European Network of
Transmission System Operators
for Electricity

RESOURCE CAPACITY MARKET UNIT (RCMU) DOCUMENT UML MODEL AND SCHEMA

2021-06-01
APPROVED DOCUMENT
VERSION 1.1

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Revision History

Version	Release	Date	Comments
0	1	2020-11-09	First draft of the document.
0	2	2020-11-26	Comments from CIM EG were considered.
1	0	2020-12-15	Approved by MC.
1	1	2021-06-01	Updates in Resource Capacity Market Unit document v1.1: • Added two optional initial registration dateAndOrTime a and registration_DateAndOrTime attributes linked to Timeseries • Market participation_marketObjectStatus.status attribute was splitted in PrimaryMarketParticipation and secondaryMarket particpation status attributes. • An optional ClearanceNumber_Name attribute was added to the Timeseries • Existing PSRType attribute was renamed to technology_PSRType • A new Fuel class was linked to the Unit class with cardinality 0..* • meteringPoint_AggregateNode.mRID was replaced by MarketEvaluationPoint.mRID Approved by MC.

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1 Objective

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

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

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

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

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

2 ResourceCapacityMarketUnit_MarketDocument

2.1 ResourceCapacityMarketUnit document contextual

2.1.1 Overview of the model

Figure 1 shows the model.

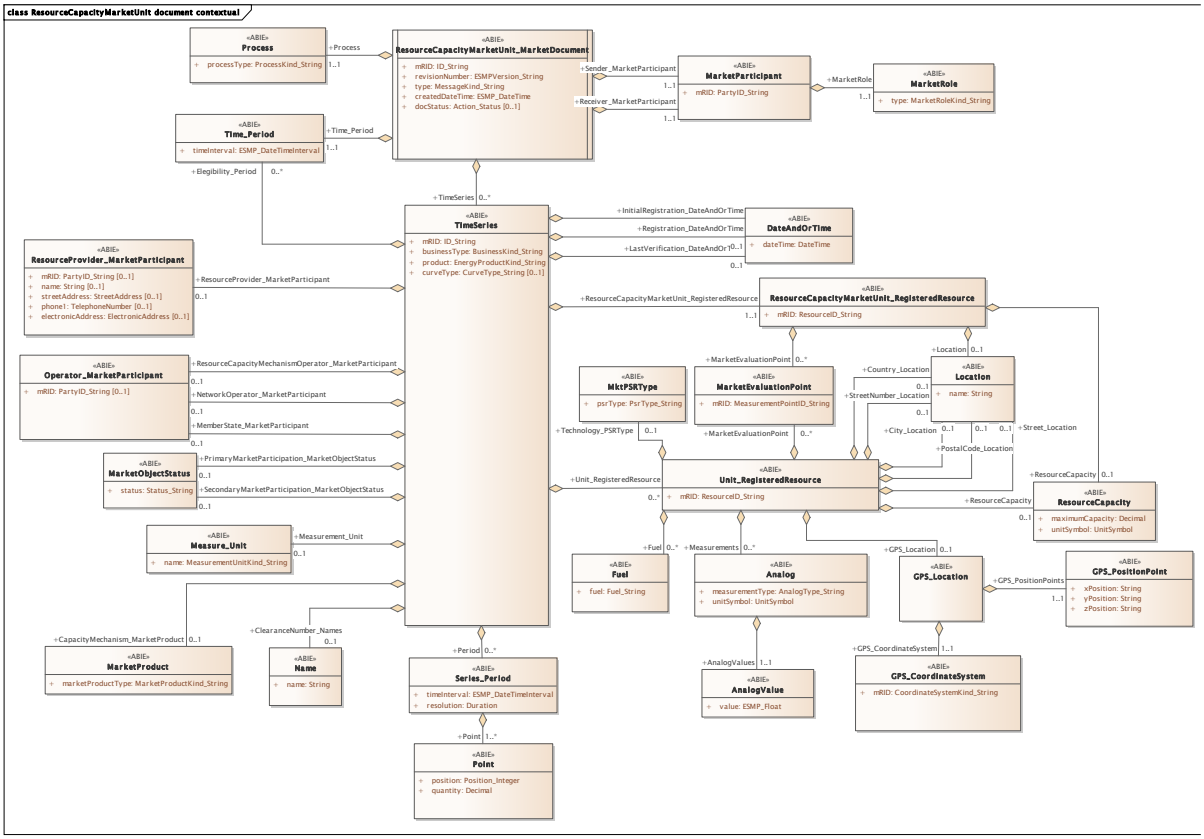

Figure 1 - ResourceCapacityMarketUnit document contextual

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107 2.1.2 IsBasedOn relationships from the European style market profile

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

110 **Table 1 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Analog	TC57CIM::IEC61970::Base::Meas::Analog
AnalogValue	TC57CIM::IEC61970::Base::Meas::AnalogValue
DateAndOrTime	TC57CIM::IEC62325::MarketManagement::DateAndOrTime
Fuel	TC57CIM::IEC62325::MarketCommon::Fuel
GPS_CoordinateSystem	TC57CIM::IEC61968::Common::CoordinateSystem
GPS_Location	TC57CIM::IEC61968::Common::Location
GPS_PositionPoint	TC57CIM::IEC61968::Common::PositionPoint
Location	TC57CIM::IEC61968::Common::Location
MarketEvaluationPoint	TC57CIM::IEC62325::MarketManagement::MarketEvaluationPoint
MarketObjectStatus	TC57CIM::IEC62325::MarketManagement::MarketObjectStatus
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketProduct	TC57CIM::IEC62325::MarketCommon::MarketProduct
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Name	TC57CIM::IEC61970::Base::Core::Name
Operator_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
ResourceCapacity	TC57CIM::IEC62325::MarketCommon::ResourceCapacity
ResourceCapacityMarketUnit_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
ResourceCapacityMarketUnit_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
ResourceProvider_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Unit_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource

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2.2 ResourceCapacityMarketUnit document assembly

2.2.1 Overview of the model

Figure 2 shows the model.

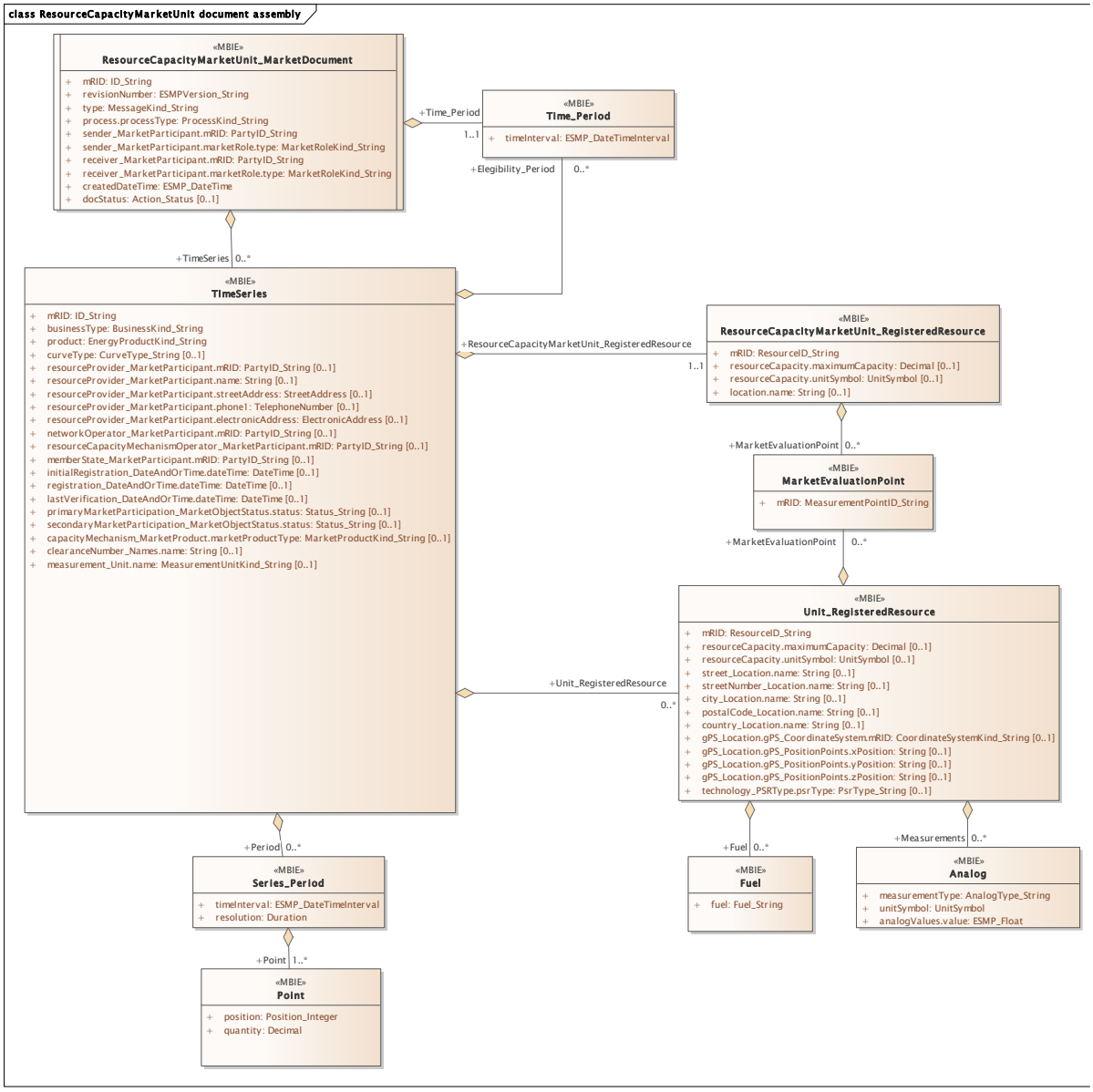

Figure 2 - ResourceCapacityMarketUnit document assembly

2.2.2 IsBasedOn relationships from the European style market profile

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

Table 2 - IsBasedOn dependency

Name	Complete IsBasedOn Path
Analog	TC57CIM::IEC61970::Base::Meas::Analog
Fuel	TC57CIM::IEC62325::MarketCommon::Fuel
MarketEvaluationPoint	TC57CIM::IEC62325::MarketManagement::MarketEvaluationPoint
Point	TC57CIM::IEC62325::MarketManagement::Point
ResourceCapacityMarketUnit_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
ResourceCapacityMarketUnit_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Unit_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource

2.2.3 Detailed ResourceCapacityMarketUnit document assembly

2.2.3.1 ResourceCapacityMarketUnit_MarketDocument root class

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

Table 3 shows all attributes of ResourceCapacityMarketUnit_MarketDocument.

Table 3 - Attributes of ResourceCapacityMarketUnit document assembly::ResourceCapacityMarketUnit_MarketDocument

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	The unique identification of the document being exchanged within a business process flow.
1	[1..1]	revisionNumber ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.
2	[1..1]	type MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.
3	[1..1]	process.processType ProcessKind_String	The identification of the nature of process that the document addresses. --- The Process associated with an electronic document header that is valid for the whole document.
4	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document owner --- The MarketParticipant associated with an electronic document header.
5	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The MarketParticipant associated with an electronic document header. --- The role associated with a MarketParticipant.

Order	mult.	Attribute name / Attribute type	Description
6	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient --- The MarketParticipant associated with an electronic document header.
7	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The MarketParticipant associated with an electronic document header. --- The role associated with a MarketParticipant.
8	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
10	[0..1]	docStatus Action_Status	The identification of the condition or position of the document with regard to its standing.

Table 4 shows all association ends of ResourceCapacityMarketUnit_MarketDocument with other classes.

Table 4 - Association ends of ResourceCapacityMarketUnit document assembly::ResourceCapacityMarketUnit_MarketDocument with other classes

Order	mult.	Class name / Role	Description
9	[1..1]	Time_Period Time_Period	The time interval that is associated with an electronic document and which is valid for the whole document. Association Based On: ResourceCapacityMarketUnit document contextual::Time_Period.Time_Period[1..1] ----- ResourceCapacityMarketUnit document contextual::ResourceCapacityMarketUnit_MarketDocument.[]
11	[0..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: ResourceCapacityMarketUnit document contextual::TimeSeries.TimeSeries[0..*] ----- ResourceCapacityMarketUnit document contextual::ResourceCapacityMarketUnit_MarketDocument.[]

2.2.3.2 Analog

Analog represents an analog Measurement.

Table 5 shows all attributes of Analog.

Table 5 - Attributes of ResourceCapacityMarketUnit document assembly::Analog

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	measurementType AnalogType_String	Specifies the type of measurement. For example, this specifies if the measurement represents an indoor temperature, outdoor temperature, bus voltage, line flow, etc.
1	[1..1]	unitSymbol UnitSymbol	The unit of measure of the measured quantity.
2	[1..1]	analogValues.value ESMP_Float	The value to supervise. --- Measurement to which this value is connected.

2.2.3.3 Fuel

A class indicating the origin of the fuel used at the related object.

Table 6 shows all attributes of Fuel.

Table 6 - Attributes of ResourceCapacityMarketUnit document assembly::Fuel

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	fuel Fuel_String	An indication of the fuel used for the energy production, or part of the energy production, that is potentially fed into the grid at the related object.

2.2.3.4 MarketEvaluationPoint

The location where one or more products are measured. This may be a physical or virtual location.

Table 7 shows all attributes of MarketEvaluationPoint.

Table 7 - Attributes of ResourceCapacityMarketUnit document assembly::MarketEvaluationPoint

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID MeasurementPointID_String	A unique identification of the measurement point. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.

2.2.3.5 Point

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

Table 8 shows all attributes of Point.

Table 8 - Attributes of ResourceCapacityMarketUnit document assembly::Point

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	position Position_Integer	A sequential value representing the relative position within a given time interval.
1	[1..1]	quantity Decimal	The principal quantity identified for a point.

2.2.3.6 ResourceCapacityMarketUnit_RegisteredResource

A resource that is registered through the market participant registration system. Examples include generating unit, load, and non-physical generator or load.

Table 9 shows all attributes of ResourceCapacityMarketUnit_RegisteredResource.

Table 9 - Attributes of ResourceCapacityMarketUnit document assembly::ResourceCapacityMarketUnit_RegisteredResource

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ResourceID_String	The unique identification of a resource. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.
1	[0..1]	resourceCapacity.maximumCapacity Decimal	The maximum capacity.
2	[0..1]	resourceCapacity.unitSymbol UnitSymbol	Unit selection for the capacity values.
3	[0..1]	location.name String	The name is any free human readable and possibly non unique text naming the object. --- Location of this power system resource.

Table 10 shows all association ends of ResourceCapacityMarketUnit_RegisteredResource with other classes.

Table 10 - Association ends of ResourceCapacityMarketUnit document assembly::ResourceCapacityMarketUnit_RegisteredResource with other classes

Order	mult.	Class name / Role	Description
4	[0..*]	MarketEvaluationPoint MarketEvaluationPoint	Association Based On: ResourceCapacityMarketUnit document contextual::MarketEvaluationPoint.MarketEvaluationPoint[0..*] ----- ResourceCapacityMarketUnit document contextual::ResourceCapacityMarketUnit_RegisteredResource.[]

2.2.3.7 Series_Period

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

Table 11 shows all attributes of Series_Period.

Table 11 - Attributes of ResourceCapacityMarketUnit document assembly::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.

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

Table 12 - Association ends of ResourceCapacityMarketUnit document assembly::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: ResourceCapacityMarketUnit document contextual::Point.Point[1..*] --- ResourceCapacityMarketUnit document contextual::Series_Period.[]

2.2.3.8 Time_Period

The identification of a time interval or a duration.

Table 13 shows all attributes of Time_Period.

Table 13 - Attributes of ResourceCapacityMarketUnit document assembly::Time_Period

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval.

2.2.3.9 TimeSeries

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

In the ESMP profile, the TimeSeries provides not only time-ordered quantities but also time-ordered information.

Table 14 shows all attributes of TimeSeries.

Table 14 - Attributes of ResourceCapacityMarketUnit document assembly::TimeSeries

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series. In the ESMP context, the "model authority" is defined as a party (originator of the exchange) that provides a unique identification in the context of a business exchange such as time series identification, bid identification, ... Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.
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.
4	[0..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.

Order	mult.	Attribute name / Attribute type	Description
5	[0..1]	resourceProvider_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- The identification of a market participant associated with a TimeSeries.
6	[0..1]	resourceProvider_MarketParticipant.name String	The name is any free human readable and possibly non unique text naming the object. --- The identification of a market participant associated with a TimeSeries.
7	[0..1]	resourceProvider_MarketParticipant.streetAddress StreetAddress	Street address. --- The identification of a market participant associated with a TimeSeries.
8	[0..1]	resourceProvider_MarketParticipant.phone1 TelephoneNumber	Phone number. --- The identification of a market participant associated with a TimeSeries.
9	[0..1]	resourceProvider_MarketParticipant.electronicAddress ElectronicAddress	Electronic address. --- The identification of a market participant associated with a TimeSeries.
10	[0..1]	networkOperator_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- The identification of a market participant associated with a TimeSeries.

Order	mult.	Attribute name / Attribute type	Description
11	[0..1]	resourceCapacityMechanismOperator_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- The identification of a market participant associated with a TimeSeries.
12	[0..1]	memberState_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- The identification of a market participant associated with a TimeSeries.
13	[0..1]	initialRegistration_DateAndOrTime.dateTime DateTime	Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ. --- A date and/or time associated with a TimeSeries.
14	[0..1]	registration_DateAndOrTime.dateTime DateTime	Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ. --- A date and/or time associated with a TimeSeries.
15	[0..1]	lastVerification_DateAndOrTime.dateTime DateTime	Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ. --- A date and/or time associated with a TimeSeries.
16	[0..1]	primaryMarketParticipation_MarketObjectStatus.status Status_String	The coded condition or position of an object with regard to its standing. --- The status of an object associated with a TimeSeries.
17	[0..1]	secondaryMarketParticipation_MarketObjectStatus.status Status_String	The coded condition or position of an object with regard to its standing. --- The status of an object associated with a TimeSeries.
18	[0..1]	capacityMechanism_MarketProduct.marketProductType MarketProductKind_String	The Type of product on a market view

Order	mult.	Attribute name / Attribute type	Description
19	[0..1]	clearanceNumber_Names.name String	Any free text that name the object. --- All names of this identified object.
20	[0..1]	measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.

194

195 Table 15 shows all association ends of TimeSeries with other classes.

196 **Table 15 - Association ends of ResourceCapacityMarketUnit document**
197 **assembly::TimeSeries with other classes**

Order	mult.	Class name / Role	Description
3	[1..1]	ResourceCapacityMarketUnit_RegisteredResource ResourceCapacityMarketUnit_RegisteredResource	The identification of a resource associated with a TimeSeries. Association Based On: ResourceCapacityMarketUnit document contextual::ResourceCapacityMarketUnit_RegisteredResource.ResourceCapacityMarketUnit_RegisteredResource[1..1] ----- ResourceCapacityMarketUnit document contextual::TimeSeries.[]
21	[0..*]	Unit_RegisteredResource Unit_RegisteredResource	The identification of a resource associated with a TimeSeries. Association Based On: ResourceCapacityMarketUnit document contextual::Unit_RegisteredResource.Unit_RegisteredResource[0..*] ----- ResourceCapacityMarketUnit document contextual::TimeSeries.[]
22	[0..*]	Time_Period Elegibility_Period	The time interval associated with a TimeSeries within an electronic document. Association Based On: ResourceCapacityMarketUnit document contextual::TimeSeries.[] ----- ResourceCapacityMarketUnit document contextual::Time_Period.Elegibility_Period[0..*]
23	[0..*]	Series_Period Period	The time interval and resolution for a period associated with a TimeSeries. Association Based On: ResourceCapacityMarketUnit document contextual::Series_Period.Period[0..*] ----- ResourceCapacityMarketUnit document contextual::TimeSeries.[]

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199 #### 2.2.3.10 Unit_RegisteredResource

200 A resource that is registered through the market participant registration system. Examples
201 include generating unit, load, and non-physical generator or load.

202 Table 16 shows all attributes of Unit_RegisteredResource.

203 **Table 16 - Attributes of ResourceCapacityMarketUnit document**
204 **assembly::Unit_RegisteredResource**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ResourceID_String	The unique identification of a resource. In the ESMP context, the "model authority" is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.
1	[0..1]	resourceCapacity.maximumCapacity Decimal	The maximum capacity.
2	[0..1]	resourceCapacity.unitSymbol UnitSymbol	Unit selection for the capacity values.
3	[0..1]	street_Location.name String	The name is any free human readable and possibly non unique text naming the object. --- Location of this power system resource.
4	[0..1]	streetNumber_Location.name String	The name is any free human readable and possibly non unique text naming the object. --- Location of this power system resource.
5	[0..1]	city_Location.name String	The name is any free human readable and possibly non unique text naming the object. --- Location of this power system resource.
6	[0..1]	postalCode_Location.name String	The name is any free human readable and possibly non unique text naming the object. --- Location of this power system resource.
7	[0..1]	country_Location.name String	The name is any free human readable and possibly non unique text naming the object. --- Location of this power system resource.
8	[0..1]	gPS_Location.gPS_CoordinateSystem.mRID CoordinateSystemKind_String	The identification of a type of coordinate system. Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID, as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended. For CIMXML data files in RDF syntax conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- Location of this power system resource. --- Coordinate system used to describe position points of this location.
9	[0..1]	gPS_Location.gPS_PositionPoints.xPosition String	X axis position. --- Location of this power system resource. --- Sequence of position points describing this location, expressed in coordinate system 'Location.CoordinateSystem'.
10	[0..1]	gPS_Location.gPS_PositionPoints.yPosition String	Y axis position. --- Location of this power system resource. --- Sequence of position points describing this location, expressed in coordinate system 'Location.CoordinateSystem'.
11	[0..1]	gPS_Location.gPS_PositionPoints.zPosition String	(if applicable) Z axis position. --- Location of this power system resource. --- Sequence of position points describing this location, expressed in coordinate system 'Location.CoordinateSystem'.

Order	mult.	Attribute name / Attribute type	Description
12	[0..1]	technology_PSRType.psrType PsrType_String	The coded type of a power system resource. --- The identification of the type of resource associated with this RegisteredResource.

205

206 Table 17 shows all association ends of Unit_RegisteredResource with other classes.

207 **Table 17 - Association ends of ResourceCapacityMarketUnit document**
208 **assembly::Unit_RegisteredResource with other classes**

Order	mult.	Class name / Role	Description
13	[0..*]	Fuel Fuel	Association Based On: ResourceCapacityMarketUnit document contextual::Fuel.Fuel[0..*] ----- ResourceCapacityMarketUnit document contextual::Unit_RegisteredResource.[]
14	[0..*]	Analog Measurements	The power system resource that contains the measurement. Association Based On: ResourceCapacityMarketUnit document contextual::Analog.Measurements[0..*] ----- ResourceCapacityMarketUnit document contextual::Unit_RegisteredResource.[]
15	[0..*]	MarketEvaluationPoint MarketEvaluationPoint	Association Based On: ResourceCapacityMarketUnit document contextual::MarketEvaluationPoint.MarketEvaluationPoint[0..*] ----- ResourceCapacityMarketUnit document contextual::Unit_RegisteredResource.[]

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210 ### 2.2.4 Datatypes

211 The list of datatypes used for the ResourceCapacityMarketUnit document assembly is as
212 follows:

213 • Action_Status compound
214 • ElectronicAddress compound
215 • ESMP_DateTimeInterval compound
216 • StreetAddress compound
217 • StreetDetail compound
218 • TelephoneNumber compound
219 • TownDetail compound
220 • AnalogType_String datatype, codelist AnalogTypeList
221 • BusinessKind_String datatype, codelist BusinessTypeList
222 • Characters10_String datatype
223 • Characters15_String datatype
224 • Characters2_String datatype
225 • Characters35_String datatype
226 • Characters70_String datatype
227 • CoordinateSystemKind_String datatype, codelist CoordinateSystemTypeList
228 • CurveType_String datatype, codelist CurveTypeList
229 • EnergyProductKind_String datatype, codelist EnergyProductTypeList
230 • ESMP_DateTime datatype
231 • ESMP_Float datatype
232 • ESMPVersion_String datatype
233 • Fuel_String datatype, codelist FuelTypeList
234 • ID_String datatype
235 • MarketProductKind_String datatype, codelist MarketProductTypeList
236 • MarketRoleKind_String datatype, codelist RoleTypeList
237 • MeasurementPointID_String datatype, codelist CodingSchemeTypeList

- MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- MessageKind_String datatype, codelist MessageTypeList
- PartyID_String datatype, codelist CodingSchemeTypeList
- Position_Integer datatype
- ProcessKind_String datatype, codelist ProcessTypeList
- PsrType_String datatype, codelist AssetTypeList
- ResourceID_String datatype, codelist CodingSchemeTypeList
- Status_String datatype, codelist StatusTypeList
- UnitSymbol datatype, codelist UnitSymbol
- YMDHM_DateTime datatype

2.2.5 ResourceCapacityMarketUnit_MarketDocument XML schema structure

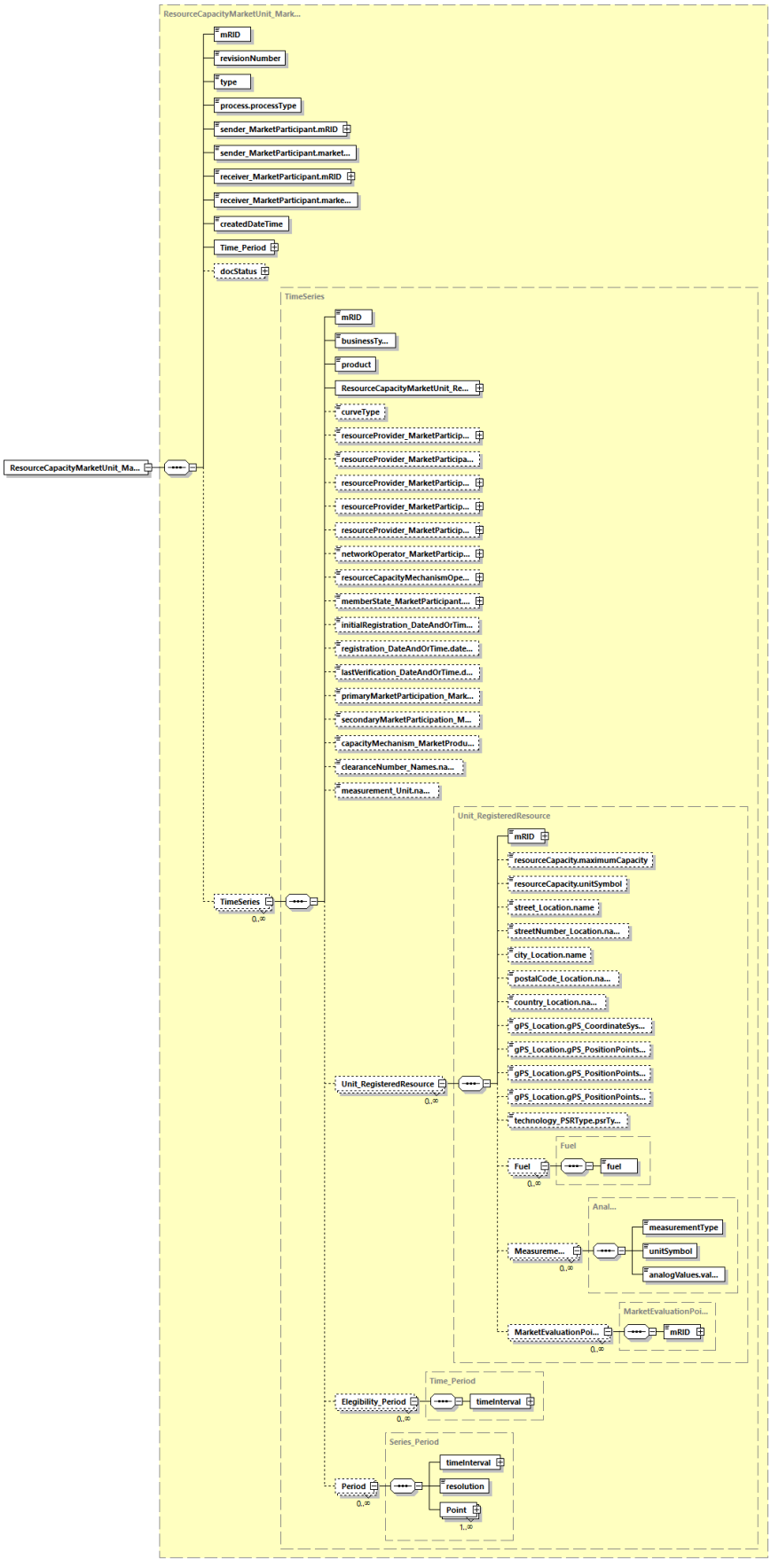

Figure 3 – ResourceCapacityMarketUnit_MarketDocument schema structure

2.2.6 ResourceCapacityMarketUnit_MarketDocument XML schema

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

urn:iec62325.351:tc57wg16:451-n:resourcecapacitymarketunitdocument:1:1

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
xmlns="urn:iec62325.351:tc57wg16:451-n:resourcecapacitymarketunitdocument:1:1"
xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns:cimp="http://www.iec.ch/cimprofile"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:iec62325.351:tc57wg16:451-
n:resourcecapacitymarketunitdocument:1:1" elementFormDefault="qualified"
attributeFormDefault="unqualified">
	<xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
entsoe-eu-wgedi-codelists.xsd"/>
	<xs:element name="ResourceCapacityMarketUnit_MarketDocument"
type="ResourceCapacityMarketUnit_MarketDocument"/>
	<xs:simpleType name="AnalogType_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="ecl:AnalogTypeList"/>
	</xs:simpleType>
	<xs:simpleType name="UnitSymbol"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#UnitSymbol">
		<xs:restriction base="ecl:UnitSymbol"/>
	</xs:simpleType>
	<xs:simpleType name="ESMP_Float"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Float">
		<xs:restriction base="xs:float">
			<xs:pattern value="([0-9]*\.?[0-9]*)"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:complexType name="Analog"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Analog">
		<xs:sequence>
			<xs:element name="measurementType" type="AnalogType_String"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Measurement.measurementType"/>
			<xs:element name="unitSymbol" type="UnitSymbol" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Measurement.unitSymbol"/>
			<xs:element name="analogValues.value" type="ESMP_Float"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#AnalogValue.value"/>
		</xs:sequence>
	</xs:complexType>
	<xs:simpleType name="Fuel_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Fuel_String">
		<xs:restriction base="ecl:FuelTypeList"/>
	</xs:simpleType>
	<xs:complexType name="Fuel"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Fuel">
		<xs:sequence>
			<xs:element name="fuel" type="Fuel_String" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Fuel.fuel"/>
		</xs:sequence>
	</xs:complexType>
```

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309         <xs:simpleType name="MeasurementPointID_String-base"
310   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
311               <xs:restriction base="xs:string">
312                     <xs:maxLength value="35"/>
313               </xs:restriction>
314         </xs:simpleType>
315         <xs:complexType name="MeasurementPointID_String"
316   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
317               <xs:simpleContent>
318                     <xs:extension base="MeasurementPointID_String-base">
319                           <xs:attribute name="codingScheme"
320   type="ecl:CodingSchemeTypeList" use="required"/>
321                     </xs:extension>
322               </xs:simpleContent>
323         </xs:complexType>
324         <xs:complexType name="MarketEvaluationPoint"
325   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
326   cim16#MarketEvaluationPoint">
327               <xs:sequence>
328                     <xs:element name="mRID" type="MeasurementPointID_String"
329   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
330   schema-cim16#IdentifiedObject.mRID"/>
331               </xs:sequence>
332         </xs:complexType>
333         <xs:simpleType name="Position_Integer"
334   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
335               <xs:restriction base="xs:integer">
336                     <xs:maxInclusive value="999999"/>
337                     <xs:minInclusive value="1"/>
338               </xs:restriction>
339         </xs:simpleType>
340         <xs:complexType name="Point"
341   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
342               <xs:sequence>
343                     <xs:element name="position" type="Position_Integer"
344   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
345   schema-cim16#Point.position"/>
346                     <xs:element name="quantity" type="xs:decimal" minOccurs="1"
347   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
348   cim16#Point.quantity"/>
349               </xs:sequence>
350         </xs:complexType>
351         <xs:simpleType name="ID_String"
352   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
353               <xs:restriction base="xs:string">
354                     <xs:maxLength value="60"/>
355               </xs:restriction>
356         </xs:simpleType>
357         <xs:simpleType name="ESMPVersion_String"
358   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
359               <xs:restriction base="xs:string">
360                     <xs:pattern value="[1-9]([0-9]){0,2}"/>
361               </xs:restriction>
362         </xs:simpleType>
363         <xs:simpleType name="MessageKind_String"
364   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
365               <xs:restriction base="ecl:MessageTypeList"/>
366         </xs:simpleType>
367         <xs:simpleType name="ProcessKind_String"
368   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
```

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            <xs:restriction base="ecl:ProcessTypeList"/>
      </xs:simpleType>
      <xs:simpleType name="PartyID_String-base"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:restriction base="xs:string">
                  <xs:maxLength value="16"/>
            </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="PartyID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:simpleContent>
                  <xs:extension base="PartyID_String-base">
                        <xs:attribute name="codingScheme"
type="ecl:CodingSchemeTypeList" use="required"/>
                  </xs:extension>
            </xs:simpleContent>
      </xs:complexType>
      <xs:simpleType name="MarketRoleKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:restriction base="ecl:RoleTypeList"/>
      </xs:simpleType>
      <xs:simpleType name="ESMP_DateTime"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
            <xs:restriction base="xs:dateTime">
                  <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
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9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
            </xs:restriction>
      </xs:simpleType>
      <xs:simpleType name="Status_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:restriction base="ecl:StatusTypeList"/>
      </xs:simpleType>
      <xs:complexType name="Action_Status"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status">
            <xs:sequence>
                  <xs:element name="value" type="Status_String" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Status.value"/>
            </xs:sequence>
      </xs:complexType>
      <xs:complexType name="ResourceCapacityMarketUnit_MarketDocument"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
            <xs:sequence>
                  <xs:element name="mRID" type="ID_String" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#IdentifiedObject.mRID"/>
                  <xs:element name="revisionNumber" type="ESMPVersion_String"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Document.revisionNumber"/>
```

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427                     <xs:element name="type" type="MessageKind_String" minOccurs="1"
428   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
429   cim16#Document.type"/>
430                     <xs:element name="process.processType"
431   type="ProcessKind_String" minOccurs="1" maxOccurs="1"
432   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
433   cim16#Process.processType"/>
434                     <xs:element name="sender_MarketParticipant.mRID"
435   type="PartyID_String" minOccurs="1" maxOccurs="1"
436   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
437   cim16#IdentifiedObject.mRID"/>
438                     <xs:element name="sender_MarketParticipant.marketRole.type"
439   type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
440   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
441                     <xs:element name="receiver_MarketParticipant.mRID"
442   type="PartyID_String" minOccurs="1" maxOccurs="1"
443   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
444   cim16#IdentifiedObject.mRID"/>
445                     <xs:element name="receiver_MarketParticipant.marketRole.type"
446   type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
447   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
448                     <xs:element name="createdDateTime" type="ESMP_DateTime"
449   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
450   schema-cim16#Document.createdDateTime"/>
451                     <xs:element name="Time_Period" type="Time_Period" minOccurs="1"
452   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
453   cim16#MarketDocument.Time_Period"/>
454                     <xs:element name="docStatus" type="Action_Status" minOccurs="0"
455   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
456   cim16#Document.docStatus"/>
457                     <xs:element name="TimeSeries" type="TimeSeries" minOccurs="0"
458   maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
459   cim16#MarketDocument.TimeSeries"/>
460               </xs:sequence>
461         </xs:complexType>
462         <xs:simpleType name="ResourceID_String-base"
463   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
464               <xs:restriction base="xs:string">
465                     <xs:maxLength value="60"/>
466               </xs:restriction>
467         </xs:simpleType>
468         <xs:complexType name="ResourceID_String"
469   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
470               <xs:simpleContent>
471                     <xs:extension base="ResourceID_String-base">
472                           <xs:attribute name="codingScheme"
473   type="ecl:CodingSchemeTypeList" use="required"/>
474                     </xs:extension>
475               </xs:simpleContent>
476         </xs:complexType>
477         <xs:complexType name="ResourceCapacityMarketUnit_RegisteredResource"
478   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
479   cim16#RegisteredResource">
480               <xs:sequence>
481                     <xs:element name="mRID" type="ResourceID_String" minOccurs="1"
482   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
483   cim16#IdentifiedObject.mRID"/>
484                     <xs:element name="resourceCapacity.maximumCapacity"
485   type="xs:decimal" minOccurs="0" maxOccurs="1"
```

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sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#ResourceCapacity.maximumCapacity"/>
                    <xs:element name="resourceCapacity.unitSymbol"
type="UnitSymbol" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#ResourceCapacity.unitSymbol"/>
                    <xs:element name="location.name" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#IdentifiedObject.name"/>
                    <xs:element name="MarketEvaluationPoint"
type="MarketEvaluationPoint" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#RegisteredResource.MarketEvaluationPoint"/>
             </xs:sequence>
      </xs:complexType>
      <xs:simpleType name="YMDHM_DateTime"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
             <xs:restriction base="xs:string">
                    <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
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5][0-
9])Z)|(([13579][26][02468][1235679]|[13579][01345789](0)[01235679]|[13579][0134578
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9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9])Z)"/>
             </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="ESMP_DateTimeInterval"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
             <xs:sequence>
                    <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#DateTimeInterval.start"/>
                    <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#DateTimeInterval.end"/>
             </xs:sequence>
      </xs:complexType>
      <xs:complexType name="Series_Period"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
             <xs:sequence>
                    <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Period.timeInterval"/>
                    <xs:element name="resolution" type="xs:duration" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Period.resolution"/>
                    <xs:element name="Point" type="Point" minOccurs="1"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Period.Point"/>
             </xs:sequence>
      </xs:complexType>
      <xs:complexType name="Time_Period"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
             <xs:sequence>
```

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545                     <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
546   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
547   schema-cim16#Period.timeInterval"/>
548               </xs:sequence>
549         </xs:complexType>
550         <xs:simpleType name="BusinessKind_String"
551   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
552               <xs:restriction base="ecl:BusinessTypeList"/>
553         </xs:simpleType>
554         <xs:simpleType name="EnergyProductKind_String"
555   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
556               <xs:restriction base="ecl:EnergyProductTypeList"/>
557         </xs:simpleType>
558         <xs:simpleType name="CurveType_String"
559   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
560               <xs:restriction base="ecl:CurveTypeList"/>
561         </xs:simpleType>
562         <xs:simpleType name="MarketProductKind_String"
563   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
564               <xs:restriction base="ecl:MarketProductTypeList"/>
565         </xs:simpleType>
566         <xs:simpleType name="MeasurementUnitKind_String"
567   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
568               <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
569         </xs:simpleType>
570         <xs:simpleType name="Characters70_String"
571   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
572               <xs:restriction base="xs:string">
573                     <xs:maxLength value="70"/>
574               </xs:restriction>
575         </xs:simpleType>
576         <xs:complexType name="ElectronicAddress"
577   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
578   cim16#ElectronicAddress">
579               <xs:sequence>
580                     <xs:element name="email1" type="Characters70_String"
581   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
582   schema-cim16#ElectronicAddress.email1"/>
583               </xs:sequence>
584         </xs:complexType>
585         <xs:simpleType name="Characters15_String"
586   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
587               <xs:restriction base="xs:string">
588                     <xs:maxLength value="15"/>
589               </xs:restriction>
590         </xs:simpleType>
591         <xs:complexType name="TelephoneNumber"
592   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TelephoneNumber">
593               <xs:sequence>
594                     <xs:element name="ituPhone" type="Characters15_String"
595   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
596   schema-cim16#TelephoneNumber.ituPhone"/>
597               </xs:sequence>
598         </xs:complexType>
599         <xs:complexType name="StreetDetail"
600   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#StreetDetail">
601               <xs:sequence>
602                     <xs:element name="addressGeneral" type="Characters70_String"
603   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
604   schema-cim16#StreetDetail.addressGeneral"/>
```

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605                     <xs:element name="addressGeneral2" type="Characters70_String"
606   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
607   schema-cim16#StreetDetail.addressGeneral2"/>
608                     <xs:element name="addressGeneral3" type="Characters70_String"
609   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
610   schema-cim16#StreetDetail.addressGeneral3"/>
611                     <xs:element name="floorIdentification" type="xs:string"
612   minOccurs="1" maxOccurs="1"/>
613               </xs:sequence>
614         </xs:complexType>
615         <xs:simpleType name="Characters10_String"
616   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
617               <xs:restriction base="xs:string">
618                     <xs:maxLength value="10"/>
619               </xs:restriction>
620         </xs:simpleType>
621         <xs:simpleType name="Characters35_String"
622   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
623               <xs:restriction base="xs:string">
624                     <xs:maxLength value="35"/>
625               </xs:restriction>
626         </xs:simpleType>
627         <xs:simpleType name="Characters2_String"
628   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
629               <xs:restriction base="xs:string">
630                     <xs:length value="2"/>
631                     <xs:pattern value="[A-Z]*"/>
632               </xs:restriction>
633         </xs:simpleType>
634         <xs:complexType name="TownDetail"
635   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TownDetail">
636               <xs:sequence>
637                     <xs:element name="name" type="Characters35_String"
638   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
639   schema-cim16#TownDetail.name"/>
640                     <xs:element name="country" type="Characters2_String"
641   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
642   schema-cim16#TownDetail.country"/>
643               </xs:sequence>
644         </xs:complexType>
645         <xs:complexType name="StreetAddress"
646   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#StreetAddress">
647               <xs:sequence>
648                     <xs:element name="streetDetail" type="StreetDetail"
649   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
650   schema-cim16#StreetAddress.streetDetail"/>
651                     <xs:element name="postalCode" type="Characters10_String"
652   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
653   schema-cim16#StreetAddress.postalCode"/>
654                     <xs:element name="townDetail" type="TownDetail" minOccurs="1"
655   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
656   cim16#StreetAddress.townDetail"/>
657                     <xs:element name="language" type="xs:string" minOccurs="0"
658   maxOccurs="1"/>
659               </xs:sequence>
660         </xs:complexType>
661         <xs:complexType name="TimeSeries"
662   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
663               <xs:sequence>
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664                     <xs:element name="mRID" type="ID_String" minOccurs="1"
665   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
666   cim16#IdentifiedObject.mRID"/>
667                     <xs:element name="businessType" type="BusinessKind_String"
668   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
669   schema-cim16#TimeSeries.businessType"/>
670                     <xs:element name="product" type="EnergyProductKind_String"
671   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
672   schema-cim16#TimeSeries.product"/>
673                     <xs:element
674   name="ResourceCapacityMarketUnit_RegisteredResource"
675   type="ResourceCapacityMarketUnit_RegisteredResource" minOccurs="1" maxOccurs="1"
676   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
677   cim16#TimeSeries.ResourceCapacityMarketUnit_RegisteredResource"/>
678                     <xs:element name="curveType" type="CurveType_String"
679   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
680   schema-cim16#TimeSeries.curveType"/>
681                     <xs:element name="resourceProvider_MarketParticipant.mRID"
682   type="PartyID_String" minOccurs="0" maxOccurs="1"
683   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
684   cim16#IdentifiedObject.mRID"/>
685                     <xs:element name="resourceProvider_MarketParticipant.name"
686   type="xs:string" minOccurs="0" maxOccurs="1"
687   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
688   cim16#IdentifiedObject.name"/>
689                     <xs:element
690   name="resourceProvider_MarketParticipant.streetAddress" type="StreetAddress"
691   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
692   schema-cim16#Organisation.streetAddress"/>
693                     <xs:element name="resourceProvider_MarketParticipant.phone1"
694   type="TelephoneNumber" minOccurs="0" maxOccurs="1"
695   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
696   cim16#Organisation.phone1"/>
697                     <xs:element
698   name="resourceProvider_MarketParticipant.electronicAddress"
699   type="ElectronicAddress" minOccurs="0" maxOccurs="1"
700   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
701   cim16#Organisation.electronicAddress"/>
702                     <xs:element name="networkOperator_MarketParticipant.mRID"
703   type="PartyID_String" minOccurs="0" maxOccurs="1"
704   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
705   cim16#IdentifiedObject.mRID"/>
706                     <xs:element
707   name="resourceCapacityMechanismOperator_MarketParticipant.mRID"
708   type="PartyID_String" minOccurs="0" maxOccurs="1"
709   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
710   cim16#IdentifiedObject.mRID"/>
711                     <xs:element name="memberState_MarketParticipant.mRID"
712   type="PartyID_String" minOccurs="0" maxOccurs="1"
713   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
714   cim16#IdentifiedObject.mRID"/>
715                     <xs:element name="initialRegistration_DateAndOrTime.dateTime"
716   type="xs:dateTime" minOccurs="0" maxOccurs="1"
717   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
718   cim16#DateAndOrTime.dateTime"/>
719                     <xs:element name="registration_DateAndOrTime.dateTime"
720   type="xs:dateTime" minOccurs="0" maxOccurs="1"
721   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
722   cim16#DateAndOrTime.dateTime"/>
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723                     <xs:element name="lastVerification_DateAndOrTime.dateTime"
724   type="xs:dateTime" minOccurs="0" maxOccurs="1"
725   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
726   cim16#DateAndOrTime.dateTime"/>
727                     <xs:element
728   name="primaryMarketParticipation_MarketObjectStatus.status" type="Status_String"
729   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
730   schema-cim16#MarketObjectStatus.status"/>
731                     <xs:element
732   name="secondaryMarketParticipation_MarketObjectStatus.status" type="Status_String"
733   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
734   schema-cim16#MarketObjectStatus.status"/>
735                     <xs:element
736   name="capacityMechanism_MarketProduct.marketProductType"
737   type="MarketProductKind_String" minOccurs="0" maxOccurs="1"
738   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
739   cim16#MarketProduct.marketProductType"/>
740                     <xs:element name="clearanceNumber_Names.name" type="xs:string"
741   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
742   schema-cim16#Name.name"/>
743                     <xs:element name="measurement_Unit.name"
744   type="MeasurementUnitKind_String" minOccurs="0" maxOccurs="1"
745   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
746                     <xs:element name="Unit_RegisteredResource"
747   type="Unit_RegisteredResource" minOccurs="0" maxOccurs="unbounded"
748   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
749   cim16#TimeSeries.Unit_RegisteredResource"/>
750                     <xs:element name="Elegibility_Period" type="Time_Period"
751   minOccurs="0" maxOccurs="unbounded"
752   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
753   cim16#TimeSeries.Elegibility_Period"/>
754                     <xs:element name="Period" type="Series_Period" minOccurs="0"
755   maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
756   cim16#TimeSeries.Period"/>
757               </xs:sequence>
758         </xs:complexType>
759         <xs:simpleType name="CoordinateSystemKind_String"
760   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
761               <xs:restriction base="ecl:CoordinateSystemTypeList"/>
762         </xs:simpleType>
763         <xs:simpleType name="PsrType_String"
764   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
765               <xs:restriction base="ecl:AssetTypeList"/>
766         </xs:simpleType>
767         <xs:complexType name="Unit_RegisteredResource"
768   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
769   cim16#RegisteredResource">
770               <xs:sequence>
771                     <xs:element name="mRID" type="ResourceID_String" minOccurs="1"
772   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
773   cim16#IdentifiedObject.mRID"/>
774                     <xs:element name="resourceCapacity.maximumCapacity"
775   type="xs:decimal" minOccurs="0" maxOccurs="1"
776   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
777   cim16#ResourceCapacity.maximumCapacity"/>
778                     <xs:element name="resourceCapacity.unitSymbol"
779   type="UnitSymbol" minOccurs="0" maxOccurs="1"
780   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
781   cim16#ResourceCapacity.unitSymbol"/>
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                    <xs:element name="street_Location.name" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#IdentifiedObject.name"/>
                    <xs:element name="streetNumber_Location.name" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#IdentifiedObject.name"/>
                    <xs:element name="city_Location.name" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#IdentifiedObject.name"/>
                    <xs:element name="postalCode_Location.name" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#IdentifiedObject.name"/>
                    <xs:element name="country_Location.name" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#IdentifiedObject.name"/>
                    <xs:element name="gPS_Location.gPS_CoordinateSystem.mRID"
type="CoordinateSystemKind_String" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#IdentifiedObject.mRID"/>
                    <xs:element name="gPS_Location.gPS_PositionPoints.xPosition"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#PositionPoint.xPosition"/>
                    <xs:element name="gPS_Location.gPS_PositionPoints.yPosition"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#PositionPoint.yPosition"/>
                    <xs:element name="gPS_Location.gPS_PositionPoints.zPosition"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#PositionPoint.zPosition"/>
                    <xs:element name="technology_PSRType.psrType"
type="PsrType_String" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#MktPSRType.psrType"/>
                    <xs:element name="Fuel" type="Fuel" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#RegisteredResource.Fuel"/>
                    <xs:element name="Measurements" type="Analog" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#RegisteredResource.Measurements"/>
                    <xs:element name="MarketEvaluationPoint"
type="MarketEvaluationPoint" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#RegisteredResource.MarketEvaluationPoint"/>
                </xs:sequence>
            </xs:complexType>
    </xs:schema>
```