274 <xs:simpleType name="CapacityContractKind_String"
275 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
276     <xs:restriction base="ecl:ContractTypeList"/>
277 </xs:simpleType>
278 <xs:simpleType name="MeasurementUnitKind_String"
279 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
280     <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
281 </xs:simpleType>
282 <xs:simpleType name="ObjectAggregationKind_String"
283 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
284     <xs:restriction base="ecl:ObjectAggregationTypeList"/>
285 </xs:simpleType>
286 <xs:simpleType name="PsrType_String"
287 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
288     <xs:restriction base="ecl:AssetTypeList"/>
289 </xs:simpleType>
290 <xs:complexType name="PlannedResource_TimeSeries"
291 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
292     <xs:sequence>
293         <xs:element name="mRID" type="ID_String" minOccurs="1"
294 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
295 cim16#IdentifiedObject.mRID"/>
296         <xs:element name="businessType" type="BusinessKind_String"
297 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
298 schema-cim16#TimeSeries.businessType"/>
299         <xs:element name="flowDirection.direction"
300 type="DirectionKind_String" minOccurs="0" maxOccurs="1"
301 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
302 cim16#FlowDirection.direction"/>
303         <xs:element name="product" type="EnergyProductKind_String"
304 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
305 schema-cim16#TimeSeries.product"/>
306         <xs:element name="connecting_Domain.mRID" type="AreaID_String"
307 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
308 schema-cim16#IdentifiedObject.mRID"/>
```

```
309         <xs:element name="registeredResource.mRID"  
310 type="ResourceID_String" minOccurs="0" maxOccurs="1"  
311 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
312 cim16#IdentifiedObject.mRID"/>  
313         <xs:element name="resourceProvider_MarketParticipant.mRID"  
314 type="PartyID_String" minOccurs="1" maxOccurs="1"  
315 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
316 cim16#IdentifiedObject.mRID"/>  
317         <xs:element name="acquiring_Domain.mRID" type="AreaID_String"  
318 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
319 schema-cim16#IdentifiedObject.mRID"/>  
320         <xs:element name="marketAgreement.type"  
321 type="CapacityContractKind_String" minOccurs="0" maxOccurs="1"  
322 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>  
323         <xs:element name="marketAgreement.mRID" type="ID_String"  
324 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
325 schema-cim16#IdentifiedObject.mRID"/>  
326         <xs:element name="measurement_Unit.name"  
327 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"  
328 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>  
329         <xs:element name="objectAggregation"  
330 type="ObjectAggregationKind_String" minOccurs="0" maxOccurs="1"  
331 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
332 cim16#TimeSeries.objectAggregation"/>  
333         <xs:element name="mktPSRType.psrType" type="PsrType_String"  
334 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
335 schema-cim16#MktPSRType.psrType"/>  
336         <xs:element name="Series_Period" type="Series_Period"  
337 minOccurs="1" maxOccurs="unbounded"  
338 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
339 cim16#TimeSeries.Series_Period"/>  
340         <xs:element name="Reason" type="Reason" minOccurs="0"  
341 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
342 cim16#TimeSeries.Reason"/>  
343     </xs:sequence>  
344 </xs:complexType>  
345 <xs:simpleType name="ESMPVersion_String"  
346 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">  
347     <xs:restriction base="xs:string">  
348         <xs:pattern value="[1-9]([0-9]){0,2}"/>  
349     </xs:restriction>  
350 </xs:simpleType>  
351 <xs:simpleType name="MessageKind_String"  
352 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">  
353     <xs:restriction base="ecl:MessageTypeList"/>  
354 </xs:simpleType>  
355 <xs:simpleType name="ProcessKind_String"  
356 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">  
357     <xs:restriction base="ecl:ProcessTypeList"/>  
358 </xs:simpleType>  
359 <xs:simpleType name="MarketRoleKind_String"  
360 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">  
361     <xs:restriction base="ecl:RoleTypeList"/>  
362 </xs:simpleType>  
363 <xs:simpleType name="ESMP_DateTime"  
364 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">  
365     <xs:restriction base="xs:dateTime">  
366         <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-  
367 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-  
368 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
```

```

369 9)]Z)|((([13579][26][02468][048]|[13579][01345789](0)[48]|[13579][01345789][2468][0
370 48]|[02468][048][02468][048]|[02468][1235679](0)[48]|[02468][1235679][2468][048]|
371 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((01)[0-9]|2[0-3]):[0-
372 5][0-9]:[0-5][0-
373 9)]Z)|((([13579][26][02468][1235679]|[13579][01345789](0)[01235679]|[13579][0134578
374 9][2468][1235679]|[02468][048][02468][1235679]|[02468][1235679](0)[01235679]|[0246
375 8][1235679][2468][1235679]|[0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
376 9]|2[0-8])T((01)[0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
377     </xs:restriction>
378   </xs:simpleType>
379   <xs:simpleType name="YMDHM_DateTime"
380 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
381     <xs:restriction base="xs:string">
382       <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-
383 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
384 9]|30))T((01)[0-9]|2[0-3]):[0-5][0-
385 9)]Z)|((([13579][26][02468][048]|[13579][01345789](0)[48]|[13579][01345789][2468][0
386 48]|[02468][048][02468][048]|[02468][1235679](0)[48]|[02468][1235679][2468][048]|
387 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((01)[0-9]|2[0-3]):[0-
388 5][0-
389 9)]Z)|((([13579][26][02468][1235679]|[13579][01345789](0)[01235679]|[13579][0134578
390 9][2468][1235679]|[02468][048][02468][1235679]|[02468][1235679](0)[01235679]|[0246
391 8][1235679][2468][1235679]|[0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
392 9]|2[0-8])T((01)[0-9]|2[0-3]):[0-5][0-9])Z)"/>
393     </xs:restriction>
394   </xs:simpleType>
395   <xs:complexType name="ESMP_DateTimeInterval"
396 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
397     <xs:sequence>
398       <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
399 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
400 cim16#DateTimeInterval.start"/>
401       <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
402 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
403 cim16#DateTimeInterval.end"/>
404     </xs:sequence>
405   </xs:complexType>
406   <xs:complexType name="PlannedResourceSchedule_MarketDocument"
407 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
408     <xs:sequence>
409       <xs:element name="mRID" type="ID_String" minOccurs="1"
410 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
411 cim16#IdentifiedObject.mRID"/>
412       <xs:element name="revisionNumber" type="ESMPVersion_String"
413 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
414 schema-cim16#Document.revisionNumber"/>
415       <xs:element name="type" type="MessageKind_String" minOccurs="1"
416 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
417 cim16#Document.type"/>
418       <xs:element name="process.processType"
419 type="ProcessKind_String" minOccurs="1" maxOccurs="1"
420 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
421 cim16#Process.processType"/>
422       <xs:element name="sender_MarketParticipant.mRID"
423 type="PartyID_String" minOccurs="1" maxOccurs="1"
424 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
425 cim16#IdentifiedObject.mRID"/>
426       <xs:element name="sender_MarketParticipant.marketRole.type"
427 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
428 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>

```



```
429         <xs:element name="receiver_MarketParticipant.mRID"
430 type="PartyID_String" minOccurs="1" maxOccurs="1"
431 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
432 cim16#IdentifiedObject.mRID"/>
433         <xs:element name="receiver_MarketParticipant.marketRole.type"
434 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
435 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
436         <xs:element name="createdDateTime" type="ESMP_DateTime"
437 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
438 schema-cim16#Document.createdDateTime"/>
439         <xs:element name="schedule_Period.timeInterval"
440 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
441 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
442 cim16#Period.timeInterval"/>
443         <xs:element name="domain.mRID" type="AreaID_String"
444 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
445 schema-cim16#IdentifiedObject.mRID"/>
446         <xs:element name="subject_MarketParticipant.mRID"
447 type="PartyID_String" minOccurs="0" maxOccurs="1"
448 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
449 cim16#IdentifiedObject.mRID"/>
450         <xs:element name="subject_MarketParticipant.marketRole.type"
451 type="MarketRoleKind_String" minOccurs="0" maxOccurs="1"
452 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
453         <xs:element name="PlannedResource_TimeSeries"
454 type="PlannedResource_TimeSeries" minOccurs="0" maxOccurs="unbounded"
455 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
456 cim16#MarketDocument.PlannedResource_TimeSeries"/>
457         <xs:element name="UnavailableReserves_TimeSeries"
458 type="UnavailableReserve_TimeSeries" minOccurs="0" maxOccurs="unbounded"
459 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
460 cim16#MarketDocument.UnavailableReserves_TimeSeries"/>
461     </xs:sequence>
462 </xs:complexType>
463 <xs:simpleType name="Position_Integer"
464 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
465     <xs:restriction base="xs:integer">
466         <xs:maxInclusive value="999999"/>
467         <xs:minInclusive value="1"/>
468     </xs:restriction>
469 </xs:simpleType>
470 <xs:complexType name="Point"
471 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
472     <xs:sequence>
473         <xs:element name="position" type="Position_Integer"
474 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
475 schema-cim16#Point.position"/>
476         <xs:element name="quantity" type="xs:decimal" minOccurs="1"
477 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
478 cim16#Point.quantity"/>
479         <xs:element name="Reason" type="Reason" minOccurs="0"
480 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
481 cim16#Point.Reason"/>
482     </xs:sequence>
483 </xs:complexType>
484 <xs:simpleType name="ReasonCode_String"
485 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
486     <xs:restriction base="ecl:ReasonCodeTypeList"/>
487 </xs:simpleType>
```

```

488     <xs:simpleType name="ReasonText_String"
489 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
490     <xs:restriction base="xs:string">
491         <xs:maxLength value="512"/>
492     </xs:restriction>
493 </xs:simpleType>
494     <xs:complexType name="Reason"
495 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
496     <xs:sequence>
497         <xs:element name="code" type="ReasonCode_String" minOccurs="1"
498 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
499 cim16#Reason.code"/>
500         <xs:element name="text" type="ReasonText_String" minOccurs="0"
501 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
502 cim16#Reason.text"/>
503     </xs:sequence>
504 </xs:complexType>
505     <xs:complexType name="Series_Period"
506 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
507     <xs:sequence>
508         <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
509 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
510 schema-cim16#Period.timeInterval"/>
511         <xs:element name="resolution" type="xs:duration" minOccurs="1"
512 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
513 cim16#Period.resolution"/>
514         <xs:element name="Point" type="Point" minOccurs="1"
515 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
516 cim16#Period.Point"/>
517     </xs:sequence>
518 </xs:complexType>
519     <xs:complexType name="UnavailableReserve_TimeSeries"
520 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
521     <xs:sequence>
522         <xs:element name="mRID" type="ID_String" minOccurs="1"
523 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
524 cim16#IdentifiedObject.mRID"/>
525         <xs:element name="businessType" type="BusinessKind_String"
526 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
527 schema-cim16#TimeSeries.businessType"/>
528         <xs:element name="flowDirection.direction"
529 type="DirectionKind_String" minOccurs="0" maxOccurs="1"
530 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
531 cim16#FlowDirection.direction"/>
532         <xs:element name="product" type="EnergyProductKind_String"
533 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
534 schema-cim16#TimeSeries.product"/>
535         <xs:element name="connecting_Domain.mRID" type="AreaID_String"
536 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
537 schema-cim16#IdentifiedObject.mRID"/>
538         <xs:element name="resourceProvider_MarketParticipant.mRID"
539 type="PartyID_String" minOccurs="1" maxOccurs="1"
540 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
541 cim16#IdentifiedObject.mRID"/>
542         <xs:element
543 name="substituteResourceProvider_MarketParticipant.mRID" type="PartyID_String"
544 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
545 schema-cim16#IdentifiedObject.mRID"/>
    
```

```
546         <xs:element name="acquiring_Domain.mRID" type="AreaID_String"
547 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
548 schema-cim16#IdentifiedObject.mRID"/>
549         <xs:element name="marketAgreement.type"
550 type="CapacityContractKind_String" minOccurs="0" maxOccurs="1"
551 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
552         <xs:element name="marketAgreement.mRID" type="ID_String"
553 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
554 schema-cim16#IdentifiedObject.mRID"/>
555         <xs:element name="measurement_Unit.name"
556 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
557 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
558         <xs:element name="Series_Period" type="Series_Period"
559 minOccurs="1" maxOccurs="unbounded"
560 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
561 cim16#TimeSeries.Series_Period"/>
562     </xs:sequence>
563 </xs:complexType>
564 </xs:schema>
```