



European Network of
Transmission System Operators
for Electricity

UNAVAILABILITY DOCUMENT UML MODEL AND SCHEMA

2017-01-27
VERSION 1.0

2

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Revision History

Version	Release	Date	Comments
0	0	2017-01-27	First drafting of the document.
1	0	2017-01-30	Version to be submitted to Market Committee following WG EDI meeting in March 2017.

62

63 **1 Objective**

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

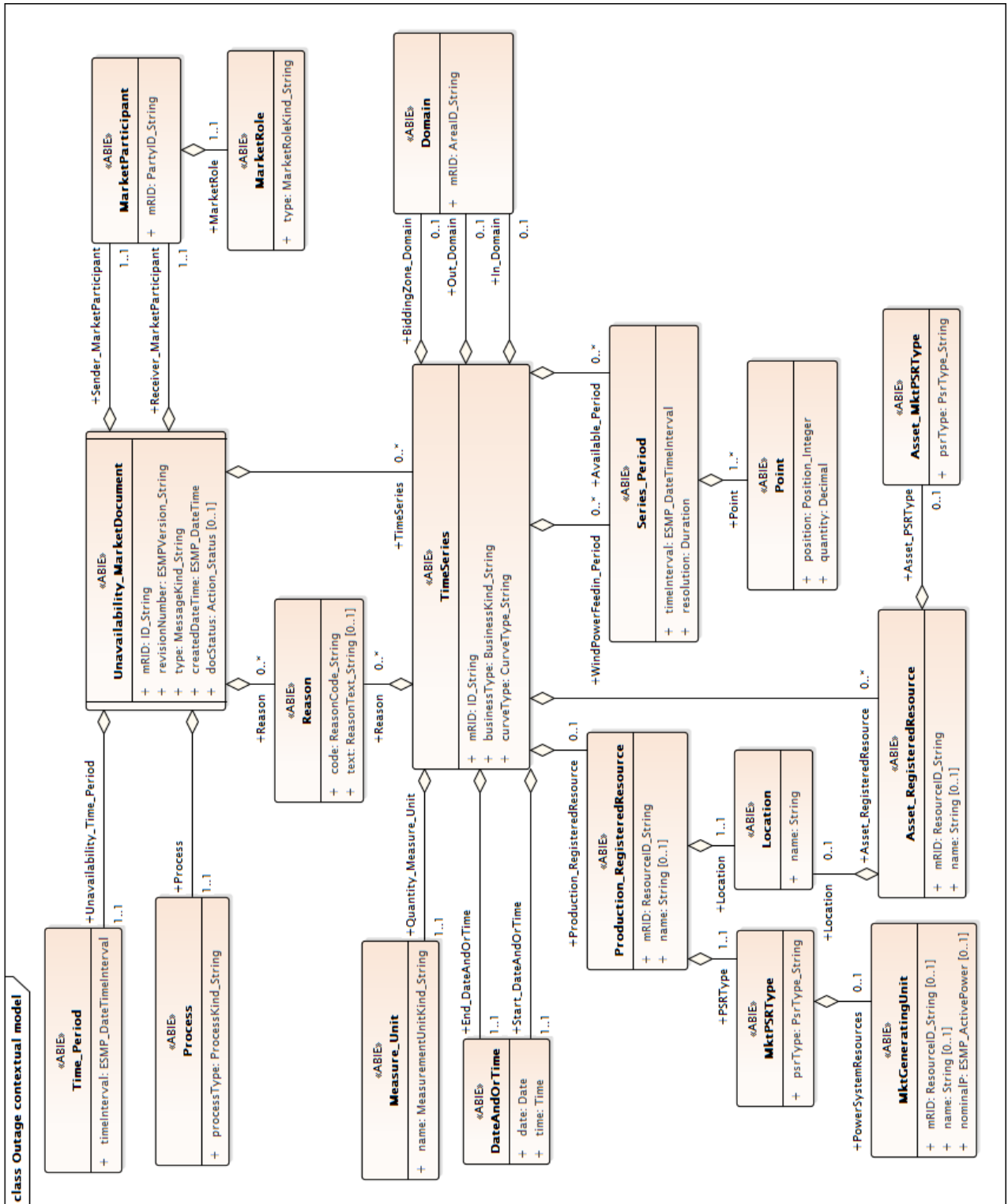
66 The schema of the Unavailability_MarketDocument could be used in various business
67 processes.

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

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

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

- 80 **2 Unavailability_MarketDocument**
- 81 **2.1 Unavailability contextual model**
- 82 **2.1.1 Overview of the model**
- 83 Figure 1 shows the model.



84
85

Figure 1 - Unavailability contextual model

86 **2.1.2 IsBasedOn relationships from the European style market profile**

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

89 **Table 1 - IsBasedOn dependency**

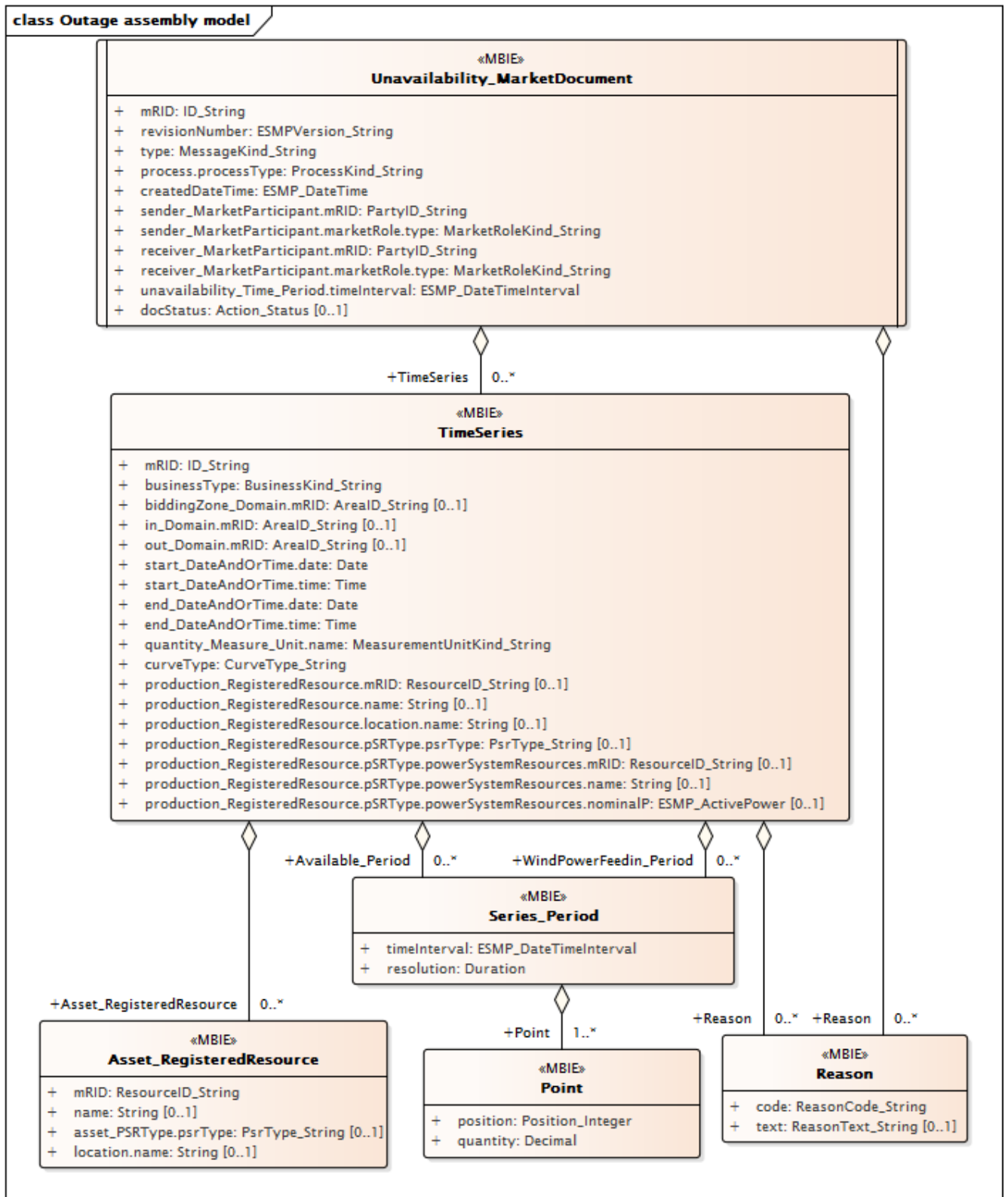
Name	Complete IsBasedOn Path
Asset_MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Asset_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
DateAndOrTime	TC57CIM::IEC62325::MarketManagement::DateAndOrTime
Domain	TC57CIM::IEC62325::MarketManagement::Domain
Location	TC57CIM::IEC61968::Common::Location
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktGeneratingUnit	TC57CIM::IEC62325::MarketCommon::MktGeneratingUnit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
Production_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Unavailability_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument

90

91 **2.2 Unavailability assembly model**

92 **2.2.1 Overview of the model**

93 Figure 2 shows the model.



94

95

Figure 2 - Unavailability assembly model

96 **2.2.2 IsBasedOn relationships from the European style market profile**

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

99 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Asset_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Unavailability_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument

100

101 **2.2.3 Detailed Unavailability assembly model**

102 **2.2.3.1 Unavailability_MarketDocument root class**

103 An electronic document containing the information necessary to satisfy the business process
104 concerning the previsual planned maintenance of assets and production and consumption
105 resource objects as well as the punctual change of availability of the same equipment.

106 Table 3 shows all attributes of Unavailability_MarketDocument.

107 **Table 3 - Attributes of Outage assembly model::Unavailability_MarketDocument**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	Unique identification of the document being exchanged within a business process flow. This identifies a given unavailability document.
1	[1..1]	revisionNumber ESMPVersion_String	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]	createdDateTime ESMP_DateTime	Identification of the date and time of the creation of the document.
5	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document owner.
6	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	Identification of the role played by a market player. --- The document owner. --- The role associated with a MarketParticipant.
7	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document recipient.
8	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	Identification of the role played by a market player. --- The document recipient. --- The role associated with a MarketParticipant.
9	[1..1]	unavailability_Time_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 time interval covering the whole unavailability document.

Order	mult.	Attribute name / Attribute type	Description
10	[0..1]	docStatus Action_Status	Identification of the condition or position of the document with regard to its standing. It is used to identify an unavailability document that has been withdrawn or cancelled.

108

109 Table 4 shows all association ends of Unavailability_MarketDocument with other classes.

110 **Table 4 - Association ends of Outage assembly model::Unavailability_MarketDocument**
111 **with other classes**

Order	mult.	Class name / Role	Description
11	[0..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: Outage contextual model::Unavailability_MarketDocument.[] ----- Outage contextual model::TimeSeries.TimeSeries[0..*]
12	[0..*]	Reason Reason	The Reason associated with the electronic document header providing the reason for the unavailability. Association Based On: Outage contextual model::Unavailability_MarketDocument.[] ----- Outage contextual model::Reason.Reason[0..*]

112

113 2.2.3.2 Asset_RegisteredResource

114 An asset that is registered through the market participant registration system.

115 Table 5 shows all attributes of Asset_RegisteredResource.

116 **Table 5 - Attributes of Outage assembly model::Asset_RegisteredResource**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ResourceID_String	The unique identification of an asset.
1	[0..1]	name String	The name of an asset.
2	[0..1]	asset_PSRTYPE.psrType PsrType_String	The coded type of an asset. --- The classification for the asset..
3	[0..1]	location.name String	The name is any free human readable and possibly non unique text naming the object. --- The name of the location of the asset.

117

118 2.2.3.3 Point

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

120 Table 6 shows all attributes of Point.

121

Table 6 - Attributes of Outage 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	Principal quantity identified for a point. This information defines the available, installed, wind power feed in or specific point quantities of an unavailability that is taken from or put into the area for the position within the interval period.

122

123 2.2.3.4 Reason

124 The motivation of an act.

125 Table 7 shows all attributes of Reason.

126

Table 7 - Attributes of Outage 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.

127

128 2.2.3.5 Series_Period

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

130 The Series_Period class provides for a given unavailability the market time unit information for:

- 131 • available capacity in the Available_Period class, the available consumption capacity, generation capacity or production unit capacity, or the impact on cross border capacity.
- 132
- 133 • or wind power feeding capacity in the WindPowerFeedin_Period class, the off shore wind power feed in capacity to the transmission infrastructure
- 134

135 Table 8 shows all attributes of Series_Period.

136

Table 8 - Attributes of Outage 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 Outage 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: Outage contextual model::Series_Period.[] ----- Outage contextual model::Point.Point[1..*]

140

141 **2.2.3.6 TimeSeries**

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

143 A time series should exist to describe a specific piece of an unavailability situation. It conveys
144 the data related to the unavailability. For consumption or production / generating unit
145 unavailability it identifies the unavailable capacity during the event. For transmission asset
146 unavailability it identifies the impact on cross zonal capacity per direction.

147 Table 10 shows all attributes of TimeSeries.

148 **Table 10 - Attributes of Outage 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]	biddingZone_Domain.mRID AreaID_String	The unique identification of the domain. --- The bidding domain associated with a TimeSeries. The identification of the bidding zone for which the unavailability information is being provided.
3	[0..1]	in_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain where energy is going associated with a TimeSeries.
4	[0..1]	out_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain where energy is coming from associated with a TimeSeries.
5	[1..1]	start_DateAndOrTime.date Date	Date as "yyyy-mm-dd", which conforms with ISO 8601. --- A start date and/or time associated with a TimeSeries. This identifies the date and/or time of the start of the unavailability being described in the time series.

Order	mult.	Attribute name / Attribute type	Description
6	[1..1]	start_DateAndOrTime.time Time	Time as "hh:mm:ss.sssZ", which conforms with ISO 8601. --- A start date and/or time associated with a TimeSeries. This identifies the date and/or time of the start of the unavailability being described in the time series.
7	[1..1]	end_DateAndOrTime.date Date	Date as "yyyy-mm-dd", which conforms with ISO 8601. --- An end date and/or time associated with a TimeSeries. This identifies the date and/or time of the end of the unavailability being described in the time series.
8	[1..1]	end_DateAndOrTime.time Time	Time as "hh:mm:ss.sssZ", which conforms with ISO 8601. --- An end date and/or time associated with a TimeSeries. This identifies the date and/or time of the end of the unavailability being described in the time series.
9	[1..1]	quantity_Measure_Unit.name MeasurementUnitKind_String	Identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.
10	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
11	[0..1]	production_RegisteredResource.mRID ResourceID_String	The unique identification of a production unit resource. --- Characteristics of a production unit affected by the unavailability.
12	[0..1]	production_RegisteredResource.name String	The name is any free human readable and possibly non unique text naming the production unit. --- Characteristics of a production unit affected by the unavailability.

Order	mult.	Attribute name / Attribute type	Description
13	[0..1]	production_RegisteredResource.location.name String	The name is any free human readable and possibly non unique text naming the object. --- Characteristics of a production unit affected by the unavailability. --- The identification of the location of the production unit.
14	[0..1]	production_RegisteredResource.pSRtype.psrType PsrType_String	The coded type of a power system resource. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit.
15	[0..1]	production_RegisteredResource.pSRtype.powerSystemResources.mRID ResourceID_String	The unique identification of a generation unit. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit. --- The generation unit dependent on a given type.
16	[0..1]	production_RegisteredResource.pSRtype.powerSystemResources.name String	The name of the generation unit. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit. --- The generation unit dependent on a given type.
17	[0..1]	production_RegisteredResource.pSRtype.powerSystemResources.nominalP ESMP_ActivePower	The nominal power of the object in question. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit. --- The generation unit dependent on a given type.

149

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

151 **Table 11 - Association ends of Outage assembly model::TimeSeries with other classes**

Order	mult.	Class name / Role	Description
18	[0..*]	Asset_RegisteredResource Asset_RegisteredResource	The identification of an asset. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Asset_RegisteredResource.Asset_RegisteredResource[0..*]
19	[0..*]	Series_Period Available_Period	The time interval and resolution of available capacity for a period associated with a TimeSeries. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Series_Period.Available_Period[0..*]

Order	mult.	Class name / Role	Description
20	[0..*]	Series_Period WindPowerFeedin_Period	The time interval and resolution for a period associated with windpower feedin. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Series_Period.WindPowerFeedin_Period[0..*]
21	[0..*]	Reason Reason	The reason information associated with a TimeSeries providing motivation information. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Reason.Reason[0..*]

152

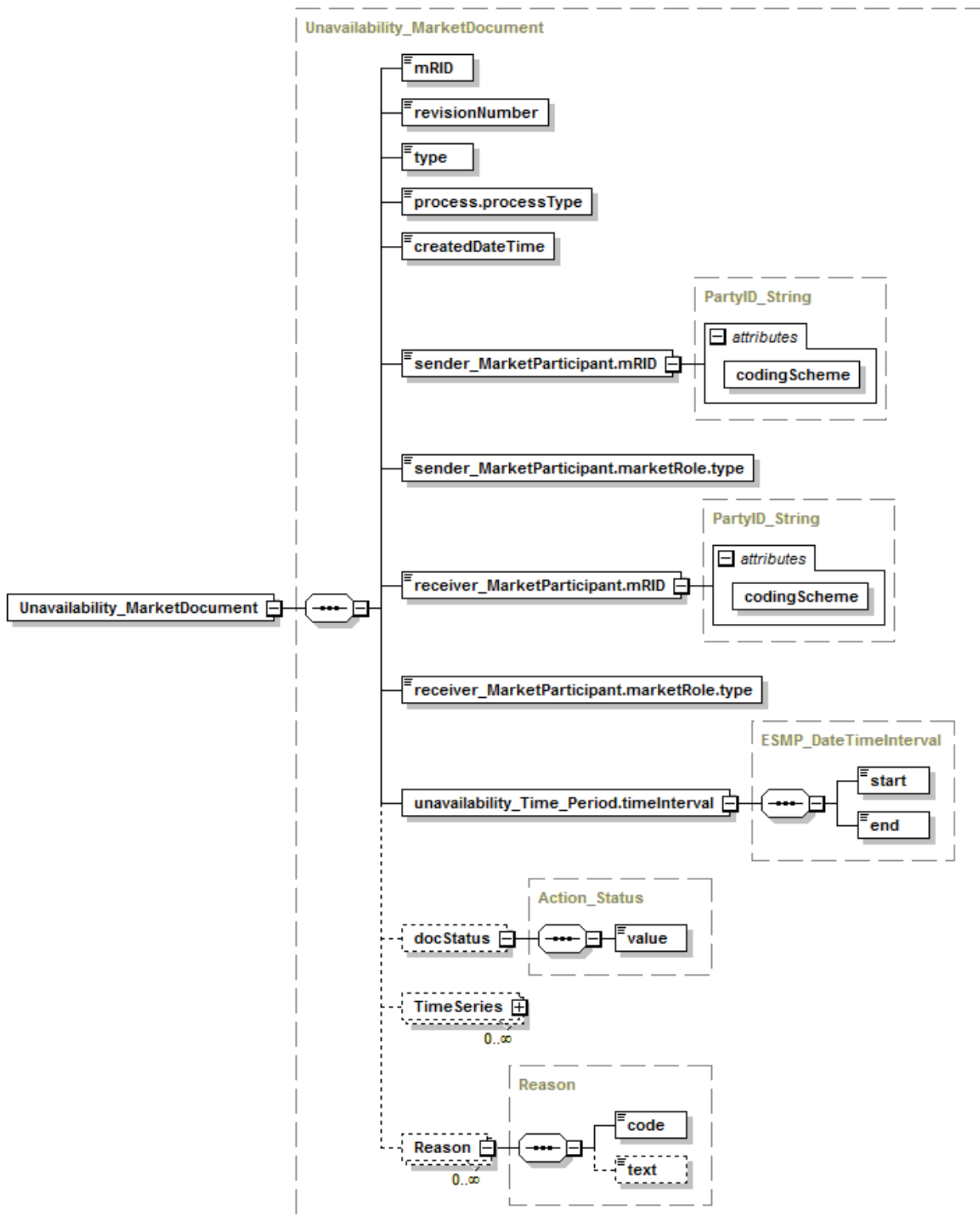
153 2.2.4 Datatypes

154 The list of datatypes used for the Outage assembly model is as follows:

- 155 • Action_Status compound
- 156 • ESMP_DateTimeInterval compound
- 157 • AreaID_String datatype, codelist CodingSchemeTypeList
- 158 • BusinessKind_String datatype, codelist BusinessTypeList
- 159 • CurveType_String datatype, codelist CurveTypeList
- 160 • ESMP_ActivePower datatype
- 161 • ESMP_DateTime datatype
- 162 • ESMPVersion_String datatype
- 163 • ID_String datatype
- 164 • MarketRoleKind_String datatype, codelist RoleTypeList
- 165 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 166 • MessageKind_String datatype, codelist MessageTypeList
- 167 • PartyID_String datatype, codelist CodingSchemeTypeList
- 168 • Position_Integer datatype
- 169 • ProcessKind_String datatype, codelist ProcessTypeList
- 170 • PsrType_String datatype, codelist AssetTypeList
- 171 • ReasonCode_String datatype, codelist ReasonCodeTypeList
- 172 • ReasonText_String datatype
- 173 • ResourceID_String datatype, codelist CodingSchemeTypeList
- 174 • Status_String datatype, codelist StatusTypeList
- 175 • UnitSymbol datatype, codelist UnitSymbol
- 176 • YMDHM_DateTime datatype

177 **2.2.5 Unavailability_MarketDocument XML schema structure**

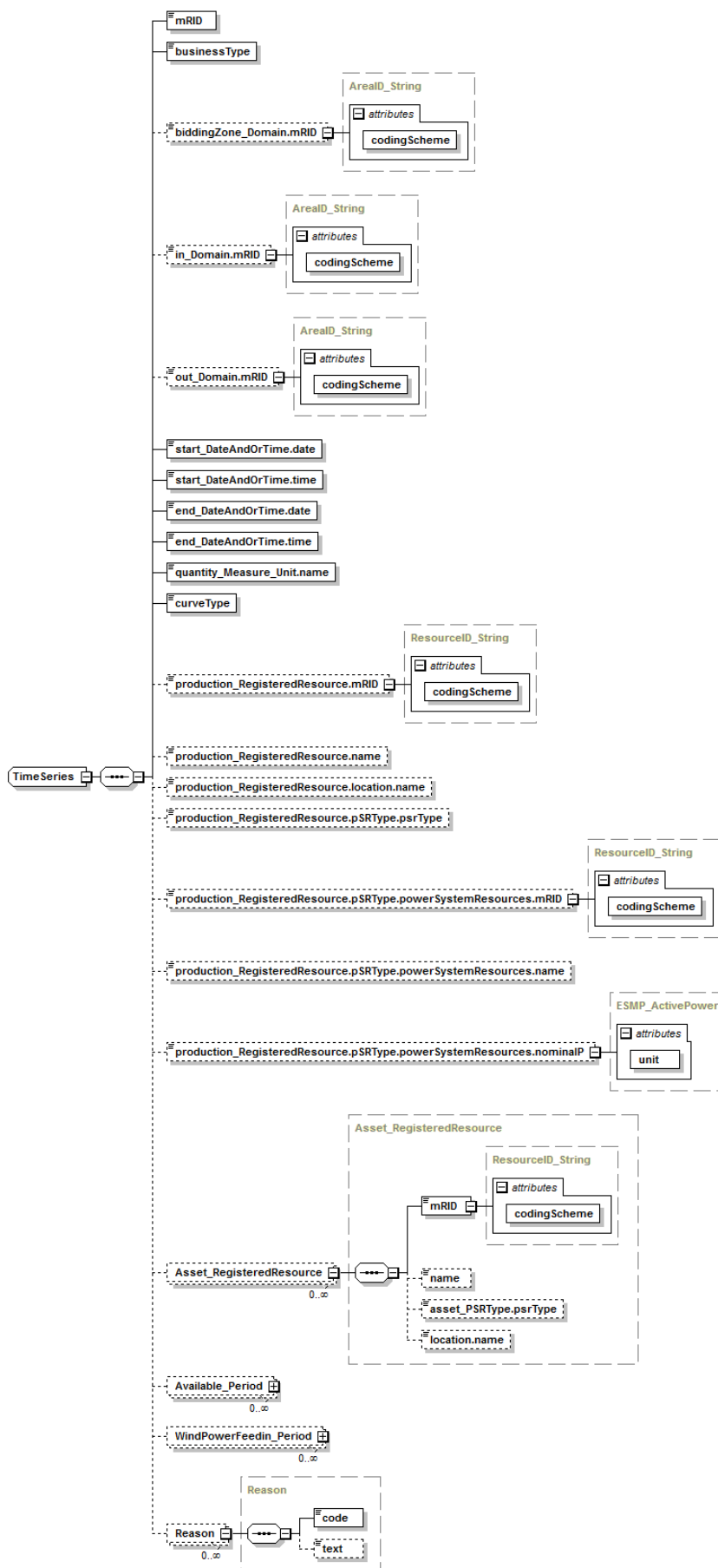
178 Figure 3 to Figure 5 provide the structure of the schema.



179

180

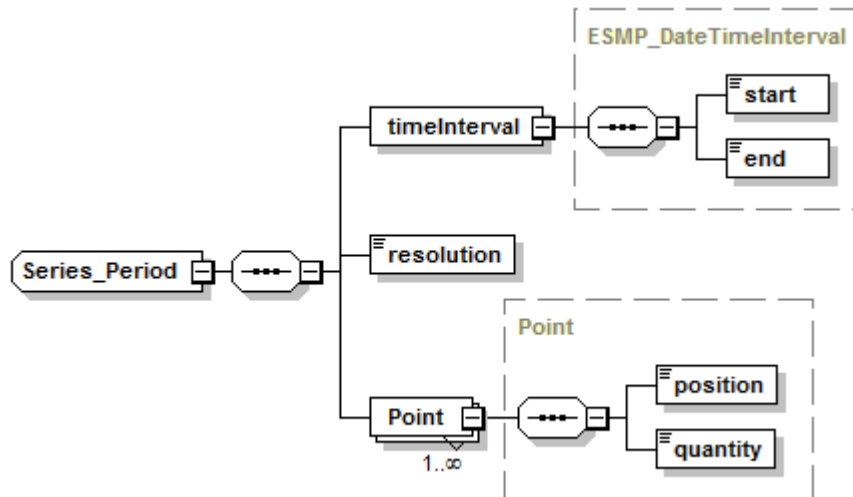
Figure 3 - Unavailability_MarketDocument schema structure 1/3



181

182

Figure 4 - Unavailability_MarketDocument schema structure 2/3



183

184

Figure 5 - Unavailability_MarketDocument schema structure 3/3

185 **2.2.6 Unavailability_MarketDocument XML schema**

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

187 urn:iec62325.351:tc57wg16:451-6:outagedocument: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 6:outagedocument:4:0" xmlns:cimp="http://www.iec.ch/cimprofile"
192 attributeFormDefault="unqualified" elementFormDefault="qualified"
193 targetNamespace="urn:iec62325.351:tc57wg16:451-6:outagedocument: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="Unavailability_MarketDocument"
198   type="Unavailability_MarketDocument" />
199   <xs:simpleType name="ResourceID_String-base"
200   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
201     <xs:restriction base="xs:string">
202       <xs:maxLength value="60" />
203     </xs:restriction>
204   </xs:simpleType>
205   <xs:complexType name="ResourceID_String"
206   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
207     <xs:simpleContent>
208       <xs:extension base="ResourceID_String-base">
209         <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
210         use="required" />
211       </xs:extension>
212     </xs:simpleContent>
213   </xs:complexType>
214   <xs:simpleType name="PsrType_String"
215   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
216     <xs:restriction base="cl:AssetTypeList" />
217   </xs:simpleType>
218   <xs:complexType name="Asset_RegisteredResource"
219   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#RegisteredResource">
220     <xs:sequence>
221       <xs:element minOccurs="1" maxOccurs="1" name="mRID" type="ResourceID_String"
222   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
223   cim16#IdentifiedObject.mRID">
224       </xs:element>
225       <xs:element minOccurs="0" maxOccurs="1" name="name" type="xs:string"
226   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
227   cim16#IdentifiedObject.name">
228       </xs:element>

```

```

229         <xs:element minOccurs="0" maxOccurs="1" name="asset_PSRType.psrType"
230 type="PsrType_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
231 cim16#MktPSRType.psrType">
232         </xs:element>
233         <xs:element minOccurs="0" maxOccurs="1" name="location.name" type="xs:string"
234 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
235 cim16#IdentifiedObject.name">
236         </xs:element>
237     </xs:sequence>
238 </xs:complexType>
239 <xs:simpleType name="Position_Integer"
240 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
241     <xs:restriction base="xs:integer">
242         <xs:maxInclusive value="999999" />
243         <xs:minInclusive value="1" />
244     </xs:restriction>
245 </xs:simpleType>
246 <xs:complexType name="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
247 schema-cim16#Point">
248     <xs:sequence>
249         <xs:element minOccurs="1" maxOccurs="1" name="position" type="Position_Integer"
250 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.position">
251         </xs:element>
252         <xs:element minOccurs="1" maxOccurs="1" name="quantity" type="xs:decimal"
253 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.quantity">
254         </xs:element>
255     </xs:sequence>
256 </xs:complexType>
257 <xs:simpleType name="ReasonCode_String"
258 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
259     <xs:restriction base="cl:ReasonCodeTypeList" />
260 </xs:simpleType>
261 <xs:simpleType name="ReasonText_String"
262 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
263     <xs:restriction base="xs:string">
264         <xs:maxLength value="512" />
265     </xs:restriction>
266 </xs:simpleType>
267 <xs:complexType name="Reason" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
268 schema-cim16#Reason">
269     <xs:sequence>
270         <xs:element minOccurs="1" maxOccurs="1" name="code" type="ReasonCode_String"
271 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.code">
272         </xs:element>
273         <xs:element minOccurs="0" maxOccurs="1" name="text" type="ReasonText_String"
274 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.text">
275         </xs:element>
276     </xs:sequence>
277 </xs:complexType>
278 <xs:simpleType name="YMDHM_DateTime"
279 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
280     <xs:restriction base="xs:string">
281         <xs:pattern value="((( [0-9]{4} ) [ \- ] ( 0 [13578] | 1 [02] ) [ \- ] ( 0 [1-9] | [12] [0-
282 9] | 3 [01] ) | ( [0-9]{4} ) [ \- ] ( ( 0 [469] ) | ( 11 ) ) [ \- ] ( 0 [1-9] | [12] [0-9] | 30 ) ) T ( ( [01] [0-9] | 2 [0-
283 3] ) : [0-5] [0-
284 9] ) Z ) | ( ( [13579] [26] [02468] [048] | [13579] [01345789] ( 0 ) [48] | [13579] [01345789] [2468] [048]
285 | [02468] [048] [02468] [048] | [02468] [1235679] ( 0 ) [48] | [02468] [1235679] [2468] [048] | [0-
286 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-
287 9] ) Z ) | ( ( [13579] [26] [02468] [1235679] | [13579] [01345789] ( 0 ) [01235679] | [13579] [01345789] [
288 2468] [1235679] | [02468] [048] [02468] [1235679] | [02468] [1235679] ( 0 ) [01235679] | [02468] [123
289 5679] [2468] [1235679] | [0-9] [0-9] [13579] [01345789] ) [ \- ] ( 02 ) [ \- ] ( 0 [1-9] | 1 [0-9] | 2 [0-
290 8] ) T ( ( [01] [0-9] | 2 [0-3] ) : [0-5] [0-9] ) Z ) " />
291     </xs:restriction>
292 </xs:simpleType>
293 <xs:complexType name="ESMP_DateTimeInterval"
294 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
295     <xs:sequence>

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296         <xs:element minOccurs="1" maxOccurs="1" name="start" type="YMDHM_DateTime"
297 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
298 cim16#DateTimeInterval.start">
299         </xs:element>
300         <xs:element minOccurs="1" maxOccurs="1" name="end" type="YMDHM_DateTime"
301 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
302 cim16#DateTimeInterval.end">
303         </xs:element>
304     </xs:sequence>
305 </xs:complexType>
306 <xs:complexType name="Series_Period"
307 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
308     <xs:sequence>
309         <xs:element minOccurs="1" maxOccurs="1" name="timeInterval"
310 type="ESMP_DateTimeInterval" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
311 schema-cim16#Period.timeInterval">
312         </xs:element>
313         <xs:element minOccurs="1" maxOccurs="1" name="resolution" type="xs:duration"
314 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution">
315         </xs:element>
316         <xs:element minOccurs="1" maxOccurs="unbounded" name="Point" type="Point"
317 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point">
318         </xs:element>
319     </xs:sequence>
320 </xs:complexType>
321 <xs:simpleType name="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
322 schema-cim16#String">
323     <xs:restriction base="xs:string">
324         <xs:maxLength value="35" />
325     </xs:restriction>
326 </xs:simpleType>
327 <xs:simpleType name="BusinessKind_String"
328 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
329     <xs:restriction base="cl:BusinessTypeList" />
330 </xs:simpleType>
331 <xs:simpleType name="AreaID_String-base"
332 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
333     <xs:restriction base="xs:string">
334         <xs:maxLength value="18" />
335     </xs:restriction>
336 </xs:simpleType>
337 <xs:complexType name="AreaID_String"
338 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
339     <xs:simpleContent>
340         <xs:extension base="AreaID_String-base">
341             <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
342 use="required" />
343         </xs:extension>
344     </xs:simpleContent>
345 </xs:complexType>
346 <xs:simpleType name="MeasurementUnitKind_String"
347 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
348     <xs:restriction base="cl:UnitOfMeasureTypeList" />
349 </xs:simpleType>
350 <xs:simpleType name="CurveType_String"
351 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
352     <xs:restriction base="cl:CurveTypeList" />
353 </xs:simpleType>
354 <xs:simpleType name="ESMP_ActivePower-base"
355 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#ActivePower">
356     <xs:restriction base="xs:float">
357         <xs:pattern value="([0-9]*\.[0-9]*)" />
358     </xs:restriction>
359 </xs:simpleType>
360 <xs:complexType name="ESMP_ActivePower"
361 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#ActivePower">
362     <xs:simpleContent>
363         <xs:extension base="ESMP_ActivePower-base">
364             <xs:attribute fixed="MAW" name="unit" type="cl:UnitSymbol" use="required" />

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365         </xs:extension>
366     </xs:simpleContent>
367 </xs:complexType>
368 <xs:complexType name="TimeSeries"
369 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
370     <xs:sequence>
371         <xs:element minOccurs="1" maxOccurs="1" name="mRID" type="ID_String"
372 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
373 cim16#IdentifiedObject.mRID">
374         </xs:element>
375         <xs:element minOccurs="1" maxOccurs="1" name="businessType"
376 type="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
377 cim16#TimeSeries.businessType">
378         </xs:element>
379         <xs:element minOccurs="0" maxOccurs="1" name="biddingZone_Domain.mRID"
380 type="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
381 cim16#IdentifiedObject.mRID">
382         </xs:element>
383         <xs:element minOccurs="0" maxOccurs="1" name="in_Domain.mRID"
384 type="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
385 cim16#IdentifiedObject.mRID">
386         </xs:element>
387         <xs:element minOccurs="0" maxOccurs="1" name="out_Domain.mRID"
388 type="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
389 cim16#IdentifiedObject.mRID">
390         </xs:element>
391         <xs:element minOccurs="1" maxOccurs="1" name="start_DateAndOrTime.date"
392 type="xs:date" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
393 cim16#DateAndOrTime.date">
394         </xs:element>
395         <xs:element minOccurs="1" maxOccurs="1" name="start_DateAndOrTime.time"
396 type="xs:time" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
397 cim16#DateAndOrTime.time">
398         </xs:element>
399         <xs:element minOccurs="1" maxOccurs="1" name="end_DateAndOrTime.date"
400 type="xs:date" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
401 cim16#DateAndOrTime.date">
402         </xs:element>
403         <xs:element minOccurs="1" maxOccurs="1" name="end_DateAndOrTime.time"
404 type="xs:time" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
405 cim16#DateAndOrTime.time">
406         </xs:element>
407         <xs:element minOccurs="1" maxOccurs="1" name="quantity_Measure_Unit.name"
408 type="MeasurementUnitKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
409 schema-cim16#Unit.name">
410         </xs:element>
411         <xs:element minOccurs="1" maxOccurs="1" name="curveType"
412 type="CurveType_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
413 cim16#TimeSeries.curveType">
414         </xs:element>
415         <xs:element minOccurs="0" maxOccurs="1"
416 name="production_RegisteredResource.mRID" type="ResourceID_String"
417 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
418 cim16#IdentifiedObject.mRID">
419         </xs:element>
420         <xs:element minOccurs="0" maxOccurs="1"
421 name="production_RegisteredResource.name" type="xs:string"
422 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
423 cim16#IdentifiedObject.name">
424         </xs:element>
425         <xs:element minOccurs="0" maxOccurs="1"
426 name="production_RegisteredResource.location.name" type="xs:string"
427 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
428 cim16#IdentifiedObject.name">
429         </xs:element>
430         <xs:element minOccurs="0" maxOccurs="1"
431 name="production_RegisteredResource.psrType.psrType" type="PsrType_String"
432 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MktPsrType.psrType">
433         </xs:element>

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434     <xs:element minOccurs="0" maxOccurs="1"
435 name="production_RegisteredResource.pSRType.powerSystemResources.mRID"
436 type="ResourceID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
437 cim16#IdentifiedObject.mRID">
438     </xs:element>
439     <xs:element minOccurs="0" maxOccurs="1"
440 name="production_RegisteredResource.pSRType.powerSystemResources.name"
441 type="xs:string" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
442 cim16#IdentifiedObject.name">
443     </xs:element>
444     <xs:element minOccurs="0" maxOccurs="1"
445 name="production_RegisteredResource.pSRType.powerSystemResources.nominalP"
446 type="ESMP_ActivePower" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
447 cim16#GeneratingUnit.nominalP">
448     </xs:element>
449     <xs:element minOccurs="0" maxOccurs="unbounded" name="Asset_RegisteredResource"
450 type="Asset_RegisteredResource" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
451 schema-cim16#TimeSeries.Asset_RegisteredResource">
452     </xs:element>
453     <xs:element minOccurs="0" maxOccurs="unbounded" name="Available_Period"
454 type="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
455 cim16#TimeSeries.Available_Period">
456     </xs:element>
457     <xs:element minOccurs="0" maxOccurs="unbounded" name="WindPowerFeedin_Period"
458 type="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
459 cim16#TimeSeries.WindPowerFeedin_Period">
460     </xs:element>
461     <xs:element minOccurs="0" maxOccurs="unbounded" name="Reason" type="Reason"
462 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.Reason">
463     </xs:element>
464 </xs:sequence>
465 </xs:complexType>
466 <xs:simpleType name="ESMPVersion_String"
467 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
468     <xs:restriction base="xs:string">
469         <xs:pattern value="[1-9]([0-9]){0,2}" />
470     </xs:restriction>
471 </xs:simpleType>
472 <xs:simpleType name="MessageKind_String"
473 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
474     <xs:restriction base="cl:MessageTypeList" />
475 </xs:simpleType>
476 <xs:simpleType name="ProcessKind_String"
477 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
478     <xs:restriction base="cl:ProcessTypeList" />
479 </xs:simpleType>
480 <xs:simpleType name="ESMP_DateTime"
481 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
482     <xs:restriction base="xs:dateTime">
483         <xs:pattern value="((([0-9]{4})[\-]([013578]|1[02])[\-]([01-9]|12)[0-
484 9]|3[01])|([0-9]{4})[\-]([0469]|(11))[\-]([01-9]|12)[0-9]|30))T((([01][0-9]|2[0-
485 3]):[0-5][0-9]:[0-5][0-
486 9])Z)|(((13579)[26][02468][048]|13579)[01345789](0)[48]|13579)[01345789][2468][048]
487 |[02468][048][02468][048]|02468)[1235679](0)[48]|02468)[1235679][2468][048]|0-
488 9][0-9][13579][26])[\-](02)[\-](01-9)|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-5][0-
489 9]:[0-5][0-
490 9])Z)|(((13579)[26][02468][1235679]|13579)[01345789](0)[01235679]|13579)[01345789][
491 2468][1235679]|02468][048][02468][1235679]|02468)[1235679](0)[01235679]|02468][123
492 5679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](01-9)|1[0-9]|2[0-
493 8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)" />
494     </xs:restriction>
495 </xs:simpleType>
496 <xs:simpleType name="PartyID_String-base"
497 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
498     <xs:restriction base="xs:string">
499         <xs:maxLength value="16" />
500     </xs:restriction>
501 </xs:simpleType>

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502     <xs:complexType name="PartyID_String"
503 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
504     <xs:simpleContent>
505     <xs:extension base="PartyID_String-base">
506     <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
507 use="required" />
508     </xs:extension>
509     </xs:simpleContent>
510     </xs:complexType>
511     <xs:simpleType name="MarketRoleKind_String"
512 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
513     <xs:restriction base="cl:RoleTypeList" />
514     </xs:simpleType>
515     <xs:simpleType name="Status_String"
516 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
517     <xs:restriction base="cl:StatusTypeList" />
518     </xs:simpleType>
519     <xs:complexType name="Action_Status"
520 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status">
521     <xs:sequence>
522     <xs:element minOccurs="1" maxOccurs="1" name="value" type="Status_String"
523 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status.value">
524     </xs:element>
525     </xs:sequence>
526     </xs:complexType>
527     <xs:complexType name="Unavailability_MarketDocument"
528 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
529     <xs:sequence>
530     <xs:element minOccurs="1" maxOccurs="1" name="mRID" type="ID_String"
531 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
532 cim16#IdentifiedObject.mRID">
533     </xs:element>
534     <xs:element minOccurs="1" maxOccurs="1" name="revisionNumber"
535 type="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
536 cim16#Document.revisionNumber">
537     </xs:element>
538     <xs:element minOccurs="1" maxOccurs="1" name="type" type="MessageKind_String"
539 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type">
540     </xs:element>
541     <xs:element minOccurs="1" maxOccurs="1" name="process.processType"
542 type="ProcessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
543 cim16#Process.processType">
544     </xs:element>
545     <xs:element minOccurs="1" maxOccurs="1" name="createdDateTime"
546 type="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
547 cim16#Document.createdDateTime">
548     </xs:element>
549     <xs:element minOccurs="1" maxOccurs="1" name="sender_MarketParticipant.mRID"
550 type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
551 cim16#IdentifiedObject.mRID">
552     </xs:element>
553     <xs:element minOccurs="1" maxOccurs="1"
554 name="sender_MarketParticipant.marketRole.type" type="MarketRoleKind_String"
555 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type">
556     </xs:element>
557     <xs:element minOccurs="1" maxOccurs="1" name="receiver_MarketParticipant.mRID"
558 type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
559 cim16#IdentifiedObject.mRID">
560     </xs:element>
561     <xs:element minOccurs="1" maxOccurs="1"
562 name="receiver_MarketParticipant.marketRole.type" type="MarketRoleKind_String"
563 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type">
564     </xs:element>
565     <xs:element minOccurs="1" maxOccurs="1"
566 name="unavailability_Time_Period.timeInterval" type="ESMP_DateTimeInterval"
567 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval">
568     </xs:element>
569     <xs:element minOccurs="0" maxOccurs="1" name="docStatus" type="Action_Status"
570 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.docStatus">

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571         </xs:element>
572         <xs:element minOccurs="0" maxOccurs="unbounded" name="TimeSeries"
573 type="TimeSeries" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
574 cim16#MarketDocument.TimeSeries">
575         </xs:element>
576         <xs:element minOccurs="0" maxOccurs="unbounded" name="Reason" type="Reason"
577 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
578 cim16#MarketDocument.Reason">
579         </xs:element>
580     </xs:sequence>
581 </xs:complexType>
582 </xs:schema>
```