



European Network of  
Transmission System Operators  
for Electricity

---

# ENERGY ACCOUNT DOCUMENT UML MODEL AND SCHEMA

---

2017-01-19  
VERSION 1.0

2

## Table of Contents

3	1	Objective .....	5
4	2	EnergyAccount_MarketDocument .....	6
5	2.1	Energy account 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	Energy account 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 Energy account assembly model.....	9
14		2.2.3.1 EnergyAccount_MarketDocument root class .....	9
15		2.2.3.2 Point .....	10
16		2.2.3.3 Reason .....	11
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 EnergyAccount_MarketDocument XML schema structure .....	14
21		2.2.6 EnergyAccount_MarketDocument XML schema .....	16

### 22 List of figures

23	Figure 1 - Energy account contextual model .....	6
24	Figure 2 - Energy account assembly model.....	8
25	Figure 3 - EnergyAccount_MarketDocument schema structure 1/3 .....	14
26	Figure 4 - EnergyAccount_MarketDocument schema structure 2/3 .....	15
27	Figure 5 - EnergyAccount_MarketDocument schema structure 3/3.....	16

### 28 List of tables

29	Table 1 - IsBasedOn dependency .....	7
30	Table 2 - IsBasedOn dependency .....	9
31	Table 3 - Attributes of Energy account assembly	
32	model::EnergyAccount_MarketDocument .....	9
33	Table 4 - Association ends of Energy account assembly	
34	model::EnergyAccount_MarketDocument with other classes .....	10
35	Table 5 - Attributes of Energy account assembly model::Point .....	10
36	Table 6 - Association ends of Energy account assembly model::Point with other	
37	classes .....	11
38	Table 7 - Attributes of Energy account assembly model::Reason .....	11
39	Table 8 - Attributes of Energy account assembly model::Series_Period .....	11
40	Table 9 - Association ends of Energy account assembly model::Series_Period with	
41	other classes .....	12
42	Table 10 - Attributes of Energy account assembly model::TimeSeries .....	12
43	Table 11 - Association ends of Energy account assembly model::TimeSeries with other	
44	classes .....	13

45

46

## Copyright notice:

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

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

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

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

60

## Maintenance notice:

61 This document is maintained by the ENTSO-E WG EDI. Comments or remarks are to be  
62 provided at [EDI.Library@entsoe.eu](mailto:EDI.Library@entsoe.eu)

63

## 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.

64

## 65 1 Objective

66 The purpose of this document is to provide the contextual and assembly UML models and the  
67 schema of the EnergyAccount\_MarketDocument.

68 The schema of the EnergyAccount\_MarketDocument could be used in various business  
69 processes.

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

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

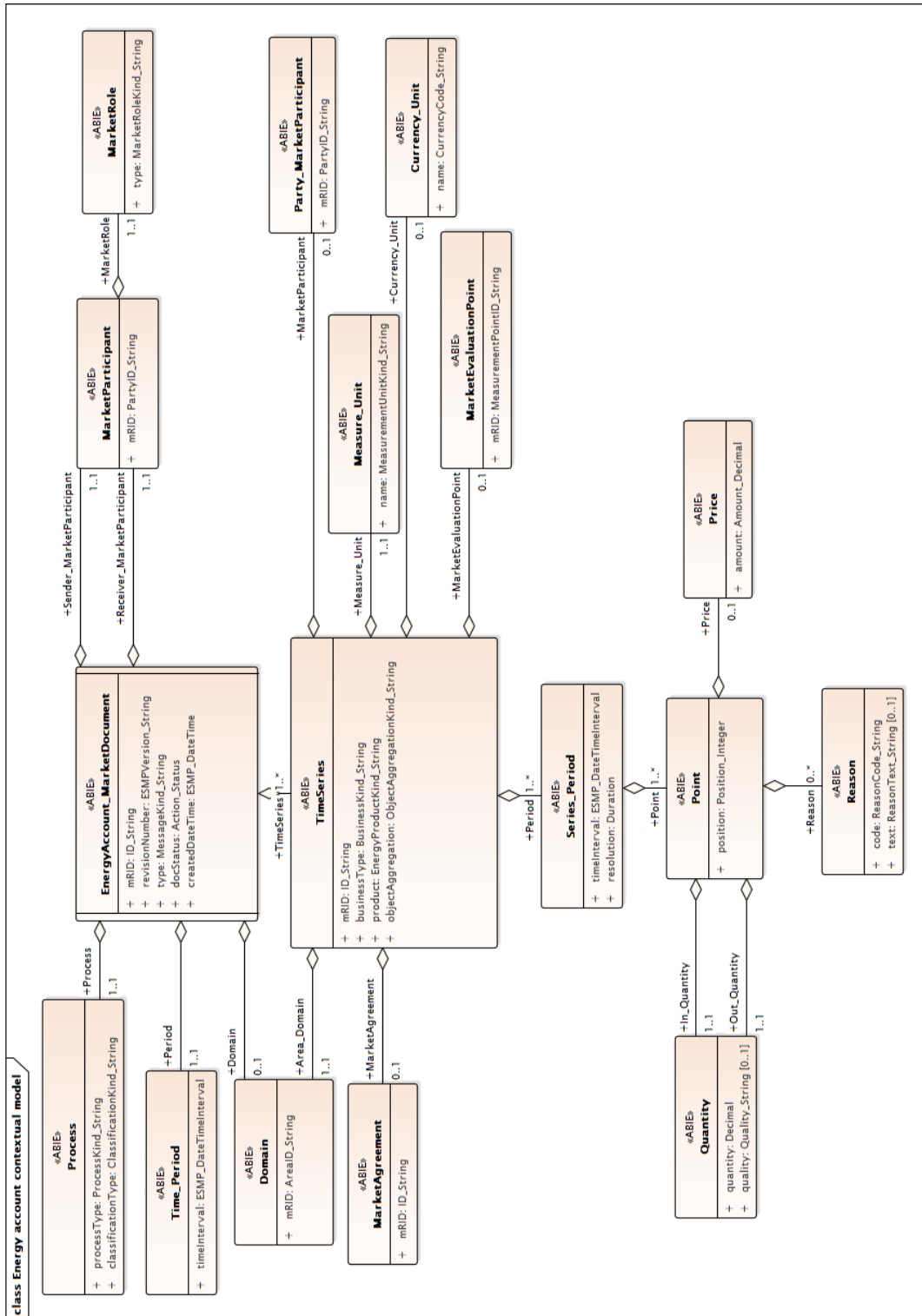
- 74 • Description of the business process;
- 75 • Use case of the business process;
- 76 • Sequence diagrams of the business process;
- 77 • List of the schema (XSD) to be used in the business process and versions of the  
78 schema;
- 79 • For each schema, dependency tables providing the necessary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

82 **2 EnergyAccount\_MarketDocument**

83 **2.1 Energy account contextual model**

84 **2.1.1 Overview of the model**

85 Figure 1 shows the model.



86

87

Figure 1 - Energy account contextual model

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

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

91 **Table 1 - IsBasedOn dependency**

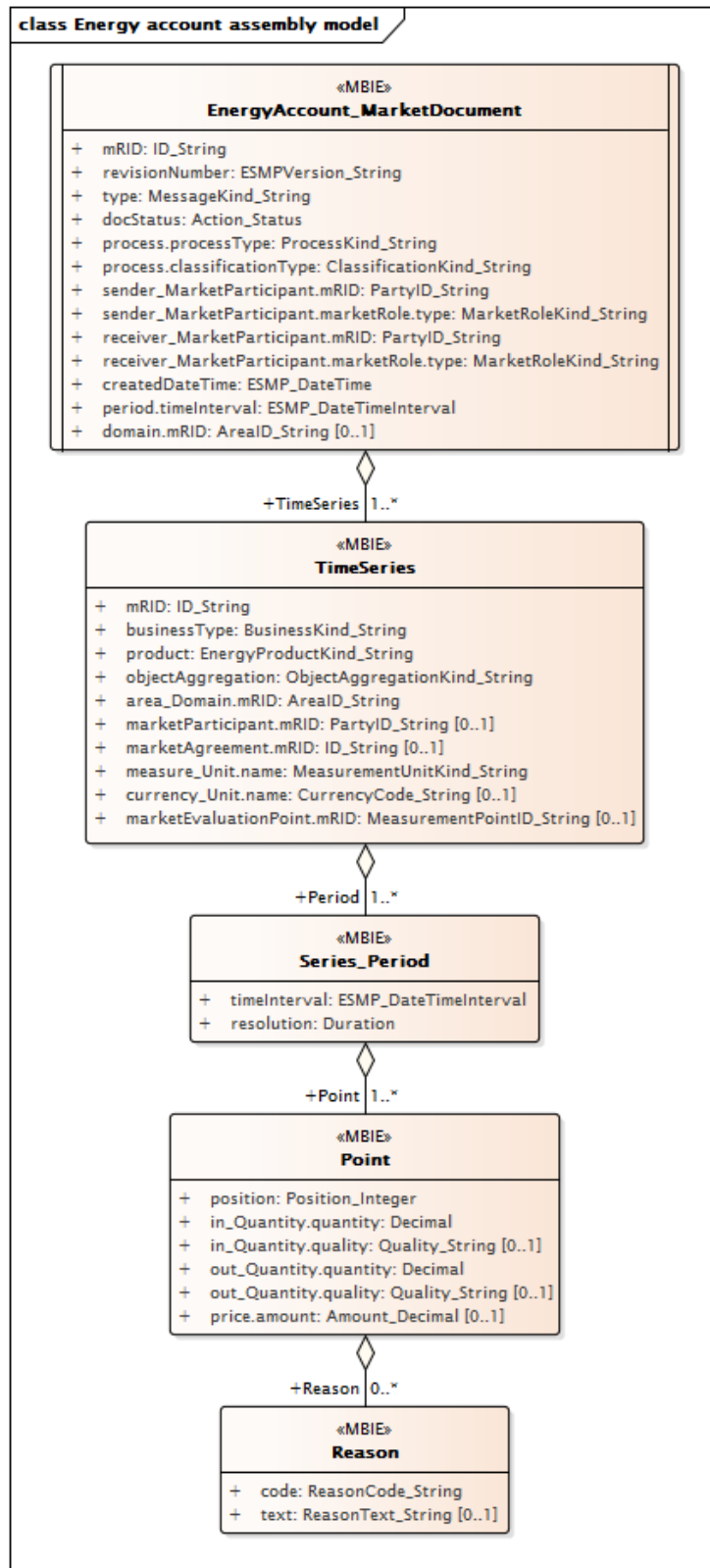
Name	Complete IsBasedOn Path
Currency_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Domain	TC57CIM::IEC62325::MarketManagement::Domain
EnergyAccount_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
MarketEvaluationPoint	TC57CIM::IEC62325::MarketManagement::MarketEvaluationPoint
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Party_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Point	TC57CIM::IEC62325::MarketManagement::Point
Price	TC57CIM::IEC62325::MarketManagement::Price
Process	TC57CIM::IEC62325::MarketManagement::Process
Quantity	TC57CIM::IEC62325::MarketManagement::Quantity
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

92

93 **2.2 Energy account assembly model**

94 **2.2.1 Overview of the model**

95 Figure 2 shows the model.



96

97

**Figure 2 - Energy account assembly model**



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

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

101 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
EnergyAccount_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

102

103 **2.2.3 Detailed Energy account assembly model**

104 **2.2.3.1 EnergyAccount\_MarketDocument root class**

105 An energy account report for a given set of time series and a given accounting period  
106 Time\_Period class, period.timeInterval attribute) shall have a unique identification assigned by  
107 the sender of the document for all transmissions to the receiver.

108 All additions, modifications, or suppressions for the time series and accounting period shall use  
109 the same identification.

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

112 Table 3 shows all attributes of EnergyAccount\_MarketDocument.

113 **Table 3 - Attributes of Energy account assembly  
114 model::EnergyAccount\_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]	docStatus Action_Status	The identification of the condition or position of the document with regard to its standing.
4	[1..1]	process.processType ProcessKind_String	The identification of the nature of process that the document addresses.
5	[1..1]	process.classificationType ClassificationKind_String	The classification mechanism used to group a set of objects together within a business process. The grouping may be of a detailed or a summary nature.
6	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document owner.
7	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document owner.
8	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient.

Order	mult.	Attribute name / Attribute type	Description
9	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document recipient.
10	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
11	[1..1]	period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- This information provides the start and end date and time of the accounting period. The receiver shall completely reject documents with any time intervals outside the accounting period.
12	[0..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the domain that is covered in the energy account report. This will frequently be the market balance area that is the subject of the report. However, other domains may also be used as defined by local market rules to enable the particular balancing markets to be identified.

115

116 Table 4 shows all association ends of EnergyAccount\_MarketDocument with other classes.

117

**Table 4 - Association ends of Energy account assembly model::EnergyAccount\_MarketDocument with other classes**

118

Order	mult.	Class name / Role	Description
13	[1..*]	TimeSeries TimeSeries	Association Based On: Energy account contextual model::TimeSeries.TimeSeries[1..*] ----- Energy account contextual model::EnergyAccount_MarketDocument.[.]

119

### 120 2.2.3.2 Point

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

122 Table 5 shows all attributes of Point.

123

**Table 5 - Attributes of Energy account 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]	in_Quantity.quantity Decimal	The quantity value. The association role provides the information about what is expressed. --- The quantity that is flowing into the Area_Domain.mRID.
2	[0..1]	in_Quantity.quality Quality_String	The description of the quality of the quantity. --- The quantity that is flowing into the Area_Domain.mRID.
3	[1..1]	out_Quantity.quantity Decimal	The quantity value. The association role provides the information about what is expressed. --- The quantity that is going out of the Area_Domain.mRID.
4	[0..1]	out_Quantity.quality Quality_String	The description of the quality of the quantity. --- The quantity that is going out of the Area_Domain.mRID.

Order	mult.	Attribute name / Attribute type	Description
5	[0..1]	price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The amount due for the account interval in question. This information defines the settlement amount taking into consideration the in and out quantities and the pricing scheme based on local market rules. A negative value indicates that the settlement amount is due by the party in question (party to be debited). If the amount is positive it is due by the imbalance settlement responsible (party to be credited).

124

125 Table 6 shows all association ends of Point with other classes.

126 **Table 6 - Association ends of Energy account assembly model::Point with other classes**

Order	mult.	Class name / Role	Description
6	[0..*]	Reason Reason	Association Based On: Energy account contextual model::Reason.Reason[0..*] ----- Energy account contextual model::Point.[]

127

### 128 2.2.3.3 Reason

129 The motivation of an act.

130 Table 7 shows all attributes of Reason.

131 **Table 7 - Attributes of Energy account 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.

132

### 133 2.2.3.4 Series\_Period

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

135 Table 8 shows all attributes of Series\_Period.

136 **Table 8 - Attributes of Energy account 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.

137

138 Table 9 shows all association ends of Series\_Period with other classes.

139 **Table 9 - Association ends of Energy account assembly model::Series\_Period with**  
140 **other classes**

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

141

142 **2.2.3.5 TimeSeries**

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

144 Table 10 shows all attributes of TimeSeries.

145 **Table 10 - Attributes of Energy account assembly model::TimeSeries**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series.
1	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
2	[1..1]	product EnergyProductKind_String	The identification of the nature of an energy product such as power, energy, reactive power, etc.
3	[1..1]	objectAggregation ObjectAggregationKind_String	The identification of the domain that is the common denominator used to aggregate a time series.
4	[1..1]	area_Domain.mRID AreaID_String	The unique identification of the domain. --- The area of concern for the imbalance settlement responsible that the time series addresses.
5	[0..1]	marketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of the party of concern for the time series.
6	[0..1]	marketAgreement.mRID ID_String	The unique identification of the agreement. --- This provides the identification of the agreement, such as a capacity agreement, that is relative to the time series.
7	[1..1]	measure_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit if measurement is used for the quantities expressed within the time series.
8	[0..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency used for the monetary amount expressed within the time series.
9	[0..1]	marketEvaluationPoint.mRID MeasurementPointID_String	A unique identification of the measurement point. --- The identification of the accounting point where the settlement information has been aggregated.

146

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

148 **Table 11 - Association ends of Energy account assembly model::TimeSeries with other**  
149 **classes**

Order	mult.	Class name / Role	Description
10	[1..*]	Series_Period Period	The receiver shall completely reject documents with any time intervals outside the accounting period. Association Based On: Energy account contextual model::Series_Period.Period[1..*] ----- Energy account contextual model::TimeSeries.[]

150

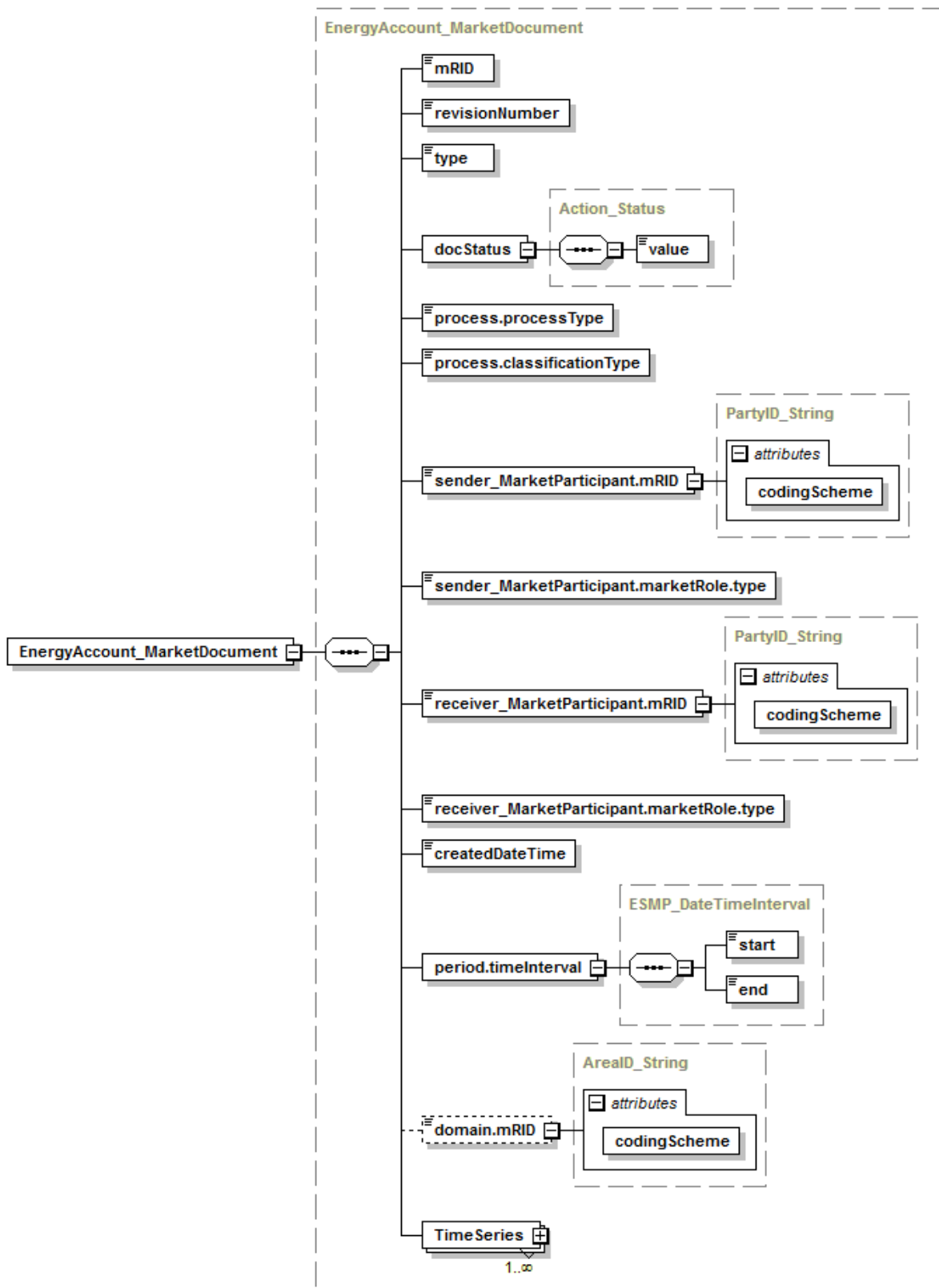
## 151 2.2.4 Datatypes

152 The list of datatypes used for the Energy account assembly model is as follows:

- 153 • Action\_Status compound
- 154 • ESMP\_DateTimeInterval compound
- 155 • Amount\_Decimal datatype
- 156 • AreaID\_String datatype, codelist CodingSchemeTypeList
- 157 • BusinessKind\_String datatype, codelist BusinessTypeList
- 158 • ClassificationKind\_String datatype, codelist ClassificationTypeList
- 159 • CurrencyCode\_String datatype, codelist CurrencyTypeList
- 160 • EnergyProductKind\_String datatype, codelist EnergyProductTypeList
- 161 • ESMP\_DateTime datatype
- 162 • ESMPVersion\_String datatype
- 163 • ID\_String datatype
- 164 • MarketRoleKind\_String datatype, codelist RoleTypeList
- 165 • MeasurementPointID\_String datatype, codelist CodingSchemeTypeList
- 166 • MeasurementUnitKind\_String datatype, codelist UnitOfMeasureTypeList
- 167 • MessageKind\_String datatype, codelist MessageTypeList
- 168 • ObjectAggregationKind\_String datatype, codelist ObjectAggregationTypeList
- 169 • PartyID\_String datatype, codelist CodingSchemeTypeList
- 170 • Position\_Integer datatype
- 171 • ProcessKind\_String datatype, codelist ProcessTypeList
- 172 • Quality\_String datatype, codelist QualityTypeList
- 173 • ReasonCode\_String datatype, codelist ReasonCodeTypeList
- 174 • ReasonText\_String datatype
- 175 • Status\_String datatype, codelist StatusTypeList
- 176 • YMDHM\_DateTime datatype

177 **2.2.5 EnergyAccount\_MarketDocument XML schema structure**

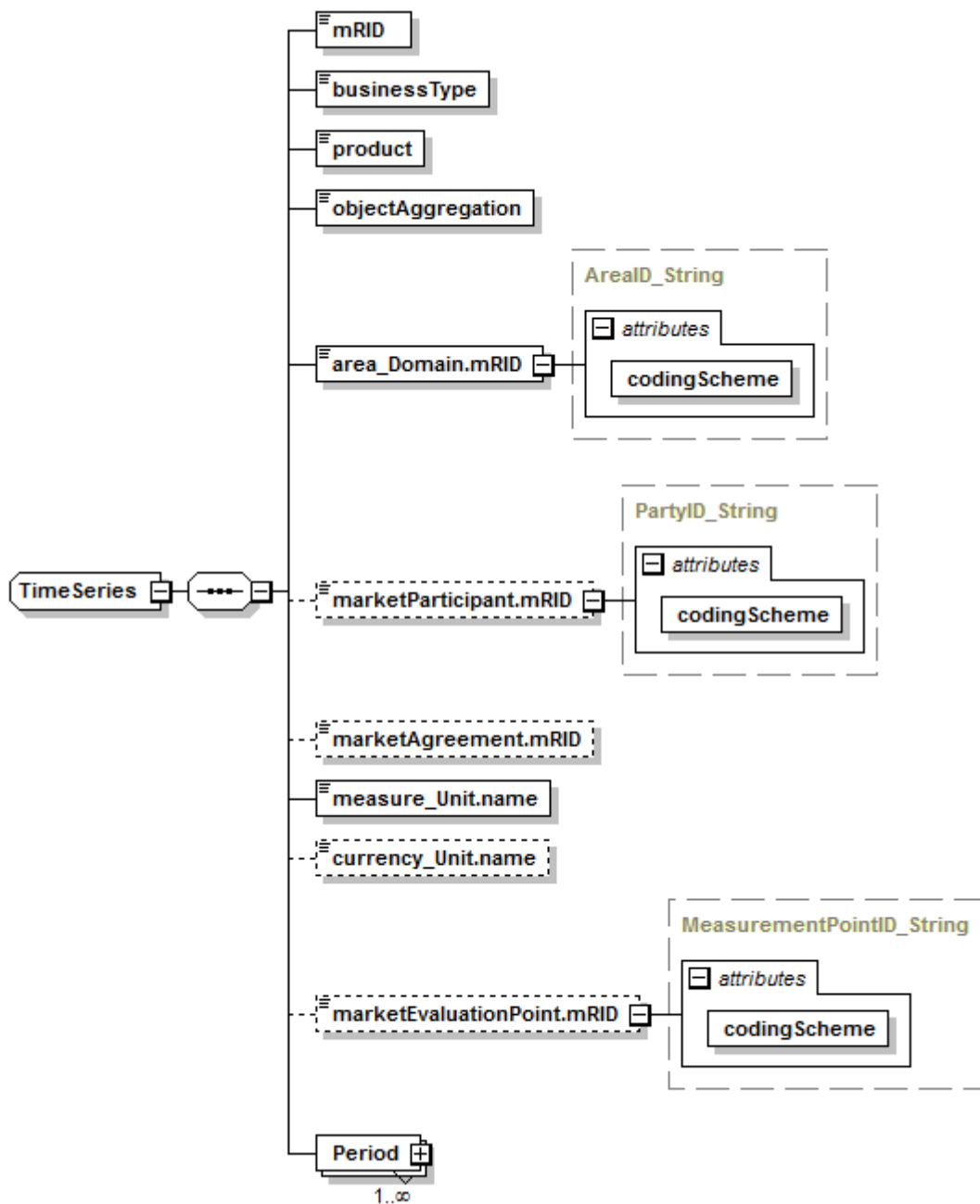
178 Figure 3 to Figure 5 provide the structure of the schema.



179

180

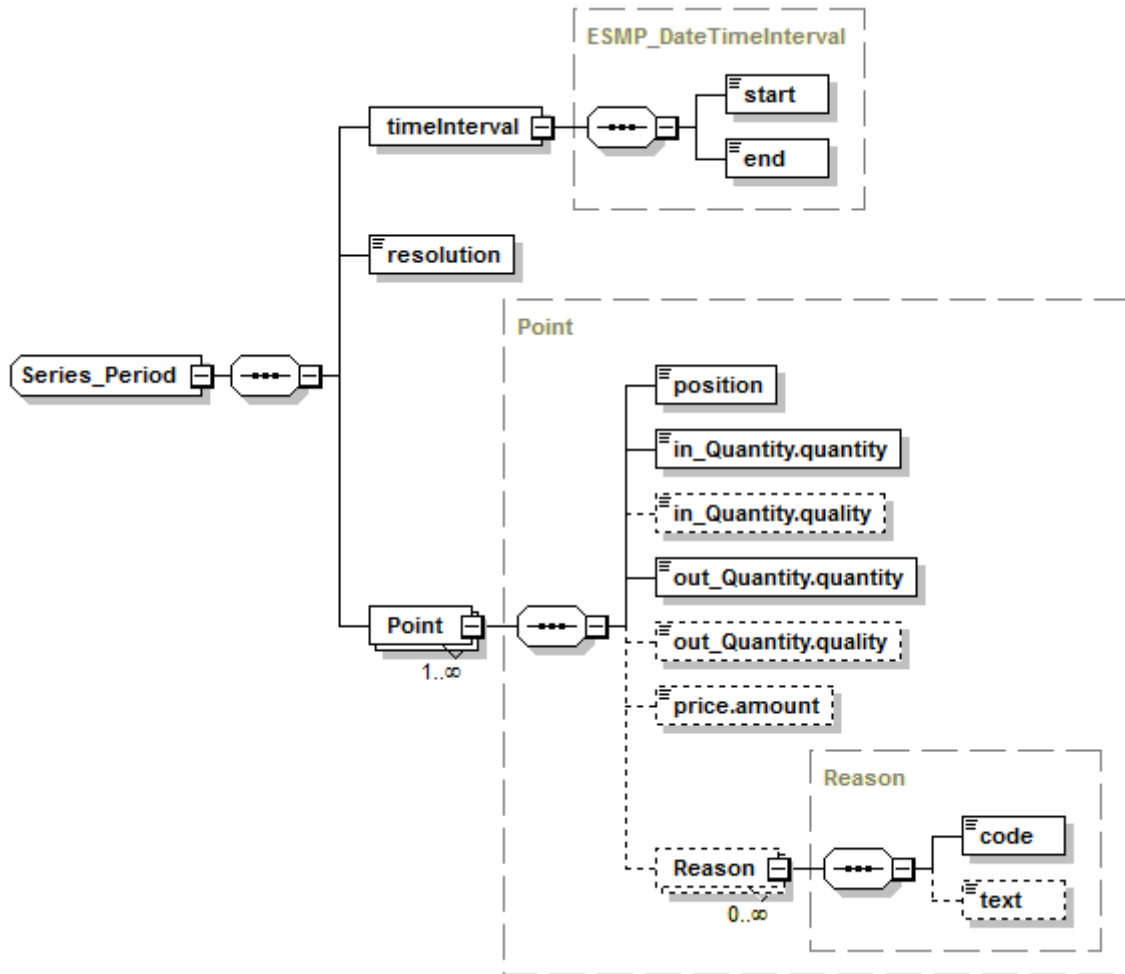
Figure 3 - EnergyAccount\_MarketDocument schema structure 1/3



181

182

Figure 4 - EnergyAccount\_MarketDocument schema structure 2/3



183

184

**Figure 5 - EnergyAccount\_MarketDocument schema structure 3/3**

**185 2.2.6 EnergyAccount\_MarketDocument XML schema**

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

187 urn:iec62325.351:tc57wg16:451-4:energyaccountdocument:4:0

```

188 <?xml version="1.0" encoding="utf-8"?>
189 <xs:schema xmlns:cl="urn:entsoe.eu:wgedi:codelists"
190 xmlns:sawsdl="http://www.w3.org/ns/sawsdl" xmlns="urn:iec62325.351:tc57wg16:451-
191 4:energyaccountdocument:4:0" xmlns:cimp="http://www.iec.ch/cimprofile"
192 attributeFormDefault="unqualified" elementFormDefault="qualified"
193 targetNamespace="urn:iec62325.351:tc57wg16:451-4:energyaccountdocument:4:0"
194 xmlns:xs="http://www.w3.org/2001/XMLSchema">
195   <xs:import schemaLocation="urn-entsoe-eu-wgedi-codelists.xsd"
196 namespace="urn:entsoe.eu:wgedi:codelists" />
197   <xs:element name="EnergyAccount_MarketDocument" type="EnergyAccount_MarketDocument"
198 />
199   <xs:simpleType name="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
200 schema-cim16#String">
201     <xs:restriction base="xs:string">
202       <xs:maxLength value="35" />
203     </xs:restriction>
204   </xs:simpleType>
205   <xs:simpleType name="ESMPVersion_String"
206 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
207     <xs:restriction base="xs:string">
208       <xs:pattern value="[1-9]([0-9]){0,2}" />
209     </xs:restriction>
210   </xs:simpleType>

```



```

211     <xs:simpleType name="MessageKind_String"
212 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
213     <xs:restriction base="cl:MessageTypeList" />
214     </xs:simpleType>
215     <xs:simpleType name="ProcessKind_String"
216 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
217     <xs:restriction base="cl:ProcessTypeList" />
218     </xs:simpleType>
219     <xs:simpleType name="ClassificationKind_String"
220 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
221     <xs:restriction base="cl:ClassificationTypeList" />
222     </xs:simpleType>
223     <xs:simpleType name="PartyID_String-base"
224 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
225     <xs:restriction base="xs:string">
226     <xs:maxLength value="16" />
227     </xs:restriction>
228     </xs:simpleType>
229     <xs:complexType name="PartyID_String"
230 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
231     <xs:simpleContent>
232     <xs:extension base="PartyID_String-base">
233     <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
234 use="required" />
235     </xs:extension>
236     </xs:simpleContent>
237     </xs:complexType>
238     <xs:simpleType name="MarketRoleKind_String"
239 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
240     <xs:restriction base="cl:RoleTypeList" />
241     </xs:simpleType>
242     <xs:simpleType name="ESMP_DateTime"
243 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
244     <xs:restriction base="xs:dateTime">
245     <xs:pattern value="((([0-9]{4}) [-] (0[13578] | 1[02]) [-] (0[1-9] | [12] [0-
246 9] | 3[01]) | ([0-9]{4}) [-] ((0[469] | (11)) [-] (0[1-9] | [12] [0-9] | 30)) T(( [01] [0-9] | 2[0-
247 3]) : [0-5] [0-9] : [0-5] [0-
248 9]) Z) | ((([13579] [26] [02468] [048] | [13579] [01345789] (0) [48] | [13579] [01345789] [2468] [048]
249 | [02468] [048] [02468] [048] | [02468] [1235679] (0) [48] | [02468] [1235679] [2468] [048] | [0-
250 9] [0-9] [13579] [26]) [-] (02) [-] (0[1-9] | 1[0-9] | 2[0-9]) T(( [01] [0-9] | 2[0-3]) : [0-5] [0-
251 9] : [0-5] [0-
252 9]) Z) | ((([13579] [26] [02468] [1235679] | [13579] [01345789] (0) [01235679] | [13579] [01345789] [
253 2468] [1235679] | [02468] [048] [02468] [1235679] | [02468] [1235679] (0) [01235679] | [02468] [123
254 5679] [2468] [1235679] | [0-9] [0-9] [13579] [01345789]) [-] (02) [-] (0[1-9] | 1[0-9] | 2[0-
255 8]) T(( [01] [0-9] | 2[0-3]) : [0-5] [0-9] : [0-5] [0-9]) Z)" />
256     </xs:restriction>
257     </xs:simpleType>
258     <xs:simpleType name="AreaID_String-base"
259 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
260     <xs:restriction base="xs:string">
261     <xs:maxLength value="18" />
262     </xs:restriction>
263     </xs:simpleType>
264     <xs:complexType name="AreaID_String"
265 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
266     <xs:simpleContent>
267     <xs:extension base="AreaID_String-base">
268     <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
269 use="required" />
270     </xs:extension>
271     </xs:simpleContent>
272     </xs:complexType>
273     <xs:simpleType name="Status_String"
274 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
275     <xs:restriction base="cl:StatusTypeList" />
276     </xs:simpleType>
277     <xs:complexType name="Action_Status"
278 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status">
279     <xs:sequence>

```

```
280     <xs:element minOccurs="1" maxOccurs="1" name="value" type="Status_String"
281 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status.value">
282     </xs:element>
283 </xs:sequence>
284 </xs:complexType>
285 <xs:simpleType name="YMDHM_DateTime"
286 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
287     <xs:restriction base="xs:string">
288     <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-9]|12)[0-
289 9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-9]|30))T((([01][0-9]|2[0-
290 3]):[0-5][0-
291 9])Z)|((([13579][26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]
292 |13579][01345789][2468][048]|13579][01345789][2468][048]|13579][01345789][2468][048]|0[
293 9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-5][0-
294 9])Z)|((([13579][26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][
295 2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][123
296 5679][2468][1235679]|0[9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-9]|2[0-
297 8])T((([01][0-9]|2[0-3]):[0-5][0-9])Z)" />
298     </xs:restriction>
299 </xs:simpleType>
300 <xs:complexType name="ESMP_DateTimeInterval"
301 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
302     <xs:sequence>
303     <xs:element minOccurs="1" maxOccurs="1" name="start" type="YMDHM_DateTime"
304 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
305 cim16#DateTimeInterval.start">
306     </xs:element>
307     <xs:element minOccurs="1" maxOccurs="1" name="end" type="YMDHM_DateTime"
308 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
309 cim16#DateTimeInterval.end">
310     </xs:element>
311 </xs:sequence>
312 </xs:complexType>
313 <xs:complexType name="EnergyAccount_MarketDocument"
314 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
315     <xs:sequence>
316     <xs:element minOccurs="1" maxOccurs="1" name="mRID" type="ID_String"
317 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
318 cim16#IdentifiedObject.mRID">
319     </xs:element>
320     <xs:element minOccurs="1" maxOccurs="1" name="revisionNumber"
321 type="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
322 cim16#Document.revisionNumber">
323     </xs:element>
324     <xs:element minOccurs="1" maxOccurs="1" name="type" type="MessageKind_String"
325 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type">
326     </xs:element>
327     <xs:element minOccurs="1" maxOccurs="1" name="docStatus" type="Action_Status"
328 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.docStatus">
329     </xs:element>
330     <xs:element minOccurs="1" maxOccurs="1" name="process.processType"
331 type="ProcessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
332 cim16#Process.processType">
333     </xs:element>
334     <xs:element minOccurs="1" maxOccurs="1" name="process.classificationType"
335 type="ClassificationKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
336 schema-cim16#Process.classificationType">
337     </xs:element>
338     <xs:element minOccurs="1" maxOccurs="1" name="sender_MarketParticipant.mRID"
339 type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
340 cim16#IdentifiedObject.mRID">
341     </xs:element>
342     <xs:element minOccurs="1" maxOccurs="1"
343 name="sender_MarketParticipant.marketRole.type" type="MarketRoleKind_String"
344 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type">
345     </xs:element>
346     <xs:element minOccurs="1" maxOccurs="1" name="receiver_MarketParticipant.mRID"
347 type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
348 cim16#IdentifiedObject.mRID">
```

```

349     </xs:element>
350     <xs:element minOccurs="1" maxOccurs="1"
351     name="receiver_MarketParticipant.marketRole.type" type="MarketRoleKind_String"
352     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type">
353     </xs:element>
354     <xs:element minOccurs="1" maxOccurs="1" name="createdDateTime"
355     type="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
356     cim16#Document.createdDateTime">
357     </xs:element>
358     <xs:element minOccurs="1" maxOccurs="1" name="period.timeInterval"
359     type="ESMP_DateTimeInterval" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
360     schema-cim16#Period.timeInterval">
361     </xs:element>
362     <xs:element minOccurs="0" maxOccurs="1" name="domain.mRID" type="AreaID_String"
363     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
364     cim16#IdentifiedObject.mRID">
365     </xs:element>
366     <xs:element minOccurs="1" maxOccurs="unbounded" name="TimeSeries"
367     type="TimeSeries" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
368     cim16#MarketDocument.TimeSeries">
369     </xs:element>
370   </xs:sequence>
371 </xs:complexType>
372 <xs:simpleType name="Position_Integer"
373 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
374   <xs:restriction base="xs:integer">
375     <xs:maxInclusive value="999999" />
376     <xs:minInclusive value="1" />
377   </xs:restriction>
378 </xs:simpleType>
379 <xs:simpleType name="Quality_String"
380 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
381   <xs:restriction base="cl:QualityTypeList" />
382 </xs:simpleType>
383 <xs:simpleType name="Amount_Decimal"
384 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Decimal">
385   <xs:restriction base="xs:decimal">
386     <xs:totalDigits value="17" />
387   </xs:restriction>
388 </xs:simpleType>
389 <xs:complexType name="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
390 schema-cim16#Point">
391   <xs:sequence>
392     <xs:element minOccurs="1" maxOccurs="1" name="position" type="Position_Integer"
393     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.position">
394     </xs:element>
395     <xs:element minOccurs="1" maxOccurs="1" name="in_Quantity.quantity"
396     type="xs:decimal" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
397     cim16#Quantity.quantity">
398     </xs:element>
399     <xs:element minOccurs="0" maxOccurs="1" name="in_Quantity.quality"
400     type="Quality_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
401     cim16#Quantity.quality">
402     </xs:element>
403     <xs:element minOccurs="1" maxOccurs="1" name="out_Quantity.quantity"
404     type="xs:decimal" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
405     cim16#Quantity.quantity">
406     </xs:element>
407     <xs:element minOccurs="0" maxOccurs="1" name="out_Quantity.quality"
408     type="Quality_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
409     cim16#Quantity.quality">
410     </xs:element>
411     <xs:element minOccurs="0" maxOccurs="1" name="price.amount"
412     type="Amount_Decimal" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
413     cim16#Price.amount">
414     </xs:element>
415     <xs:element minOccurs="0" maxOccurs="unbounded" name="Reason" type="Reason"
416     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.Reason">
417     </xs:element>

```

```

418     </xs:sequence>
419   </xs:complexType>
420   <xs:simpleType name="ReasonCode_String"
421 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
422     <xs:restriction base="cl:ReasonCodeTypeList" />
423   </xs:simpleType>
424   <xs:simpleType name="ReasonText_String"
425 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
426     <xs:restriction base="xs:string">
427       <xs:maxLength value="512" />
428     </xs:restriction>
429   </xs:simpleType>
430   <xs:complexType name="Reason" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
431 schema-cim16#Reason">
432     <xs:sequence>
433       <xs:element minOccurs="1" maxOccurs="1" name="code" type="ReasonCode_String"
434 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.code">
435         </xs:element>
436       <xs:element minOccurs="0" maxOccurs="1" name="text" type="ReasonText_String"
437 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.text">
438         </xs:element>
439     </xs:sequence>
440   </xs:complexType>
441   <xs:complexType name="Series_Period"
442 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
443     <xs:sequence>
444       <xs:element minOccurs="1" maxOccurs="1" name="timeInterval"
445 type="ESMP_DateTimeInterval" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
446 schema-cim16#Period.timeInterval">
447         </xs:element>
448       <xs:element minOccurs="1" maxOccurs="1" name="resolution" type="xs:duration"
449 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution">
450         </xs:element>
451       <xs:element minOccurs="1" maxOccurs="unbounded" name="Point" type="Point"
452 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point">
453         </xs:element>
454     </xs:sequence>
455   </xs:complexType>
456   <xs:simpleType name="BusinessKind_String"
457 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
458     <xs:restriction base="cl:BusinessTypeList" />
459   </xs:simpleType>
460   <xs:simpleType name="EnergyProductKind_String"
461 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
462     <xs:restriction base="cl:EnergyProductTypeList" />
463   </xs:simpleType>
464   <xs:simpleType name="ObjectAggregationKind_String"
465 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
466     <xs:restriction base="cl:ObjectAggregationTypeList" />
467   </xs:simpleType>
468   <xs:simpleType name="MeasurementUnitKind_String"
469 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
470     <xs:restriction base="cl:UnitOfMeasureTypeList" />
471   </xs:simpleType>
472   <xs:simpleType name="CurrencyCode_String"
473 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
474     <xs:restriction base="cl:CurrencyTypeList" />
475   </xs:simpleType>
476   <xs:simpleType name="MeasurementPointID_String-base"
477 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
478     <xs:restriction base="xs:string">
479       <xs:maxLength value="35" />
480     </xs:restriction>
481   </xs:simpleType>
482   <xs:complexType name="MeasurementPointID_String"
483 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
484     <xs:simpleContent>
485       <xs:extension base="MeasurementPointID_String-base">

```

```

486         <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
487 use="required" />
488     </xs:extension>
489 </xs:simpleContent>
490 </xs:complexType>
491 <xs:complexType name="TimeSeries"
492 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
493     <xs:sequence>
494         <xs:element minOccurs="1" maxOccurs="1" name="mRID" type="ID_String"
495 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
496 cim16#IdentifiedObject.mRID">
497             </xs:element>
498         <xs:element minOccurs="1" maxOccurs="1" name="businessType"
499 type="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
500 cim16#TimeSeries.businessType">
501             </xs:element>
502         <xs:element minOccurs="1" maxOccurs="1" name="product"
503 type="EnergyProductKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
504 schema-cim16#TimeSeries.product">
505             </xs:element>
506         <xs:element minOccurs="1" maxOccurs="1" name="objectAggregation"
507 type="ObjectAggregationKind_String"
508 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
509 cim16#TimeSeries.objectAggregation">
510             </xs:element>
511         <xs:element minOccurs="1" maxOccurs="1" name="area_Domain.mRID"
512 type="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
513 cim16#IdentifiedObject.mRID">
514             </xs:element>
515         <xs:element minOccurs="0" maxOccurs="1" name="marketParticipant.mRID"
516 type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
517 cim16#IdentifiedObject.mRID">
518             </xs:element>
519         <xs:element minOccurs="0" maxOccurs="1" name="marketAgreement.mRID"
520 type="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
521 cim16#IdentifiedObject.mRID">
522             </xs:element>
523         <xs:element minOccurs="1" maxOccurs="1" name="measure_Unit.name"
524 type="MeasurementUnitKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
525 schema-cim16#Unit.name">
526             </xs:element>
527         <xs:element minOccurs="0" maxOccurs="1" name="currency_Unit.name"
528 type="CurrencyCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
529 cim16#Unit.name">
530             </xs:element>
531         <xs:element minOccurs="0" maxOccurs="1" name="marketEvaluationPoint.mRID"
532 type="MeasurementPointID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
533 schema-cim16#IdentifiedObject.mRID">
534             </xs:element>
535         <xs:element minOccurs="1" maxOccurs="unbounded" name="Period"
536 type="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
537 cim16#TimeSeries.Period">
538             </xs:element>
539     </xs:sequence>
540 </xs:complexType>
541 </xs:schema>
  
```