



European Network of
Transmission System Operators
for Electricity

BALANCING DOCUMENT UML MODEL AND SCHEMA

2018-03-06
DOCUMENT APPROVED
VERSION 2.0

2

Table of Contents

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

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Revision History

Version	Release	Date	Comments
0	0	2017-01-19	First drafting of the document.
1	0	2017-01-30	Version to be submitted to Market Committee following WG EDI meeting in March 2017.
2	0	2018-03-08	<p>Approved by MC. XSD version 4.0: Add new attributes:</p> <ul style="list-style-type: none"> • MarketProduct • AllocationDecision • UnavailableQuantity <p>Added two new relations between TimeSeries and MarketProduct</p>

60

61 1 Objective

62 The purpose of this document is to provide the contextual and assembly UML models and the
63 schema of the Balancing_MarketDocument.

64 The schema of the Balancing_MarketDocument could be used in various business processes.

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

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

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

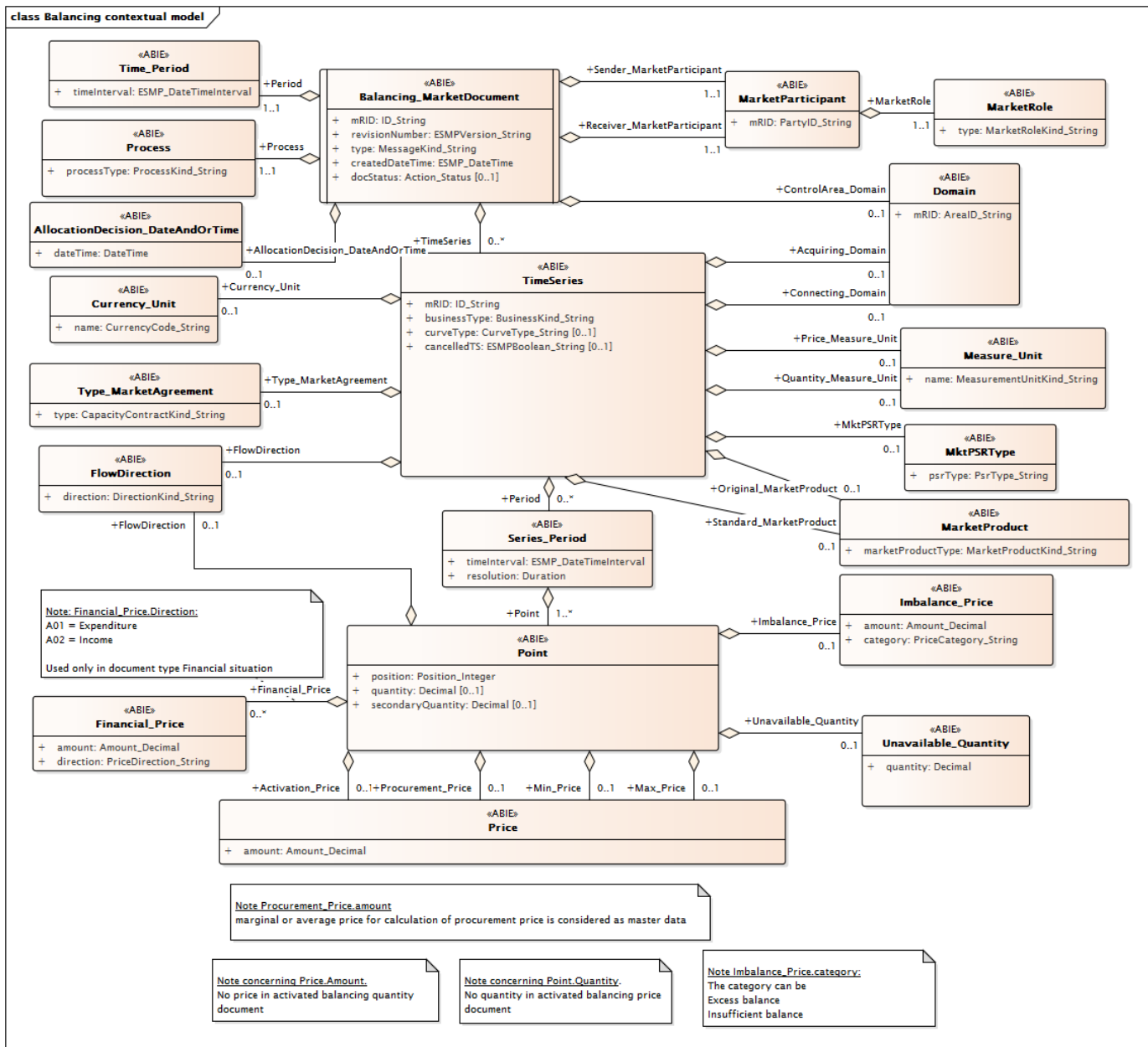
77

78 **2 Balancing_MarketDocument**

79 **2.1 Balancing contextual model**

80 **2.1.1 Overview of the model**

81 Figure 1 shows the model.



82

83

Figure 1 - Balancing contextual model

84 **2.1.2 IsBasedOn relationships from the European style market profile**

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

87 **Table 1 - IsBasedOn dependency**

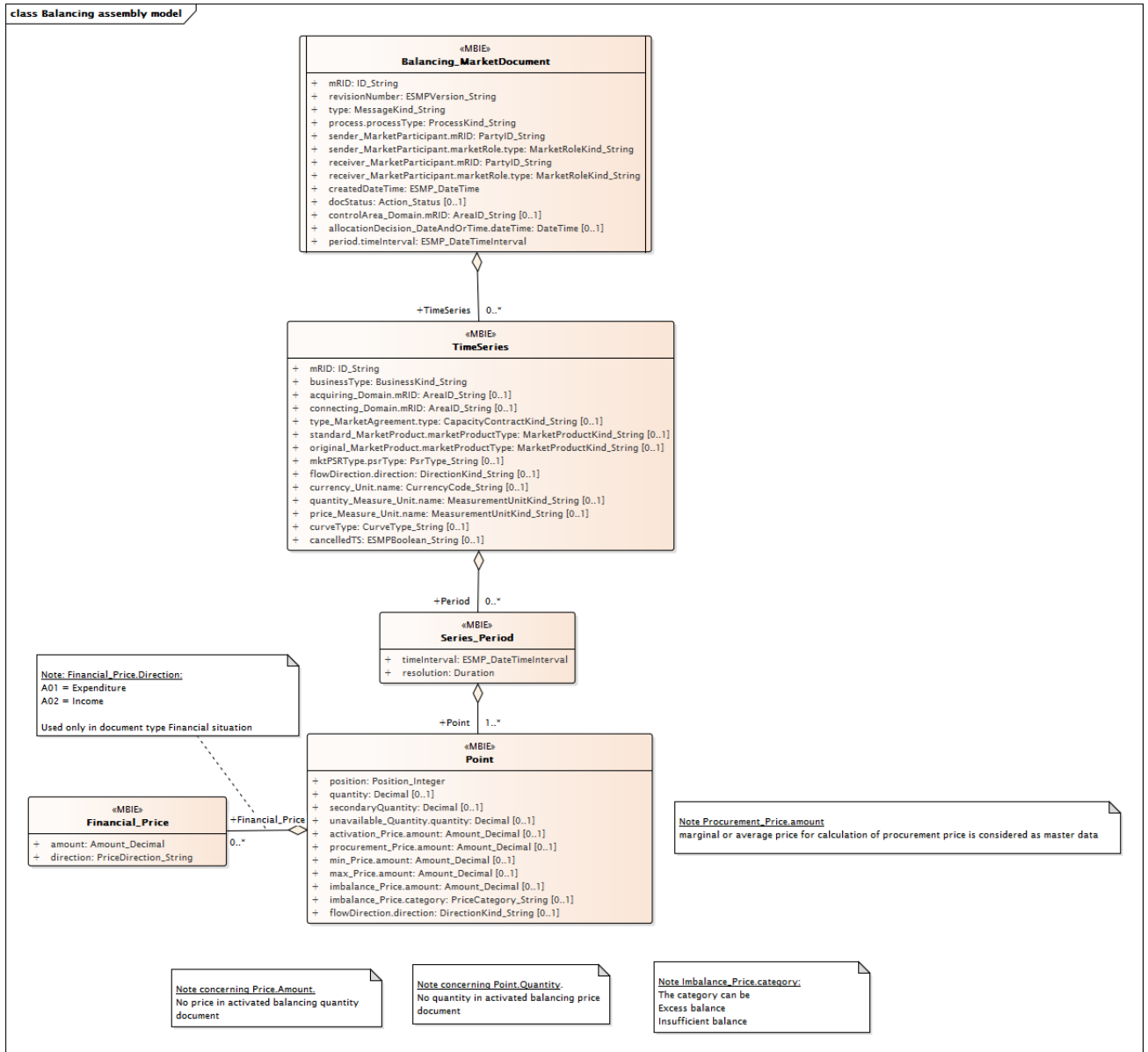
Name	Complete IsBasedOn Path
AllocationDecision_DateAndOrTime	TC57CIM::IEC62325::MarketManagement::DateAndOrTime
Balancing_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Currency_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Domain	TC57CIM::IEC62325::MarketManagement::Domain
Financial_Price	TC57CIM::IEC62325::MarketManagement::Price
FlowDirection	TC57CIM::IEC62325::MarketManagement::FlowDirection
Imbalance_Price	TC57CIM::IEC62325::MarketManagement::Price
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketProduct	TC57CIM::IEC62325::MarketOperations::MarketPlan::MarketProduct
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Point	TC57CIM::IEC62325::MarketManagement::Point
Price	TC57CIM::IEC62325::MarketManagement::Price
Process	TC57CIM::IEC62325::MarketManagement::Process
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Type_MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
Unavailable_Quantity	TC57CIM::IEC62325::MarketManagement::Quantity

88

89 2.2 Balancing assembly model

90 2.2.1 Overview of the model

91 Figure 2 shows the model.



92

93

Figure 2 - Balancing assembly model

94 **2.2.2 IsBasedOn relationships from the European style market profile**

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

97 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Balancing_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Financial_Price	TC57CIM::IEC62325::MarketManagement::Price
Point	TC57CIM::IEC62325::MarketManagement::Point
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

98

99 **2.2.3 Detailed Balancing assembly model**

100 **2.2.3.1 Balancing_MarketDocument root class**

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

103 The Balancing_MarketDocument describes a specific situation in the balancing information
104 exchange.

105 Table 3 shows all attributes of Balancing_MarketDocument.

106 **Table 3 - Attributes of Balancing assembly model::Balancing_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. --- The role associated with a MarketParticipant.
6	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient
7	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- 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	[0..1]	docStatus Action_Status	The identification of the condition or position of the document with regard to its standing.
10	[0..1]	controlArea_Domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the control area of the issuer.

Order	mult.	Attribute name / Attribute type	Description
11	[0..1]	allocationDecision_DateAndOrTime.dateTime DateTime	Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ. --- Date and time when the decision on allocation was made
12	[1..1]	period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval.

107

108 Table 4 shows all association ends of Balancing_MarketDocument with other classes.

109 **Table 4 - Association ends of Balancing assembly model::Balancing_MarketDocument**
110 **with other classes**

Order	mult.	Class name / Role	Description
13	[0..*]	TimeSeries TimeSeries	A time series should exist to describe the specific information associated with balancing reserves, imbalance, financial report or cross-border balancing. Association Based On: Balancing contextual model::Balancing_MarketDocument.[] ----- Balancing contextual model::TimeSeries.TimeSeries[0..*]

111

112 2.2.3.2 Financial_Price

113 The cost corresponding to a specific entity expressed in a currency.

114 Table 5 shows all attributes of Financial_Price.

115 **Table 5 - Attributes of Balancing assembly model::Financial_Price**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	amount Amount_Decimal	A number of monetary units specified in a unit of currency.
1	[1..1]	direction PriceDirection_String	The direction of a price payment (i.e. an impacted area system operator pays to internal market parties or inverse). This is to be used only in a document describing the financial situation. The code A01 is to be used for expenditure. The code A02 is to be used for income.

116

117 2.2.3.3 Point

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

119 Table 6 shows all attributes of Point.

120 **Table 6 - Attributes of Balancing 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	[0..1]	quantity Decimal	The principal quantity or the accepted offer quantity identified for a point.

Order	mult.	Attribute name / Attribute type	Description
2	[0..1]	secondaryQuantity Decimal	This information defines the activated quantity or the offered volume for a point.
3	[0..1]	unavailable_Quantity.quantity Decimal	The quantity value. The association role provides the information about what is expressed. --- The Quantity of balancing energy unavailable for the activation
4	[0..1]	activation_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The activation pricing information per quantity and interval.
5	[0..1]	procurement_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The procurement pricing information per quantity and interval.
6	[0..1]	min_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The minimum pricing information per quantity and interval.
7	[0..1]	max_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The maximum pricing information per quantity and interval
8	[0..1]	imbalance_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The imbalance pricing information per quantity and interval.
9	[0..1]	imbalance_Price.category PriceCategory_String	The category of a price to be used in a price calculation. Note: the price category is mutually agreed between system operators. --- The imbalance pricing information per quantity and interval.
10	[0..1]	flowDirection.direction DirectionKind_String	The coded identification of the direction of energy flow. --- The flow direction provides the indication if the reserve is activated upward or downward.

121

122 Table 7 shows all association ends of Point with other classes.

123 **Table 7 - Association ends of Balancing assembly model::Point with other classes**

Order	mult.	Class name / Role	Description
11	[0..*]	Financial_Price Financial_Price	The price information associated with a given Point. This identifies the financial amount in relation to a specific direction associated with a transmission system operator for procuring, activating and settling balancing information. Association Based On: Balancing contextual model::Point.[] ----- Balancing contextual model::Financial_Price.Financial_Price[0..*]

124

125 2.2.3.4 Series_Period

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

127 Table 8 shows all attributes of Series_Period.

128 **Table 8 - Attributes of Balancing 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.

129

130 Table 9 shows all association ends of Series_Period with other classes.

131 **Table 9 - Association ends of Balancing assembly model::Series_Period with other**
132 **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: Balancing contextual model::Series_Period.[] ----- Balancing contextual model::Point.Point[1..*]

133

134 2.2.3.5 TimeSeries

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

136 Table 10 shows all attributes of TimeSeries.

137 **Table 10 - Attributes of Balancing 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	[0..1]	acquiring_Domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the acquiring area.
3	[0..1]	connecting_Domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the connecting area
4	[0..1]	type_MarketAgreement.type CapacityContractKind_String	The specification of the kind of the contract, e.g. long term, daily contract. --- The identification of the procurement time unit.
5	[0..1]	standard_MarketProduct.marketProductType MarketProductKind_String	The Type of product on a market view
6	[0..1]	original_MarketProduct.marketProductType MarketProductKind_String	The Type of product on a market view
7	[0..1]	mktPSRType.psrType PsrType_String	The coded type of a power system resource. --- The identification of the source type of the reserve.
8	[0..1]	flowDirection.direction DirectionKind_String	The coded identification of the direction of energy flow. --- The flow direction associated with a TimeSeries for the balance reserve.
9	[0..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency associated with a TimeSeries.
10	[0..1]	quantity_Measure_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.
11	[0..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 associated with the prices in a TimeSeries.

Order	mult.	Attribute name / Attribute type	Description
12	[0..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
13	[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.

138

139 Table 11 shows all association ends of TimeSeries with other classes.

140 **Table 11 - Association ends of Balancing assembly model::TimeSeries with other**
141 **classes**

Order	mult.	Class name / Role	Description
14	[0..*]	Series_Period Period	The series period class provides the balancing time unit information in respect to the balancing reserve capacity. Association Based On: Balancing contextual model::TimeSeries.[] ----- Balancing contextual model::Series_Period.Period[0..*]

142

143 2.2.4 Datatypes

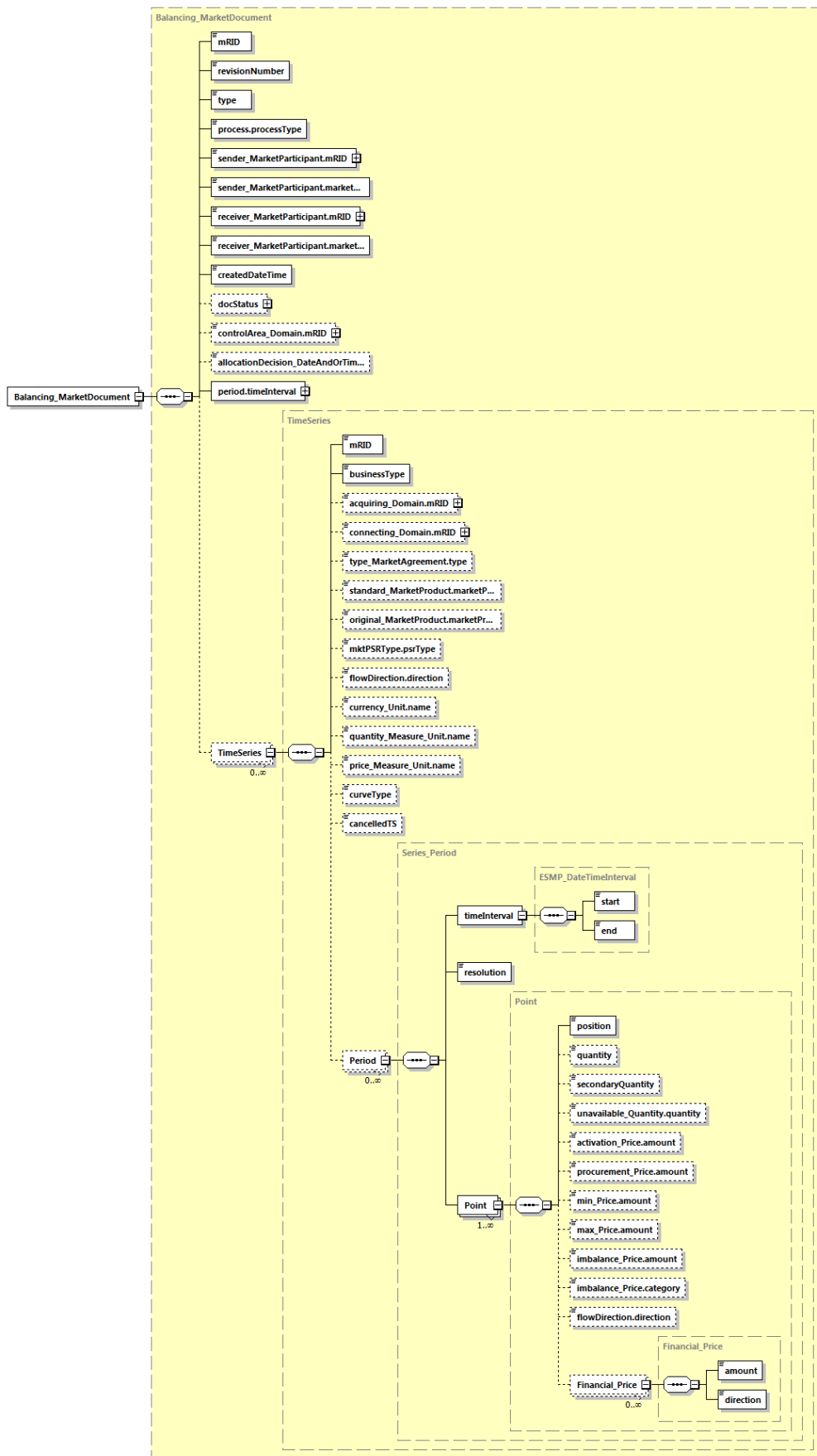
144 The list of datatypes used for the Balancing assembly model is as follows:

- 145 • Action_Status compound
- 146 • ESMP_DateTimeInterval compound
- 147 • Amount_Decimal datatype
- 148 • AreaID_String datatype, codelist CodingSchemeTypeList
- 149 • BusinessKind_String datatype, codelist BusinessTypeList
- 150 • CapacityContractKind_String datatype, codelist ContractTypeList
- 151 • CurrencyCode_String datatype, codelist CurrencyTypeList
- 152 • CurveType_String datatype, codelist CurveTypeList
- 153 • DirectionKind_String datatype, codelist DirectionTypeList
- 154 • ESMP_DateTime datatype
- 155 • ESMPBoolean_String datatype, codelist IndicatorTypeList
- 156 • ESMPVersion_String datatype
- 157 • ID_String datatype
- 158 • MarketProductKind_String datatype, codelist MarketProductTypeList
- 159 • MarketRoleKind_String datatype, codelist RoleTypeList
- 160 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 161 • MessageKind_String datatype, codelist MessageTypeList
- 162 • PartyID_String datatype, codelist CodingSchemeTypeList
- 163 • Position_Integer datatype
- 164 • PriceCategory_String datatype, codelist PriceCategoryTypeList
- 165 • PriceDirection_String datatype, codelist PriceDirectionTypeList
- 166 • ProcessKind_String datatype, codelist ProcessTypeList
- 167 • PsrType_String datatype, codelist AssetTypeList
- 168 • Status_String datatype, codelist StatusTypeList
- 169 • YMDHM_DateTime datatype

170

171

172 2.2.5 Balancing_MarketDocument XML schema structure



173

174

Generated by XMLSpy www.altova.com

Figure 3 - Balancing_MarketDocument schema structure
 – Page 14 of 19 –

175 **2.2.6 Balancing_MarketDocument XML schema**

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

177 urn:iec62325.351:tc57wg16:451-6:balancingdocument:4:0

178

```

179 <?xml version="1.0" encoding="utf-8"?>
180 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
181 xmlns="urn:iec62325.351:tc57wg16:451-6:balancingdocument:4:0" xmlns:cimp="http://www.iec.ch/cimprofile"
182 xmlns:xs="http://www.w3.org/2001/XMLSchema" targetNamespace="urn:iec62325.351:tc57wg16:451-
183 6:balancingdocument:4:0" elementFormDefault="qualified" attributeFormDefault="unqualified">
184 <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-entsoe-eu-wgedi-
185 codelists.xsd"/>
186 <xs:element name="Balancing_MarketDocument" type="Balancing_MarketDocument"/>
187 <xs:simpleType name="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
188 cim16#String">
189 <xs:restriction base="xs:string">
190 <xs:maxLength value="35"/>
191 </xs:restriction>
192 </xs:simpleType>
193 <xs:simpleType name="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
194 schema-cim16#String">
195 <xs:restriction base="xs:string">
196 <xs:pattern value="[1-9]([0-9]){0,2}"/>
197 </xs:restriction>
198 </xs:simpleType>
199 <xs:simpleType name="MessageKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
200 schema-cim16#String">
201 <xs:restriction base="ecl:MessageTypeList"/>
202 </xs:simpleType>
203 <xs:simpleType name="ProcessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
204 schema-cim16#String">
205 <xs:restriction base="ecl:ProcessTypeList"/>
206 </xs:simpleType>
207 <xs:simpleType name="PartyID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
208 schema-cim16#String">
209 <xs:restriction base="xs:string">
210 <xs:maxLength value="16"/>
211 </xs:restriction>
212 </xs:simpleType>
213 <xs:complexType name="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
214 schema-cim16#String">
215 <xs:simpleContent>
216 <xs:extension base="PartyID_String-base">
217 <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
218 use="required"/>
219 </xs:extension>
220 </xs:simpleContent>
221 </xs:complexType>
222 <xs:simpleType name="MarketRoleKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
223 schema-cim16#String">
224 <xs:restriction base="ecl:RoleTypeList"/>
225 </xs:simpleType>
226 <xs:simpleType name="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
227 cim16#DateTime">
228 <xs:restriction base="xs:dateTime">
229 <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-9]|[12][0-
230 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-
231 5][0-
232 9])Z|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]|02468][048][0246
233 8][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0[0-9][0-9][13579][26])[\-](02)[\-](0[1-
234 9]|1[0-9]|2[0-9])T((0[1][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
235 9])Z|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][2468][1235679]|02
236 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0[0-9][0-
237 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)/>
238 </xs:restriction>
239 </xs:simpleType>
240 <xs:simpleType name="AreaID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
241 schema-cim16#String">
242 <xs:restriction base="xs:string">
243 <xs:maxLength value="18"/>
244 </xs:restriction>
245 </xs:simpleType>

```

```

246         <xs:complexType name="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
247 cim16#String">
248             <xs:simpleContent>
249                 <xs:extension base="AreaID_String-base">
250                     <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
251 use="required"/>
252                 </xs:extension>
253             </xs:simpleContent>
254         </xs:complexType>
255         <xs:simpleType name="Status_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
256 cim16#String">
257             <xs:restriction base="ecl:StatusTypeList"/>
258         </xs:simpleType>
259         <xs:complexType name="Action_Status" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
260 cim16#Status">
261             <xs:sequence>
262                 <xs:element name="value" type="Status_String" minOccurs="1" maxOccurs="1"
263 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status.value"/>
264             </xs:sequence>
265         </xs:complexType>
266         <xs:simpleType name="YMDHM_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
267 cim16#DateTime">
268             <xs:restriction base="xs:string">
269                 <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-9]|[12][0-
270 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-
271 9])Z)|((([13579][26][02468][048]|[13579][01345789](0)[48]|([13579][01345789][2468][048]|([02468][048]
272 8)[048]|[02468][1235679](0)[48]|([02468][1235679][2468][048]|([0-9][0-9][13579][26])[\-](02)[\-](0[1-
273 9]|1[0-9]|2[0-9])T((0[1][0-9]|2[0-3]):[0-5][0-
274 9])Z)|((([13579][26][02468][1235679]|[13579][01345789](0)[01235679]|([13579][01345789][2468][1235679]|([02
275 468][048][02468][1235679]|([02468][1235679](0)[01235679]|([02468][1235679][2468][1235679]|([0-9][0-
276 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])Z)"/>
277             </xs:restriction>
278         </xs:simpleType>
279         <xs:complexType name="ESMP_DateTimeInterval"
280 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
281             <xs:sequence>
282                 <xs:element name="start" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
283 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.start"/>
284                 <xs:element name="end" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
285 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.end"/>
286             </xs:sequence>
287         </xs:complexType>
288         <xs:complexType name="Balancing_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" maxOccurs="1"
292 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
293                 <xs:element name="revisionNumber" type="ESMPVersion_String" minOccurs="1"
294 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
295 cim16#Document.revisionNumber"/>
296                 <xs:element name="type" type="MessageKind_String" minOccurs="1" maxOccurs="1"
297 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
298                 <xs:element name="process.processType" type="ProcessKind_String" minOccurs="1"
299 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Process.processType"/>
300                 <xs:element name="sender_MarketParticipant.mRID" type="PartyID_String"
301 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
302 cim16#IdentifiedObject.mRID"/>
303                 <xs:element name="sender_MarketParticipant.marketRole.type"
304 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
305 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
306                 <xs:element name="receiver_MarketParticipant.mRID" type="PartyID_String"
307 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
308 cim16#IdentifiedObject.mRID"/>
309                 <xs:element name="receiver_MarketParticipant.marketRole.type"
310 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
311 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
312                 <xs:element name="createdDateTime" type="ESMP_DateTime" minOccurs="1"
313 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
314 cim16#Document.createdDateTime"/>
315                 <xs:element name="docStatus" type="Action_Status" minOccurs="0" maxOccurs="1"
316 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.docStatus"/>
317                 <xs:element name="controlArea_Domain.mRID" type="AreaID_String" minOccurs="0"
318 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
    
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319         <xs:element name="allocationDecision_DateAndOrTime.dateTime"
320 type="xs:dateTime" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
321 schema-cim16#DateAndOrTime.dateTime"/>
322         <xs:element name="period.timeInterval" type="ESMP_DateTimeInterval"
323 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
324 cim16#Period.timeInterval"/>
325         <xs:element name="TimeSeries" type="TimeSeries" minOccurs="0"
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="Amount_Decimal" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
331 cim16#Decimal">
332     <xs:restriction base="xs:decimal">
333         <xs:totalDigits value="17"/>
334     </xs:restriction>
335 </xs:simpleType>
336 <xs:simpleType name="PriceDirection_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
337 schema-cim16#String">
338     <xs:restriction base="ecl:PriceDirectionTypeList"/>
339 </xs:simpleType>
340 <xs:complexType name="Financial_Price" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
341 schema-cim16#Price">
342     <xs:sequence>
343         <xs:element name="amount" type="Amount_Decimal" minOccurs="1" maxOccurs="1"
344 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.amount"/>
345         <xs:element name="direction" type="PriceDirection_String" minOccurs="1"
346 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.direction"/>
347     </xs:sequence>
348 </xs:complexType>
349 <xs:simpleType name="Position_Integer" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
350 schema-cim16#Integer">
351     <xs:restriction base="xs:integer">
352         <xs:maxInclusive value="999999"/>
353         <xs:minInclusive value="1"/>
354     </xs:restriction>
355 </xs:simpleType>
356 <xs:simpleType name="PriceCategory_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
357 schema-cim16#String">
358     <xs:restriction base="ecl:PriceCategoryTypeList"/>
359 </xs:simpleType>
360 <xs:simpleType name="DirectionKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
361 schema-cim16#String">
362     <xs:restriction base="ecl:DirectionTypeList"/>
363 </xs:simpleType>
364 <xs:complexType name="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
365 cim16#Point">
366     <xs:sequence>
367         <xs:element name="position" type="Position_Integer" minOccurs="1"
368 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.position"/>
369         <xs:element name="quantity" type="xs:decimal" minOccurs="0" maxOccurs="1"
370 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.quantity"/>
371         <xs:element name="secondaryQuantity" type="xs:decimal" minOccurs="0"
372 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
373 cim16#Point.secondaryQuantity"/>
374         <xs:element name="unavailable_Quantity.quantity" type="xs:decimal"
375 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
376 cim16#Quantity.quantity"/>
377         <xs:element name="activation_Price.amount" type="Amount_Decimal" minOccurs="0"
378 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.amount"/>
379         <xs:element name="procurement_Price.amount" type="Amount_Decimal"
380 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
381 cim16#Price.amount"/>
382         <xs:element name="min_Price.amount" type="Amount_Decimal" minOccurs="0"
383 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.amount"/>
384         <xs:element name="max_Price.amount" type="Amount_Decimal" minOccurs="0"
385 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.amount"/>
386         <xs:element name="imbalance_Price.amount" type="Amount_Decimal" minOccurs="0"
387 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.amount"/>
388         <xs:element name="imbalance_Price.category" type="PriceCategory_String"
389 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
390 cim16#Price.category"/>
391         <xs:element name="flowDirection.direction" type="DirectionKind_String"
392 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
393 cim16#FlowDirection.direction"/>

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394         <xs:element name="Financial_Price" type="Financial_Price" minOccurs="0"
395 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
396 cim16#Point.Financial_Price"/>
397     </xs:sequence>
398 </xs:complexType>
399 <xs:complexType name="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
400 cim16#Period">
401     <xs:sequence>
402         <xs:element name="timeInterval" type="ESMP_DateTimeInterval" minOccurs="1"
403 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval"/>
404         <xs:element name="resolution" type="xs:duration" minOccurs="1" maxOccurs="1"
405 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution"/>
406         <xs:element name="Point" type="Point" minOccurs="1" maxOccurs="unbounded"
407 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point"/>
408     </xs:sequence>
409 </xs:complexType>
410 <xs:simpleType name="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
411 schema-cim16#String">
412     <xs:restriction base="ecl:BusinessTypeList"/>
413 </xs:simpleType>
414 <xs:simpleType name="CapacityContractKind_String"
415 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
416     <xs:restriction base="ecl:ContractTypeList"/>
417 </xs:simpleType>
418 <xs:simpleType name="MarketProductKind_String"
419 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketProductKind_String">
420     <xs:restriction base="ecl:MarketProductTypeList"/>
421 </xs:simpleType>
422 <xs:simpleType name="PsrType_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
423 cim16#String">
424     <xs:restriction base="ecl:AssetTypeList"/>
425 </xs:simpleType>
426 <xs:simpleType name="CurrencyCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
427 schema-cim16#String">
428     <xs:restriction base="ecl:CurrencyTypeList"/>
429 </xs:simpleType>
430 <xs:simpleType name="MeasurementUnitKind_String"
431 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
432     <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
433 </xs:simpleType>
434 <xs:simpleType name="CurveType_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
435 schema-cim16#String">
436     <xs:restriction base="ecl:CurveTypeList"/>
437 </xs:simpleType>
438 <xs:simpleType name="ESMPBoolean_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
439 schema-cim16#String">
440     <xs:restriction base="ecl:IndicatorTypeList"/>
441 </xs:simpleType>
442 <xs:complexType name="TimeSeries" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
443 cim16#TimeSeries">
444     <xs:sequence>
445         <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
446 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
447         <xs:element name="businessType" type="BusinessKind_String" minOccurs="1"
448 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
449 cim16#TimeSeries.businessType"/>
450         <xs:element name="acquiring_Domain.mRID" type="AreaID_String" minOccurs="0"
451 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
452         <xs:element name="connecting_Domain.mRID" type="AreaID_String" minOccurs="0"
453 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
454         <xs:element name="type_MarketAgreement.type"
455 type="CapacityContractKind_String" minOccurs="0" maxOccurs="1"
456 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
457         <xs:element name="standard_MarketProduct.marketProductType"
458 type="MarketProductKind_String" minOccurs="0" maxOccurs="1"
459 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketProduct.marketProductType"/>
460         <xs:element name="original_MarketProduct.marketProductType"
461 type="MarketProductKind_String" minOccurs="0" maxOccurs="1"
462 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketProduct.marketProductType"/>
463         <xs:element name="mktPSRType.psrType" type="PsrType_String" minOccurs="0"
464 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MktPSRType.psrType"/>
465         <xs:element name="flowDirection.direction" type="DirectionKind_String"
466 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
467 cim16#FlowDirection.direction"/>

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468         <xs:element name="currency_Unit.name" type="CurrencyCode_String" minOccurs="0"
469 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
470         <xs:element name="quantity_Measure_Unit.name"
471 type="MeasurementUnitKind_String" minOccurs="0" maxOccurs="1"
472 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
473         <xs:element name="price_Measure_Unit.name" type="MeasurementUnitKind_String"
474 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
475 cim16#Unit.name"/>
476         <xs:element name="curveType" type="CurveType_String" minOccurs="0"
477 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.curveType"/>
478         <xs:element name="cancelledTS" type="ESMPBoolean_String" minOccurs="0"
479 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.cancelledTS"/>
480         <xs:element name="Period" type="Series_Period" minOccurs="0"
481 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
482 cim16#TimeSeries.Period"/>
483         </xs:sequence>
484     </xs:complexType>
485 </xs:schema>

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