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NOTE CONCERNING WORDING USED IN THIS DOCUMENT

The force of the following words is modified by the requirement level of the document in which they are used.

- **SHALL**: This word, or the terms “REQUIRED” or “MUST”, means that the definition is an absolute requirement of the specification.

- **SHALL NOT**: This phrase, or the phrase “MUST NOT”, means that the definition is an absolute prohibition of the specification.

- **SHOULD**: This word, or the adjective “RECOMMENDED”, means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

- **SHOULD NOT**: This phrase, or the phrase “NOT RECOMMENDED”, means that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behaviour described with this label.

- **MAY**: This word, or the adjective “OPTIONAL”, means that an item is truly optional.
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<th>Release</th>
<th>Date</th>
<th>Paragraph</th>
<th>Comments</th>
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<td>2018-06-04</td>
<td></td>
<td>Approved by MC</td>
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1 Scope

The objective of this implementation guide is to make possible for TSOs and RSCs to develop an IT application to exchange information relative to Short-Term Adequacy forecast process.

The implementation guide is one of the building blocks for using UML (Unified Modelling Language) based techniques in defining processes and messages for interchange between actors in the electrical industry in Europe.

The implementation guide is developed for the harmonisation of the underlying data exchange process.

2 References

2.1 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.


2.2 Other references

- Article 81 of the Guideline on electricity transmission system operation (SO GL).
- Coordinated Week Ahead Adequacy Assessment STA Methodology v1.5
- BP Coordinated Week Ahead Adequacy Assessment v2.4
- STA - Cross Regional Adequacy Tool - Functional Specification v2.0
3 Terms and definitions

Biomass: Biomass electrical power in [MW] at the reference point.

Coal-derived gas: Coal-derived gas electrical power in [MW] at the reference point.

Force Outage Rate: A measure of the probability that a generating unit will not be available due to forced outages or forced deratings.


Fossil oil shale: Fossil oil shale electrical power in [MW] at the reference point.

Fossil peat: Fossil peat electrical power in [MW] at the reference point.

Gas: Gas electrical power in [MW] at the reference point.

Generation in Forced outages: Aggregates forced – i.e. not scheduled - unavailability of generating capacity.

Generation in planned Maintenance and Overhauls: Aggregates scheduled unavailability of generating capacity for regular inspection and maintenance.

Generation reserved for system services: This capacity is required to maintain the security of supply according to the operating rules of each TSO with a direct impact on adequacy. Ancillary services refer to a range of functions which TSOs contract so that they can guarantee system security. As system services reserve, TSOs have to consider:

- frequency containment reserves (FCR) (to maintain system frequency with automatic and very fast responses); fast reserve
- frequency restoration reserves (FRRm/a) (which can provide additional energy when needed),
- replacement reserves (RR) can be considered as an important tool for ensuring adequacy

Geothermal: Geothermal electrical power in [MW] at the reference point.

Hard coal: Hard coal electrical power in [MW] at the reference point.

Hydro Pump storage: Pump-Storage is a hydro unit in which water can be raised by means of pumps and stored to be used later for the generation of electrical energy in [MW] at the reference point.

Hydro Run of the river and poundage: Hydro Run of the river and poundage electrical power in [MW] at the reference point.

Hydro Water reservoir: Hydro Water reservoir electrical power in [MW] at the reference point.

Load reduction: Load Reduction is a voluntary reduction in demand performed by a consumer or a group of consumers in order to help the Balancing of the system. Load Reduction can be remunerated.

Load: Total Load, including losses without power used for energy storage, means a load equal to generation on transmission and distribution grids.

Marine: Marine (wave, tidal and sea current) electrical power in [MW] at the reference point.
Must Run: The amount of output of the generators which, for various reasons, must be connected to the transmission/distribution grid. Such reasons may include: network constraints (overload management, voltage control), specific policies, minimum number of units needed to provide system services, system inertia, subsidies, environmental causes etc.

Net Generating Capacity (NGC): Net generating capacity is the maximum electrical net active power a power plant can feed-in continuously without exceeding the designed thermal limits.

Non-Usable Capacity: Aggregates reductions of the net generating capacities due to the following causes:
- Temporary limitation due to constraints, like power stations in mothball or test operation, heat extraction for CHP's
- Limitation due to fuel constraints management
- Limitation reflecting the average availability of the primary energy source (e.g. reservoir level for pump storage hydro units)
- Power stations with output power limitation due to environmental and ambient constraints
- Non-available part of the wind and solar total installed capacity due to variable weather conditions.

Nuclear: Nuclear electrical power in [MW] at the reference point.

Offshore Wind: Offshore wind electrical power in [MW] at the reference point.

Oil: Oil electrical power in [MW] at the reference point.

Onshore Wind: Onshore wind electrical power in [MW] at the reference point.

Others Renewable: Others RES are energies from renewable non-fossil sources, namely aerothermal, geothermal, hydrothermal, tidal, ocean energy, hydropower, run of river, biomass, landfill gas, waste, sewage treatment plant gas and biogases in [MW] at the reference point.

Others: Others are energies from fossil sources not accounted for gas, nuclear and coal, such as oil, oil shades, and mixed fuels in [MW] at the reference point.

PEMMDB: Pan European Market Modelling Data Base.

PV Solar: PV Solar electrical power in [MW] at the reference point.

PXX Load Forecast: The XXth percentile of load is the value in [MW] below which XX% of the observations may be found at the reference point.

PXX Solar Forecast: The XXth percentile of PV Solar is the value in [MW] below which XX% of the observations may be found at the reference point.

PXX Wind Offshore forecast: The XXth percentile of Wind Offshore is the value in [MW] below which XX% of the observations may be found at the reference point.

PXX Wind Onshore forecast: The XXth percentile of Wind Onshore is the value in [MW] below which XX% of the observations may be found at the reference point.

Reference point: The dates and times for which power data are collected. Reference points are characteristic enough of the entire period studied to limit the data to be collected to the data at the reference points. Reference point refers to hourly values. An hourly value is a forecast data foreseen at XX:30 (XX is the hour).

Reliable Available Capacity (RAC): The RAC on a power system is the difference between the Net Generating capacity (NGC) and the Unavailable Capacity. The RAC is the part of the NGC that is currently available to cover the load at a reference point.

Reliable available capacity (RAC) formula: RAC = Net Generating Capacity – Unavailable capacity.
The Reliably Available Capacity definition can be applied to the hourly data needed for STA

Remaining Capacity and to different generations types.

**Remaining capacity**: The remaining capacity (RC) for a TSO is the measurement of its own
possibility to cover its load by its available generation. The Remaining Capacity on a power
system is the difference between the Reliably Available Capacity and the Load.

**Remaining capacity (RC) formula**: \( RC = \text{Reliably Available Capacity} - \text{Load} \)

A positive RC means that a TSO has more available generation than its load. In the opposite,
a negative RC means its load isn’t covered by its reliably available generation. If RC is null,
then load and available generation are equal. This item is a pragmatic indicator to define TSOs
which need energy to cover their load or are able to export surplus of energy to help others
TSOs to feed their load.

**TP**: Transparency Platform. This platform provides free, continuous access to pan-European
electricity market data for all users.

**Unavailable Capacity**: This is the part of the NGC which is not reliably available to power plant
operators due to limitations on the output power of power plants. It consists of the Non-Usable
Capacity, power plants in scheduled Maintenance and Overhauls or in forced Outages or
reserved for System Services.

**Waste**: Waste electrical power in [MW] at the reference point

**Week Ahead Load forecast**: This represents the load forecast value as predicted by a
Transmission System Operator for its control area at W-1. The W-1 load forecast represents
hourly average values of the load figures for the entire week.

**Week Ahead Load reduction forecast**: This represents the load reduction forecast value as
predicted by a Transmission System Operator for its control area at W-1. The W-1 load forecast
represents hourly average values of the load figures for the entire week.

**Week Ahead PXX Load Forecast**: This represents the PXX load forecast value as predicted
by a system Operator for its control area at W-1. The W-1 system PXX load forecast represents
hourly average values of the XXth percentile of load figures for the entire week.

**Week Ahead PXX PV Solar Forecast**: This represents the PXX PV Solar forecast value as
predicted by a system Operator for its control area at W-1. The W-1 system PXX PV Solar
forecast represents hourly average values of the 5th percentile of PV Solar figures for the entire
week.

**Week Ahead PXX Wind Offshore Forecast**: This represents the PXX wind offshore forecast
value as predicted by a system Operator for its control area at W-1. The W-1 system PXX wind
offshore forecast represents hourly average values of the XXth percentile of wind offshore
figures for the entire week.

**Week Ahead PXX Wind Onshore Forecast**: This represents the PXX wind onshore forecast
value as predicted by a system Operator for its control area at W-1. The W-1 system PXX wind
onshore forecast represents hourly average values of the XXth percentile of wind onshore
figures for the entire week W.

**Week Ahead Remaining capacity**: This represents Remaining Capacity applied to week-
ahead operational period.

**Week-ahead (W-1) operational period**: Starts on D-1 to D-7 CET/CEST time

**Week-ahead operational granularity**: Week Ahead values are hourly values from the Week Ahead
operational period.
4 The STA Business Process

4.1 Overview

Each Transmission System Operator (TSO) shall provide to the Regional Security Coordinator (RSC) the information necessary to perform the adequacy assessments in its control area: expected total load and available resources of demand response, availability of power generation modules and operational security limits.

Based on these hourly forecasts for next week (from D-1 until D-7), Regional Security Coordinator shall perform adequacy assessments for at least the week-ahead timeframe with the aim of detecting situations where a lack of adequacy is expected in any of the control areas or at regional level, considering possible cross-border exchanges and operational security limits.

Following this,

- RSC (on a rotating basis) performs a cross-regional adequacy assessment to highlight at ENTSO-E level the situations where a lack of adequacy is expected.
- On TSO requests, e.g. due to lack of adequacy assessed or estimation of TSOs, RSC shall perform a regional adequacy assessment in the relevant adequacy coordination region and shall deliver the results of the regional adequacy assessment together with the actions it proposes to reduce risk to the associated TSOs.

The current Implementation Guide focuses only on the cross regional process.
4.2 Use Case

Table 1 gives a list of actors involved in STA data exchange.

<table>
<thead>
<tr>
<th>Actor Label</th>
<th>Actor Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data provider</td>
<td>Data provider is responsible for providing transmission capacity, generation and load data information</td>
</tr>
<tr>
<td>System operator</td>
<td>A system operator, or any other actor on behalf a SO, who is responsible for providing load and generation forecasts. It is possible for SO to deliver the NTCs in case they consider it necessary.</td>
</tr>
<tr>
<td>RSC</td>
<td>The Regional Security Coordinator calculates STA results (Net positions, adequacy flags, interchange zones...) and send the acknowledgements and STA results</td>
</tr>
</tbody>
</table>
Table 2 gives a list of use cases for STA data exchange.

<table>
<thead>
<tr>
<th>Use case label</th>
<th>Actors involved</th>
<th>Action descriptions and assertions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide Transmission Capacity, Generation and Load data information</td>
<td>Data provider, System operator</td>
<td>Data provider sends to the system operator all the information necessary to calculate forecasts. This use case is out of the scope of the implementation guide.</td>
</tr>
<tr>
<td>Calculate week ahead total load and generation forecast, percentile 5 and 95</td>
<td>System operator</td>
<td>System operator calculates week ahead total load and generation forecast, percentile 5 and 95 with the information received from Data provider. This use case is out of the scope of the implementation guide.</td>
</tr>
<tr>
<td>Submit (forecasts, ack)</td>
<td>System operator, RSC</td>
<td>System operator submits forecasts to RSC. The RSC checks submitted document. It fully or partially accepts or rejects received data and send an acknowledgement to the System operator. Submitting must include generation and load forecast information documents. The submission of the NTCs is optional.</td>
</tr>
<tr>
<td>Calculate STA results</td>
<td>RSC</td>
<td>RSC calculates STA results (Net positions, adequacy flags, interchange zones...) with the information received from System operator. The calculation is performed according to the deadlines of the business process. This use case is out of the scope of the implementation guide.</td>
</tr>
<tr>
<td>Send STA Results</td>
<td>RSC, Information Receiver</td>
<td>Once RSC has calculated the results, he sends them to the information receivers</td>
</tr>
</tbody>
</table>
4.3 Document exchange processes

4.3.1 Overview

The use cases are supported by the following document exchanges:

- Submit ShortMediumTermAdequacyPrognosis_MarketDocument
- Submit Capacity_MarketDocument
- Reply Acknowledgement_MarketDocument
- Send ShortMediumTermAdequacyResults_MarketDocument

Next figure shows a sequence diagram of the documents exchange processes.

- The above sequence diagram describes how the system operator submits week ahead generation, load forecast and NTCs (Optional submission for TSOs) to enable the RSC to calculate the STA results (Net positions, adequacy flags, interchange zones...).
4.3.2 Submit ShortMediumTermAdequacyPrognosis_MarketDocument

- First, data providers send to the SO all the necessary data to perform the calculation of the percentiles. As an example, we can quote:
  - The Production unit existing and planned capacity
  - The Installed generation capacity aggregated
  - The Generation or load forecast information
- These data exchanges between the data provider and the SO are out of the scope of this implementation guide.
- Once the SO has received these data, the SO calculates total load and generation forecast percentile 5 and 95 and submits them (In a ShortMediumTermAdequacyPrognosis_MarketDocument CIM format) to the RSC.

4.3.3 Submit Capacity_MarketDocument

In case, SO wants to submit the NTCs, they should send them separately using the capacity market document.

4.3.4 Reply Acknowledgement

It is a syntax and business acknowledgment: When the RSC receives the forecasts, the RSC checks that the technical and functional validity of the information and send an acknowledgment to the SO. The acknowledgement can be positive (A01 fully accepted), partially accepted (A03 Message contains errors at the time series level) or negative (A02 fully rejected).

4.3.5 Send ShortMediumTermAdequacyResults_MarketDocument

Then RSC calculates Adequacy and send the results to the information receiver.
5 General rules for document exchange

5.1 Overview

The document exchange processes of STA described in the previous chapter require sending and receiving various CIM based documents. The CIM based documents to be used are:

- ShortMediumTermAdequacyPrognosis_MarketDocument (v1.0.xsd)
- Capacity_MarketDocument (iec62325-451-3-capacity_v8_0.xsd)
- Acknowledgement_MarketDocument (iec62325-451-1-acknowledgement_v8_0.xsd)
- ShortMediumTermAdequacyResults_MarketDocument (v1.0.xsd)

These CIM based documents shall be used to carry out the communication tasks:

- submit - The document contains data to be processed by the receiver.
- reply - It is the reaction to receiving a submit or get document.
- send - The document contains data which may be processed by the receiver.

Next table gives an overview, which document shall be used to carry out the communication tasks of document exchange processes (DEP). For reducing the size of the table, we are going to use the following abbreviations:

- SMTAPD: ShortMediumTermAdequacyPrognosis_MarketDocument
- AMD: Acknowledgement_MarketDocument IEC62325-451-1
- SMTARD: ShortMediumTermAdequacyResults_MarketDocument

<table>
<thead>
<tr>
<th>DEP Chapter</th>
<th>DEP label</th>
<th>send/submit document</th>
<th>Reply document</th>
<th>Reply conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3.2</td>
<td>Submit load and generation forecasts</td>
<td>SMTAPD</td>
<td>AMD</td>
<td>SMTAPD fully accepted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SMTAPD partially accepted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fully rejected due to errors in the SMTAPD</td>
</tr>
<tr>
<td>4.3.3</td>
<td>If SO submit NTCs</td>
<td>CMD</td>
<td>AMD</td>
<td>CMD fully accepted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CMD partially accepted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fully rejected due to errors in the CMD</td>
</tr>
<tr>
<td>4.3.5</td>
<td>Send STA results</td>
<td>SMTARD</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

To have a more complete view of the reply conditions, please check the quality rules wrote by the business.
5.2 Data exchange with STA platform

The Implementation Guide describes the data exchange with the STA platform. Inputs are sent from TSOs to the STA platform. An ACK is sent from STA platform to TSOs. The next figure describes the data exchange:

![Data exchange diagram]

The input files are expected to contain data at least from 7 days on the period, from D-1 to maximum D-10. To take into account TSO data for calculation, both load and generation must be provided. NTC can also be provided in a separated file. Providing NTC information to STA software platform is not mandatory.
5.3 ShortMediumTermAdequacyPrognosis_MarketDocument dependency table

General Notes:

- It's mandatory to use the codes specified under the column with the values for the businessType attribute.
- If the sender, for some reason, doesn't provide the information related with the code, then it's not mandatory to include a Timeseries with that businessType code in the document.
- As you are obliged to use only EIC codes to identify parties, zones or assets, you must write in the coding scheme attribute of your XML document code A01 (EIC).
- For all Generation and Load data business type exchanges, TSOs shall be able to use either bidding zone or control area. TSOs shall always use the same bidding zone or control area code when sending data across time.
- To avoid sending quantity values with a lot of decimals, please restrict the number of decimals to five as maximum. EG: 0.86578

Table 4 - ShortMediumTermAdequacyPrognosisDocument_MarketDocument dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRID</td>
<td>Unique ID (Max 35 characters)</td>
<td>Identification of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>revisionNumber</td>
<td>Consecutive number. Pattern ([1-9][0-9][0,2])</td>
<td>Version of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>type</td>
<td>B14: Energy prognosis document</td>
<td>The document type describes the principal characteristic of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>process.processType</td>
<td>A31: Week ahead</td>
<td>Indicates the nature of process that the document addresses.</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Starts on D-1 to D-7 CET/CEST time</td>
<td></td>
</tr>
<tr>
<td>sender_MarketParticipant.mRID</td>
<td>EIC-X code of the TSO</td>
<td>The identification of the sender.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>sender_MarketParticipant.marketRole.type</td>
<td>A04: System Operator</td>
<td>The role of the sender.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>receiver_MarketParticipant.mRID</td>
<td>EIC-V code of the STA IT System</td>
<td>The identification of the receiver.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>receiver_MarketParticipant.marketRole.type</td>
<td>A44: RSC</td>
<td>The role of the receiver.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>---------</td>
<td>--------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>createdDateTime</td>
<td>E.G: 2018-03-23T12:04:39Z</td>
<td>UTC Time.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>time_Period.timeInterval</td>
<td>E.G: &lt;start&gt;2018-03-16T00:00Z&lt;/start&gt; &lt;end&gt;2018-03-17T00:00Z&lt;/end&gt;</td>
<td>STA target time interval covered by the document.</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

### Table 5 – TimeSeries Prognosis Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRID</td>
<td>Unique ID (Max 35 characters)</td>
<td>Identification of the time series</td>
</tr>
<tr>
<td>businessType</td>
<td>Generation Forecasts</td>
<td>The exact business nature identifying the principal characteristic of time series.</td>
</tr>
<tr>
<td></td>
<td>A38: Available generation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A95: Frequency containment reserve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A96: Automatic frequency restoration reserve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A97: Manual frequency restoration reserve</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B81: Outage (OUT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B94: Must Run</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Load Forecasts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A13: Load Profile</td>
<td></td>
</tr>
<tr>
<td>curveType</td>
<td>A02: Point</td>
<td>The type of curve being defined in the time series</td>
</tr>
<tr>
<td>measurement_Unit.name</td>
<td>MAW</td>
<td>Name of the unit measurement.</td>
</tr>
</tbody>
</table>

*Table 5 – TimeSeries Prognosis Document dependency table*

542
543
<table>
<thead>
<tr>
<th>domain.mRID</th>
<th>EIC-Y Area Code</th>
<th>ID of the control area or bidding zone.</th>
<th>Mandatory</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>mktPSRType.psrType</th>
<th><strong>Generation Forecasts</strong></th>
<th>Used as asset type: The identification of the type of asset. Mandatory only for (Generation) Business Type Codes:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• A38: Available generation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A95: Frequency containment reserve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A96: Automatic frequency restoration reserve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A97: Manual frequency restoration reserve</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• B81: Outage (OUT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• B94: Must Run</td>
</tr>
</tbody>
</table>

If the prognosis document is going to contain Generation forecasts, you’ll have to use the asset type codes under Generation Forecasts column.

Else if the prognosis document is going to contain Load forecasts:
| flowDirection.direction | A01: UP | A02: DOWN | Used to characterize the direction (downward or upward) of the system services. Mandatory only for Business Type Codes:  
- A95: Frequency containment reserve  
- A96: Automatic frequency restoration reserve,  
- A97: Manual frequency restoration reserve | Optional |

(businessType codes A13), is not necessary to specify here any code.
### Table 6 – Series_Period Prognosis Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>timeInterval</td>
<td>E.G: &lt;start&gt;2018-03-16T00:00Z&lt;/start&gt; &lt;end&gt;2018-03-16T00:30Z&lt;/end&gt;</td>
<td>Time interval covered by elements of Point class. It must be included within header Time_Period.timeInterval.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>resolution</td>
<td>PT60M</td>
<td>Resolution used in the Point class.</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

### Table 7 – Point Prognosis Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>position</td>
<td>Integer value &gt; 0</td>
<td>A sequential value representing the relative position within a given time interval.</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>The position must begin with 1 and increment by 1 for each subsequent position forming a series of contiguous numbers covering the complete range of the period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>Decimal value (Float)</td>
<td>The principal quantity identified for a point.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>generationOutage</td>
<td>Decimal value (Float) between 0 and 1</td>
<td>Generation Outage probability value. Mandatory only for Business Type Code:</td>
<td>Optional</td>
</tr>
<tr>
<td>Probability_Quant</td>
<td>EG: 0.87546</td>
<td>• B81: Outage</td>
<td></td>
</tr>
<tr>
<td>quantity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Table 8 – Percentile_Quantity Prognosis Document dependency table**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>05: Percentile 05</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>95: Percentile 95</td>
<td>The description of the type of percentile. Mandatory only for Business Type Codes: • A13: Load Profile  • A38: Available generation combined with mktPSRtype B16, B18, B19</td>
<td>Mandatory</td>
</tr>
<tr>
<td>quantity</td>
<td>Decimal value (Float)</td>
<td>The quantity value. Mandatory only for Business Type Codes: • A13: Load Profile  • A38: Available generation combined with mktPSRtype B16, B18, B19</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>
5.4 Generation and Load Input data to STA software platform

ShortMediumTermAdequacyPrognosis_MarketDocument is described in this Implementation Guide as the exchange data document to deliver generation and load inputs from TSOs to STA platform.

Using this document, TSOs can send separately load and generation information. Possible examples of mRID pattern convention for load and generation files will be described in this point.

The assembly model for data input (Generation and Load) from TSOs is shown in chapter 6.2:

- **ShortMediumTermAdequacyPrognosis_MarketDocument**
  - mRID: ID_String is a unique ID of maximum 35 characters.
  - Proposed patterns of the STA project for the mRID are the following ones:
    - Load_XXX_YYYY-MM-DD_YYYY-MM-DDTHHMM
    - Gen_XXX_YYYY-MM-DD_YYYY-MM-DDTHHMM
  - Load pattern can be used for load input document, Gen pattern can be used for generation input document. STA platform will not refuse a document if the pattern is not respected. CIM EG recommends using non-significant mRIDs generated by the IT Systems.
  - Receiver_MarketParticipant.mRID: PartyID_String EIC-V code of STA platform, not yet decided.

- **Timeseries**
  - mRID: ID_String is a unique ID of maximum 35 characters.
  - A proposed pattern of the STA project for this mRID in Timeseries is the following:
    - BBB_PPP_XXX_YYYY-MM-DDTHHMM
  - BBB is the business type code described in the Timeseries. PPP is the PSRtype code described in the Timeseries. PPP not used for mRID of Timeseries containing load and NTC information. STA platform will not refuse a document if the pattern is not respected. CIM EG recommends using non-significant mRIDs generated by the IT Systems.
  - flowDirection.direction: DirectionKind_String used for service system direction (up or down).

- **Series_Period**
  - In our case, the timeInterval for Series_Period is expected being the same as the timeInterval of the document.
595  • **Point**

generationOutageProbability_Quantity.quantity is a decimal value between 0 and 1 giving the probability of loss of a certain amount of MW (given in quantity:Decimal). This information is mandatory only with business type B81

599  • **Percentile_Quantity**

Mandatory for load (timeseries with business type A13), solar, wind onshore and wind offshore information (timeseries with business type A38 combined with mktPSRtype B16, B18, B19). If a TSO does not have the information available (e.g. no relevant solar installation), it is not mandatory to provide values.

The next table shows an example of mRID following the given convention.

<table>
<thead>
<tr>
<th>Table 9 - mRID examples for input TSO files</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>mRID document level</strong></td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Timeseries level</td>
</tr>
<tr>
<td>Business type codes</td>
</tr>
</tbody>
</table>

608  5.4.1 Special remarks concerning inputs

609  a) If a TSO does not have a specific energy type, TSO should not provide the Timeseries related to this businessType - mktPSRType.

612  b) For mktPSRType = B10 (hydro pumped storage), values can be positive (generating mode) or negative (pumping mode).

614  5.4.2 Outage consideration methodology

615  TSOs can send outage probability and outage value using business type code B81 in Timeseries. Then, in Point, TSOs specify the outage value through attribute “quantity: Decimal”. TSOs specify outage probability through attribute “generationOutageProbability_Quantity.quantity: Decimal”. This information can be delivered for each mktPSRType. This information is not mandatory.

620  In case TSOs provide this information, TSOs shall consider the following methodology to provide outage values:

622  TSOs shall consider the loss of a foreseen available power plant. Considering each power plant as $G_i$, with probability of outage, and active power capacity available equal to $AP_i$.

624  In the case that there are more than 1 power plant per cluster, considering $n_i$ the number of power plants in the same cluster “$i$” (parameters $P_i$ and $AP_i$ equal for all power plants in the cluster “$i$”). in order to estimate the outage value, TSOs shall select the plant $G_i$ to maximize the formula:

$$\text{Select } i; \ (\max) \ P_i \ast AP_i \ast n_i$$

631  Once power plant from cluster “$i$” is selected, the expected power outage value to provide is $AP_i$, and the expected forced outage rate to provide is $P_i$. 

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5.4.3 XML input load examples – ShortMediumTermAdequacyPrognosis_MarketDocument

Find below an example of ShortMediumTermAdequacyPrognosis_MarketDocument XML document using the given conventions for sending load values. The document contains a Timeseries class to provide the necessary information. The Timeseries will be depicted hereafter.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--SMTA Prognosis v1.0 Example-->
<!--This is a SMTA confidential file-->
<ShortMediumTermAdequacyPrognosis_MarketDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xmlns="urn:iec62325.351:tc57wg16:451-n:smtaprognosisdocument:1:0"
 xsi:schemaLocation="urn:iec6235.351:tc57wg16:451-n:smtaprognosisdocument:1:0 iec62325-451-n-smtaprognosis_v_1_0.xsd">
 <mRID>Load_ES_2018-06-15T0811</mRID>
 <revisionNumber>1</revisionNumber>
 <type>B14</type>
 <processType_Process.processType>A31</processType_Process.processType>
 <!--As we are going to provide only EIC codes, in the coding schemes we only write code A01-->
 <sender_MarketParticipant.mRID codingScheme="A01">10XES-REE------E</sender_MarketParticipant.mRID>
 <sender_MarketParticipant.marketRole.type>A04</sender_MarketParticipant.marketRole.type>
 <!--The IEC code I wrote in the receiver is fictitious. It’s just to provide an example. To put here the correct code of the SMTA IT Tool-->
 <receiver_MarketParticipant.mRID codingScheme="A01">SMTA-CODE--1</receiver_MarketParticipant.mRID>
 <receiver_MarketParticipant.marketRole.type>A44</receiver_MarketParticipant.marketRole.type>
 <createdDateTime>2018-06-15T08:11:31Z</createdDateTime>
 <time_Period.timeInterval>
  <start>2018-06-15T22:00Z</start>
  <end>2018-06-22T00:00Z</end>
 </time_Period.timeInterval>
 <TimeSeries>
  <!--Example of Timeseries for sending load data is given below-->
 </TimeSeries>
</ShortMediumTermAdequacyPrognosis_MarketDocument>
```

Figure 4 - Load XML input prognosis document

ShortMediumTermAdequacyPrognosis_MarketDocument

Notice that all the XML examples are provided only for information purposes.
Find below an example of Timeseries class for sending load values in prognosis document.

```xml
<TimeSeries>
  <mRID>A13_ES_2018-06-15T0811</mRID>
  <businessType>A13</businessType>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <domain.mRID codingScheme="A01">18YES-REE------0</domain.mRID>
  <Series_Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>33000.0</quantity>
      <Percentile_Quantity>
        <type>05</type>
        <quantity>31000.0</quantity>
      </Percentile_Quantity>
      <Percentile_Quantity>
        <type>95</type>
        <quantity>35000.0</quantity>
      </Percentile_Quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>34000.0</quantity>
      <Percentile_Quantity>
        <type>05</type>
        <quantity>32000.0</quantity>
      </Percentile_Quantity>
      <Percentile_Quantity>
        <type>95</type>
        <quantity>36000.0</quantity>
      </Percentile_Quantity>
    </Point>
  </Series_Period>
</TimeSeries>
```

**Figure 5 - Timeseries for load values. Forecast load, percentile 05 and 95**
5.4.4 XML input Gen examples – ShortMediumTermAdequacyPrognosis_MarketDocument

Find below an example of ShortMediumTermAdequacyPrognosis_MarketDocument XML document using the given conventions for sending generation values. The document contains several Timeseries to provide the necessary information to STA platform. Timeseries examples will be given hereafter to present solar information and outage probability.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--SMTA Prognosis v1.0 Example-->
<!--This is a SMTA confidential file-->... for sending generation data is given below-->
</TimeSeries>
</ShortMediumTermAdequacyPrognosis_MarketDocument>
```

Figure 6 - Generation XML input prognosis document ShortMediumTermAdequacyPrognosis_MarketDocument
Find below an example of Timeseries class for sending generation values in prognosis document. In the example below, solar generation forecast is provided along with its percentile forecast.

```xml
<TimeSeries>
  <mRID>A38_B16_ES_2018-06-15T0811</mRID>
  <businessType>A38</businessType>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <domain.mRID codingScheme="A01">10YES-REE------0</domain.mRID>
  <Series.Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>13000.0</quantity>
      <Percentile.Quantity>
        <type>05</type>
        <quantity>11000.0</quantity>
      </Percentile.Quantity>
      <Percentile.Quantity>
        <type>95</type>
        <quantity>15000.0</quantity>
      </Percentile.Quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>14000.0</quantity>
      <Percentile.Quantity>
        <type>05</type>
        <quantity>12000.0</quantity>
      </Percentile.Quantity>
      <Percentile.Quantity>
        <type>95</type>
        <quantity>16000.0</quantity>
      </Percentile.Quantity>
    </Point>
  </Series.Period>
</TimeSeries>
```

Figure 7 - Timeseries for generation values. Example of solar forecast values with its percentile 05 and 95
Find below an example of Timeseries class for sending outage values to be used for probabilistic assessment. This Timeseries for outage values must be delivered in the generation input file. In the example below, there is a chance of 3% to trip 1000 MW of nuclear generation at position 1.

```xml
<TimeSeries>
  <mRID>B81_B14_ES_2018-06-15T0811</mRID>
  <businessType>B81</businessType>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <domain.mRID codingScheme="A01">10YES-REE------0</domain.mRID>
  <mktPSRType.psrType>B14</mktPSRType.psrType>
  <Series_Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <!--1000 MW of nuclear to trip-->
      <quantity>1000.0</quantity>
      <!--Probability to trip = 3%-->
      <generationOutageProbability_Quantity.quantity>0.03</generationOutageProbability_Quantity.quantity>
    </Point>
    <Point>
      <position>2</position>
      <!--1000 MW of nuclear to trip-->
      <quantity>1000.0</quantity>
      <!--Probability to trip = 3%-->
      <generationOutageProbability_Quantity.quantity>0.03</generationOutageProbability_Quantity.quantity>
    </Point>
  </Series_Period>
</TimeSeries>
```

Figure 8 - Timeseries outage values for probabilistic assessment
5.5 **Capacity_MarketDocument dependency table**

**General Notes:**

- As you are obliged to use only EIC codes to identify parties, zones or assets, you must write in the coding scheme attribute of your XML document code A01 (EIC).
- To avoid sending quantity values with a lot of decimals, please restrict the number of decimals to five as maximum. EG: 0.86578

### Table 10 - Capacity_MarketDocument dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRID</td>
<td>Unique ID (Max 35 characters)</td>
<td>Identification of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>revisionNumber</td>
<td>Consecutive number. Pattern ([1-9][0-9]{0,2})</td>
<td>Version of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>type</td>
<td>A26: Capacity document</td>
<td>The document type describes the principal characteristic of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>process.processType</td>
<td>A31: Week ahead</td>
<td>Indicates the nature of process that the document addresses.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>sender_MarketParticipant.mRID</td>
<td>EIC-X code of the TSO</td>
<td>The identification of the sender.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>sender_MarketParticipant.marketRole.type</td>
<td>A04: System Operator</td>
<td>The role of the sender.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>receiver_MarketParticipant.mRID</td>
<td>EIC-V code of the STA IT System</td>
<td>The identification of the receiver.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>receiver_MarketParticipant.marketRole.type</td>
<td>A44: RSC</td>
<td>The role of the receiver.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>createdDateTime</td>
<td>E.G: 2018-03-23T12:04:39Z</td>
<td>UTC Time.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>docstatus</td>
<td>Not used.</td>
<td>The identification of the condition or position of the document with regard to its standing.</td>
<td>Optional</td>
</tr>
</tbody>
</table>
### Table 11 - TimeSeries Capacity Document dependency table

<table>
<thead>
<tr>
<th>TimeSeries</th>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRID</td>
<td>Unique ID (Max 35 characters)</td>
<td>Identification of the time series</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>businessType</td>
<td>A27: NTC</td>
<td>The exact business nature identifying the principal characteristic of time series.</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>product</td>
<td>8716867000016: Active Power</td>
<td>The identification of the nature of an energy product such as power, energy, reactive power, etc.</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>in_Domain</td>
<td>EIC-Y Area Code</td>
<td>Import bidding zone or control area ID</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------------------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>out_Domain</td>
<td>EIC-Y Area Code</td>
<td>Export bidding zone or control area ID</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>measure_Unit.name</td>
<td>MAW</td>
<td>Name of the unit measurement.</td>
<td>Mandatory</td>
<td></td>
</tr>
<tr>
<td>auction.mRID</td>
<td>Not used.</td>
<td>The unique identification of the auction.</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td>auction.category</td>
<td>Not used.</td>
<td>The product category of an auction.</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td>curveType</td>
<td>A02: Point</td>
<td>The type of curve being defined in the time series</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td>connectingLine_RegistredResource</td>
<td>Not used.</td>
<td>The identification of a set of lines that connect two areas</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td>reason.code</td>
<td>It can be used all codes in the ReasonCodeType Codelist.</td>
<td>Indicates if the capacity document is correct or has errors at the TimeSeries level. Mandatory only if there are errors at the header level.</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td>reason.text</td>
<td>May be used Text</td>
<td>Text explaining possible problem. Mandatory only if there are errors at the Timeseries level.</td>
<td>Optional</td>
<td></td>
</tr>
</tbody>
</table>

### Table 12 - Series_Period Capacity Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>timInterval</td>
<td>E.G: &lt;start&gt;2018-03-16T00:00Z&lt;/start&gt; &lt;end&gt;2018-03-16T00:30Z&lt;/end&gt;</td>
<td>Time interval covered by elements of Point class. It must be included within header Time_Period.timeInterval.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>resolution</td>
<td>PT60M</td>
<td>Resolution used in the Point class.</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>
### Table 13 - Point Capacity Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>position</td>
<td>Integer value &gt; 0</td>
<td>A sequential value representing the relative position within a given time interval.</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>The position must begin with 1 and increment by 1 for each subsequent position forming a series of contiguous numbers covering the complete range of the period.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quantity</td>
<td>Decimal value (Float)</td>
<td>The principal quantity identified for a point.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>reason.code</td>
<td>It can be used all codes in the ReasonCodeType Codelist.</td>
<td>Indicates if the capacity document is correct or has errors at the point level.</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mandatory only if there are errors at the header level.</td>
<td></td>
</tr>
<tr>
<td>reason.text</td>
<td>May be used</td>
<td>Text explaining possible problem.</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td>Text</td>
<td>Mandatory only if there are errors at the point level.</td>
<td></td>
</tr>
</tbody>
</table>
5.6 NTC Input data to STA software platform

Capacity_MarketDocument is described in this Implementation Guide as the exchange data document to deliver NTC inputs from TSOs to STA platform.

Using this document, TSOs can send separately NTCs information. mRID naming convention for NTC files will be described in this point.

The assembly model for NTC data input from TSOs can be found in IEC 62325-451-3:2014+AMD1:2017 CSV Consolidated version.

- **Capacity_MarketDocument**
  - mRID: ID_String is a unique ID of maximum 35 characters.
  - A proposed pattern of the STA project for this mRID is the following:
    - NTC XXX YYYY-MM-DD YYYY-MM-DDTHHMM
    - STA platform will not refuse a document if the pattern is not respected. CIM EG recommends using non-significant mRIDs generated by the IT Systems.
  - Receiver_MarketParticipant.mRID: PartyID_String EIC-V code of STA platform, not yet decided.

- **Timeseries**
  - mRID: ID_String is a unique ID of maximum 35 characters.
  - A proposed pattern of the STA project for mRID in Timeseries is the following:
    - BBB PPP XXX YYYY-MM-DDTHHMM
    - BBB is the business type code described in the Timeseries. PPP not used for mRID of Timeseries containing NTC information.
  - STA platform will not refuse a document if the pattern is not respected. CIM EG recommends using non-significant mRIDs generated by the IT Systems.

- **Series_Period**
  - In our case, the timeInterval for Series_Period is expected being the same as the timeInterval of the document.
• **Point**

In this attribute we specify the different values for the NTCs.

The next table shows an example of mRID following the given convention.

<table>
<thead>
<tr>
<th>Table 14 - mRID examples for input TSO files</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>mRID document level</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>mRID Timeseries level</td>
</tr>
<tr>
<td>Business type codes</td>
</tr>
</tbody>
</table>


Notice that all the XML examples are provided only for information purposes.

5.6.1 XML input NTC examples – Capacity_MarketDocument

Find below an example of Capacity_MarketDocument XML document using the given conventions for sending NTC values. The document contains one Timeseries to provide the necessary information to STA platform. Timeseries example will be given hereafter to present NTC information.

```xml
<?xml version="1.0" encoding="UTF-8"?>
xmlns:urn:iec62325.351:tc57wg16:451-3:capacitydocument:8:0 xsd:schemaLocation="urn:iec62325.351:tc57wg16:451-3:capacitydocument:8:0 iec62325-451-3-capacity_v8_0.xsd">
  <mRID>NTC_ES_2018-06-16_2018-06-15T0811</mRID>
  <revisionNumber>1</revisionNumber>
  <type>A26</type>
  <process.processType>A31</process.processType>
  <sender_MarketParticipant.mRID codingScheme="A01">10XES-REE------E</sender_MarketParticipant.mRID>
  <sender_MarketParticipant.marketRole.type>A04</sender_MarketParticipant.marketRole.type>
  <receiver_MarketParticipant.mRID codingScheme="A01">SMTA-CODE--1</receiver_MarketParticipant.mRID>
  <receiver_MarketParticipant.marketRole.type>A44</receiver_MarketParticipant.marketRole.type>
  <createdDateTime>2018-06-15T08:11:31Z</createdDateTime>
  <period.timeInterval>
    <start>2018-06-15T22:00Z</start>
    <end>2018-06-15T22:00Z</end>
  </period.timeInterval>
  <domain.mRID codingScheme="A01">10XES-REE------E</domain.mRID>
  <TimeSeries>
    <!--Example of Timeseries for sending NTCs data is given below-->
  </TimeSeries>
  <Reason>
    <!--Reason attribute is optional-->
    <code>B11</code>
    <text>a</text>
  </Reason>
</Capacity_MarketDocument>
```

Figure 9 - NTC XML input Capacity_MarketDocument
Find below an example of Timeseries containing NTC information for border ES→FR.

```xml
<Timeseries>
  <mRID>A27_ES_2018-06-15T0811</mRID>
  <businessType>A27</businessType>
  <product>B716867000016</product>
  <in_Domain.mRID codingScheme='A01'>10YFR-RTE------C</in_Domain.mRID>
  <out_Domain.mRID codingScheme='A01'>10YES-REE------0</out_Domain.mRID>
  <measure_Unit.name>MAW</measure_Unit.name>
  <curveType>A01</curveType>
  <Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>1000.0</quantity>
    </Point>
    <Reason>
      <code>B37</code>
      <text>a</text>
    </Reason>
    <Point>
      <position>2</position>
      <quantity>1000.0</quantity>
    </Point>
  </Period>
</Timeseries>
```

Figure 10 - Timeseries NTC information – example for ES→FR border
5.7 ShortMediumTermAdequacyResults_MarketDocument dependency table

General Notes:

- As you are obliged to use only EIC codes to identify parties, zones or assets, you must write in the coding scheme attribute of your XML document code A01 (EIC).
- To avoid sending quantity values with a lot of decimals, please restrict the number of decimals to five as maximum. EG: 0.86578

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRID</td>
<td>Unique ID (Max 35 characters)</td>
<td>Identification of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>revisionNumber</td>
<td>Consecutive number. Pattern ([1-9][0-9])(0,2)</td>
<td>Version of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>type</td>
<td>B19: Reporting information market document</td>
<td>The document type describes the principal characteristic of the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>process.processType</td>
<td>A31: Week ahead</td>
<td>Indicates the nature of process that the document addresses.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>sender_MarketParticipant.mRID</td>
<td>EIC-V code of the STA IT System</td>
<td>The identification of the sender.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>sender_MarketParticipant.marketRole.type</td>
<td>A44: RSC</td>
<td>The role of the sender.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>receiver_MarketParticipant.mRID</td>
<td>EIC-X code of the TSO</td>
<td>The identification of the receiver.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>receiver_MarketParticipant.marketRole.type</td>
<td>A04: System Operator</td>
<td>The role of the receiver.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>createdDateTime</td>
<td>E.G: 2018-03-23T12:04:39Z</td>
<td>UTC Time.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>time_Period.TimeInterval</td>
<td>E.G: &lt;start&gt;2018-03-16T00:00Z&lt;/start&gt;</td>
<td>STA Results target time interval covered by the document.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Reason.code</td>
<td>May be used.</td>
<td>Indicates if the results document is correct or has errors at the header level.</td>
<td>Optional</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td>It can be used all codes in the ReasonCodeType Codelist.</td>
<td>Mandatory only if there are errors at the header level.</td>
<td></td>
</tr>
<tr>
<td>Reason.text</td>
<td>May be used Text</td>
<td>Text explaining possible problem.</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mandatory only if there are errors at the header level.</td>
<td></td>
</tr>
</tbody>
</table>

### Table 16 – TimeSeries Results Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>mRID</td>
<td>Unique ID (Max 35 characters)</td>
<td>Identification of the time series.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>businessType</td>
<td>A01: Production</td>
<td>The exact business nature identifying the principal characteristic of time series.</td>
<td>Mandatory</td>
</tr>
<tr>
<td></td>
<td>A13: Load profile</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A27: Net transfer capacity (NTC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A38: Available generation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B63: Aggregated netted external schedule</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B64: Netted area AC position</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B65: Netted area position</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B99: Load Shedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C01: Remaining Capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C02: Indicator of generation capacity adequacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>product</td>
<td>8716867000016: Active Power</td>
<td>The identification of the nature of an energy product such as power, energy, reactive power, etc.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>curveType</td>
<td>A02: Point</td>
<td>The type of curve being defined in the time series.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>-----------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>measurement_Unit.name</td>
<td>MAW</td>
<td>Name of the unit measurement.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>in_Domain.mRID</td>
<td>EIC-Y Area Code</td>
<td>Import control area or bidding zone ID</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If businessType code is A27 (NTC) or B63 (Aggregated Netted external schedule): Import control area or bidding zone ID.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If businessType code is B64, B65, C01, C02. The export or import situation is defined by filling the attribute with code “10YEU-CONT-SYNC0” inside “in_Domain.mRID” or “outDomain.mRID”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For the rest of the businessType codes: ID of the control area or bidding zone. To write the same control area/bidding zone id in both domains (in and out).</td>
<td></td>
</tr>
<tr>
<td>out_Domain.mRID</td>
<td>EIC-Y Area Code</td>
<td>Export control area or bidding zone ID</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If businessType code is A27 (NTC) or B63 (Aggregated Netted external schedule): Export control area or bidding zone ID.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If businessType code is B64, B65, C01, C02. The export or import situation is defined by filling the attribute with code “10YEU-CONT-SYNC0” inside “in_Domain.mRID” or “outDomain.mRID”</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For the rest of the businessType codes: ID of the control area or bidding zone. To write the same control area/bidding zone id in both domains (in and out).</td>
<td></td>
</tr>
<tr>
<td>connectingLine_Regis teredResource.mRID</td>
<td>EIC-T Code</td>
<td>ID of the connecting line.</td>
<td>Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mandatory only for Business Type Code:</td>
<td></td>
</tr>
<tr>
<td>mktPSRTyp.psrType</td>
<td>B01: Biomass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B02: Fossil Brown coal/Lignite</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B03: Fossil Coal-derived gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B04: Fossil Gas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B05: Fossil Hard coal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B06: Fossil Oil</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B07: Fossil Oil shale</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B08: Fossil Peat</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B09: Geothermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B10: Hydro Pumped Storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B11: Hydro Run-of-river and poundage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B12: Hydro Water Reservoir</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B013: Marine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B14: Nuclear</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B15: Other renewable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B16: Solar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B17: Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B18: Wind Offshore</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B19: Wind Onshore</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B20: Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **B63: Aggregated netted external schedule**

  Used as asset type: The identification of the type of asset.

  **Mandatory only for Business Type Code:**

  - **A01: Production**

<table>
<thead>
<tr>
<th>Reason.code</th>
<th>May be used.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>It can be used all codes in the ReasonCodeType Codelist.</td>
</tr>
</tbody>
</table>

  Indicates if the results document is correct or has errors at the timeseries level.

  **Mandatory only if there are errors at the timeseries level.**

<table>
<thead>
<tr>
<th>Reason.text</th>
<th>May be used Text</th>
</tr>
</thead>
</table>

  Text explaining possible problem.

  **Mandatory only if there are errors at the timeseries level.**

- **Optional**
### Table 17 – Series_Period Results Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>timeInterval</td>
<td>E.G: &lt;start&gt;2018-03-16T00:00Z&lt;/start&gt; &lt;end&gt;2018-03-16T00:30Z&lt;/end&gt;</td>
<td>Time interval covered by elements of Point class. It must be included within header Time_Period.timeInterval.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>resolution</td>
<td>PT60M</td>
<td>Resolution used in the Point class.</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

### Table 18 - Point Results Document dependency table

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Values</th>
<th>Description</th>
<th>XSD Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>position</td>
<td>Integer value &gt; 0</td>
<td>A sequential value representing the relative position within a given time interval.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>quantity</td>
<td>Decimal value (Float)</td>
<td>The principal quantity identified for a point.</td>
<td>Mandatory</td>
</tr>
<tr>
<td>posFR_Quantity.quantity</td>
<td>Not used</td>
<td>Positive feasibility range.</td>
<td>Optional</td>
</tr>
<tr>
<td>negFR_Quantity.quantity</td>
<td>Not used</td>
<td>Negative feasibility range.</td>
<td>Optional</td>
</tr>
<tr>
<td>Reason.code</td>
<td>May be used. It can be used all codes in the ReasonCodeType Codelist.</td>
<td>Indicates if the results document is correct or has errors at the timeseries level. Mandatory only if there are errors at the point level.</td>
<td>Optional</td>
</tr>
<tr>
<td>Reason.text</td>
<td>May be used Text</td>
<td>Text explaining possible problem. Mandatory only if there are errors at the point level.</td>
<td>Optional</td>
</tr>
</tbody>
</table>
### 5.8 Output data from STA software platform

ShortMediumTermAdequacyResults_MarketDocument is a document to provide results of STA calculation to TSOs and RSCs. The next table describes the expected results from STA calculation contained in the output file.

<table>
<thead>
<tr>
<th>Label</th>
<th>BusinessType Code</th>
<th>Business Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>A01</td>
<td>Expected results for A01 are generation per energy type started in each area minimizing the objective function described in Business Process Document.</td>
</tr>
<tr>
<td>Load profile</td>
<td>A13</td>
<td>The load profile of given area.</td>
</tr>
<tr>
<td>Generation profile</td>
<td>A38</td>
<td>The input RAC provided by TSOs.</td>
</tr>
<tr>
<td>Net Transfer Capacity (NTC)</td>
<td>A27</td>
<td>The selected NTC of each border used for STA calculation according to the selection rules defined in Business Process Document.</td>
</tr>
<tr>
<td>Aggregated netted external schedule</td>
<td>B63</td>
<td>Exchange on borders found after STA calculation.</td>
</tr>
<tr>
<td>Netted area AC position</td>
<td>B64</td>
<td>The AC net position for a given area (without DC flows). This data is similar to Vulcanus program. Convention for Export or Import sign is given in B64 example here after.</td>
</tr>
<tr>
<td>Netted area position</td>
<td>B65</td>
<td>The AC and DC netted position for a given area. This code takes in account flows on DC lines. Convention for Export or Import sign is given in B64 example here after.</td>
</tr>
<tr>
<td>Load shedding</td>
<td>B99</td>
<td>Load shedding in a given area if there is adequacy absence after calculation. The amount of load shedding calculated shows directly the level of absence of adequacy.</td>
</tr>
<tr>
<td>Remaining Capacity</td>
<td>C01</td>
<td>RAC minus load for a given area. This is the TSO input to STA. Convention for Export or Import sign is given in B64 example here after.</td>
</tr>
<tr>
<td>Indicator of generation capacity adequacy</td>
<td>C02</td>
<td>This is the final Remaining Capacity after STA calculation. It is calculated as initial Remaining Capacity + Imports – Exports. Convention for Export or Import sign is given in B64 example here after.</td>
</tr>
</tbody>
</table>
5.8.1 XML output results examples –

ShortMediumTermAdequacyResults_MarketDocument

You can find the assembly model of SMTA results document in chapter 6.4

- ShortMediumTermAdequacyResults_MarketDocument

  - mRID: ID_String is a unique ID of maximum 35 characters. This is the results document mRID. A proposed pattern of the STA project for the mRID at that document level:

    STA_YYYY-MM-DD_YYYY-MM-DDTHHMM

    TSO platform will not refuse a document if the pattern is not respected. CIM EG recommends using non-significant mRIDs generated by the IT Systems.

  - Sender_MarketParticipant.mRID: PartyID_String is the EIC-V code of STA platform. This code is not available yet.

- Timeseries

  - mRID: ID_String is a unique ID of maximum 35 characters. A proposed pattern of the STA project for the mRID at the timeseries level:

    BBB_PPP_XXX_YYYY-MM-DDTHHMM

    BBB is the business type code of related Timeseries. PPP is the PSRtype code related of Timeseries. XXX is the TSO iso code for Timeseries with business types A01, A13, A38, B64, B65, B99, C01 and C02. For other Timeseries, XXXXX is maximum length of 6 characters. For business types A27 and B63, that is the merge iso codes of TSOs corresponding border (e.g. XXXX=BENL). YYYYY-MM-DDTHHMM is the created date time of document.

    This convention is used with Timeseries with business types A01. When Timeseries describe business codes A13, B64, B65, B99, C01 and C02, there is no PSRtype. Thus, the convention becomes:

    BBB_XXX_YYYY-MM-DDTHHMM

    TSO platform will not refuse a document if the pattern is not respected. CIM EG recommends using non-significant mRIDs generated by the IT Systems.

    The next table shows an example of mRID following the given convention.

<table>
<thead>
<tr>
<th>Convention Timeseries</th>
<th>Generation output example</th>
<th>Other outputs example</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2) B63_BENL_2018-06-15T0905</td>
</tr>
<tr>
<td>Used for</td>
<td>Only for business type code A01</td>
<td>1) Only for business type codes A13, B64, B65, B99, C01 and C02. 2) Only for business type codes A27 and B63</td>
</tr>
</tbody>
</table>
Notice that all the XML examples are provided only for information purposes.

5.8.2 XML output document ShortMediumTermAdequacyResults_MarketDocument

Find below an example of ShortMediumTermAdequacyResults_MarketDocument XML document.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!--SMTA Results Example created by Alvaro Marciel--> 
<!-This is a SMTA CONFIDENTIAL file -->
  <mRID>SMTA_2018-06-16_2018-06-15T0905</mRID>
  <revisionNumber>1</revisionNumber>
  <type>B19</type>
  <process.processType>A31</process.processType>
  <sender_MarketParticipant.mRID codingScheme="A01">EIC-V tool code</sender_MarketParticipant.mRID>
  <receiver_MarketParticipant.mRID codingScheme="A01">10XES-REE------E</receiver_MarketParticipant.mRID>
  <createdDateTime>2018-06-15T10:47Z</createdDateTime>
  <time_Period.timeInterval start="2018-06-06T15T22:00Z" end="2018-06-06T22T22:00Z">
    <TimeSeries>
      <!--Example of Timseries for sending results data are given below -->
      </TimeSeries>
      <!--More Timseries...-->
  </time_Period.timeInterval>
</ShortMediumTermAdequacyResults_MarketDocument>
```

Figure 11 - Result XML document ShortMediumTermAdequacyResults_MarketDocument

5.8.3 XML output Timeseries B64, B65, C01, C02 example

Attached to the ShortMediumTermAdequacyResults_MarketDocument class, find an example of the Timseries class below with business type B65 to describe netted area position in Spain. Every Timseries will describe a different business result.

```xml
<TimeSeries>
  <mRID>B65_ES_2018-06-15T0905</mRID>
  <businessType>B65</businessType>
  <product>8716867000016</product>
  <curveType>A01</curveType>
  <measurement_Unit.name>MAWc</measurement_Unit.name>
  <in_Domain.mRID codingScheme="A01">10YES-REE------E</in_Domain.mRID>
  <out_Domain.mRID codingScheme="A01">10YEU-CON-SYNCO</out_Domain.mRID>
  <Period>
    <timeInterval start="2018-06-15T22:00Z" end="2018-06-15T22:00Z">
      <Point>
        <position>1</position>
        <quantity>1350.0</quantity>
      </Point>
      <Point>
        <position>2</position>
        <quantity>1550.0</quantity>
      </Point>
    </timeInterval>
  </Period>
</TimeSeries>
```

Figure 12 - Timseries of BusinessType B65 netted area position

Quantity is always a positive number. The export or import situation is defined by filling the tag “10YEU-CON-SYNCO” inside “in_Domain.mRID” or “outDomain.mRID”. The other domain tag must be filled by the TSO EIC code related to the value. The table below shows how export or import are described.
This rule is used for business types B64, B65, C01 and C02.

5.8.4 XML output Timeseries B63 example

Attached to the ShortMediumTermAdequacyResults_MarketDocument class, find an example of the Timeseries class below with business type B63 to describe aggregated netted external schedule. We can distinguish 4 different border situations:

- AC border
- DC border between synchronous areas
- Mix AC and DC border
- DC border in same synchronous area

Each situation will be presented hereafter.

This example below describes a Timeseries involving business type B63 netted external schedule on AC border. The Timeseries is given for an exchange on border BE towards NL.

```
<TimeSeries>
    <mRID>B63_BENL_2018-06-15T0905</mRID>
    <businessType>B63</businessType>
    ... 
            <quantity>1350.0</quantity> 
        </Point> 
... 
    </Period>
</TimeSeries>
```

Figure 13 - Timeseries with BusinessType B63 on AC border connection

The second Timeseries example with situation on DC border between synchronous areas is given below. This example shows the situation on NorNed DC cable between NL and NO, considering the direction NL towards NO. One particularity on borders with DC cable between synchronous area is the use of a middle point which is the border. Because of that, two Timeseries are necessary to describe the exchange. The next figure describes this element.

```
<TimeSeries>
    <mRID>B63_BENL_2018-06-15T0905</mRID>
    <businessType>B63</businessType>
    ... 
            <quantity>1350.0</quantity> 
        </Point> 
... 
    </Period>
</TimeSeries>
```
Flow direction NLNO

Timeseries 1

out_Domain.mRID

10YNL--------L

NL

(VSA) Virtual Scheduling Area

|in_Domain.mRID|
|10YDOM-1001A041Z|

Timeseries 2

out_Domain.mRID

10YDOM-1001A041Z

NO

|in_Domain.mRID|
|10YN0-------C|

---

HVDC cable – EIC-T code: 10T-NL-NO-00001W

Figure 14 - HVDC cable between synchronous areas

Figure 15 - Timeseries with BusinessType B63 on DC border between synchronous areas
The third case to describe is the mixed AC and DC border, for instance border between Italy and France in the future. For such border, we need 3 Timeseries to describe the exchange:

- 1 Timeseries to describe the AC exchange
- 2 Timeseries to describe the DC exchange

It is a combination of Timeseries of the 2 previous cases.

The fourth example is the DC border in same synchronous area, for instance Italy – Greece. If the DC cable is considered in AC-mode, it is considered as AC border (Timeseries as first case).

### 5.8.5 XML output Timeseries A27 NTC example

BusinessType A27 is used to share NTC selected by STA tool according to the Business Process document. For each border in each direction, a specific Timeseries will share the selected NTC. Here is an example on border BE→NL.

```xml
<TimeSeries>
  <mRID>A27_BENL_2018-06-15T0905</mRID>
  <businessType>A27</businessType>
  <product>8716867000016</product>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <in_Domain.mRID codingScheme="A01">10YNL---L</in_Domain.mRID>
  <out_Domain.mRID codingSchemes="A01">10YBE--------2</out_Domain.mRID>
  <Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-15T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>2000.0</quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>2000.0</quantity>
    </Point>
    ...
  </Period>
</TimeSeries>
```

Figure 16 - Timeseries with BusinessType A27 on border BE→NL
5.8.6 XML output Timeseries A01 generation started example

This Timeseries A01 provides the generation per energy type started in each area after STA calculation. The code EIC-Y of TSOs is given in both attributes out_Domain.mRID and in_Domain.mRID. The decimal value can be positive (generating mode) or negative for B10 (pumping mode). Here below an example with nuclear generation (mktPSRType = B14).

```
<TimeSeries>
  <mRID>A01_ES_2018-06-15T0905</mRID>
  <businessType>A01</businessType>
  <product>87166E7000016</product>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <in_Domain.mRID codingScheme="A01">10YES-REE------E</in_Domain.mRID>
  <out_Domain.mRID codingScheme="A01">10YES-REE------E</out_Domain.mRID>
  <mktPSRType.psrType>B14</mktPSRType.psrType>
  <Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>10050.0</quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>9780.0</quantity>
    </Point>
  </Period>
</TimeSeries>
```

Figure 17 - Timeseries of BusinessType A01 RAC of TSOs

5.8.7 XML output Timeseries A38 generation input example

This Timeseries A38 provides the generation input of each TSO per energy type started in each area after STA calculation. The code EIC-Y of TSOs is given in both attributes out_Domain.mRID and in_Domain.mRID. The decimal value can be positive (generating mode) or negative for B10 (pumping mode). Here below an example with nuclear generation (mktPSRType = B14).

```
<TimeSeries>
  <mRID>A38_ES_2018-06-15T0905</mRID>
  <businessType>A38</businessType>
  <product>87166E7000016</product>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <in_Domain.mRID codingScheme="A01">10YES-REE------E</in_Domain.mRID>
  <out_Domain.mRID codingScheme="A01">10YES-REE------E</out_Domain.mRID>
  <mktPSRType.psrType>B14</mktPSRType.psrType>
  <Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>10050.0</quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>9780.0</quantity>
    </Point>
  </Period>
</TimeSeries>
```

Figure 18 - Timeseries of BusinessType A38 generation input of TSOs
5.8.8 XML output Timeseries A13 Total Load example

Find below an example of Timeseries for sharing the Total load of TSOs. TSO is specified by its EIC-Y code in both attributes out_Domain.mRID and in_Domain.mRID. The decimal value is positive.

```xml
<TimeSeries>
  <mRID>A13_BE_2018-06-15T0905</mRID>
  <businessType>A13</businessType>
  <product>8716667000016</product>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <in_Domain.mRID codingScheme="A01">10YBE----------2</in_Domain.mRID>
  <out_Domain.mRID codingScheme="A01">10YBE----------2</out_Domain.mRID>
  <Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-15T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>10500.0</quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>11050.0</quantity>
    </Point>
  </Period>
</TimeSeries>
```

Figure 19 - Timeseries with BusinessType A13 Total Load

Find below an example of Timeseries for sharing the Total load of TSOs. TSO is specified by its EIC-Y code in attribute out_Domain.mRID. In attribute in_Domain.mRID, the code 10YEU-CONT-SYNC0 is used. When the tool does not forecast Load Shedding, the Timeseries with BusinessType B99 is not provided in the result document.
5.8.9 XML output Timeseries B99 Load Shedding example

Find below an example of Timeseries for sharing the Total load of TSOs. TSO is specified by its EIC-Y code in attribute out_Domain.mRID. In attribute in_Domain.mRID, the code 10YEUCONT-SYNC0 is used. When the tool does not forecast Load Shedding, the Timeseries with BusinessType B99 is not provided in the result document.

```xml
<TimeSeries>
  <mRID>B99_BE_2018-06-15T0905</mRID>
  <businessType>B99</businessType>
  <product>871667000016</product>
  <curveType>A02</curveType>
  <measurement_Unit.name>MAW</measurement_Unit.name>
  <in_Domain.mRID codingScheme="A01">10YBE---------2</in_Domain.mRID>
  <out_Domain.mRID codingScheme="A01">10YBE---------2</out_Domain.mRID>
  <Period>
    <timeInterval>
      <start>2018-06-15T22:00Z</start>
      <end>2018-06-22T22:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
    <Point>
      <position>1</position>
      <quantity>1050.0</quantity>
    </Point>
    <Point>
      <position>2</position>
      <quantity>1243.0</quantity>
    </Point>
  </Period>
</TimeSeries>
```

Figure 20 - Timeseries with BusinessType B99 Load Shedding
6 Contextual and assembly models

6.1 Short medium term adequacy prognosis contextual model

6.1.1 Overview of the model

Figure 21 - Short medium term adequacy prognosis contextual model shows the model.
6.1.2 *IsBasedOn* relationships from the European style market profile

Table 21 - *IsBasedOn* dependency shows the traceability dependency of the classes used in this package towards the upper level.

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete <em>IsBasedOn</em> Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain</td>
<td>TC57CIM::IEC62325::MarketManagement::Domain</td>
</tr>
<tr>
<td>FlowDirection</td>
<td>TC57CIM::IEC62325::MarketManagement::FlowDirection</td>
</tr>
<tr>
<td>MarketParticipant</td>
<td>TC57CIM::IEC62325::MarketCommon::MarketParticipant</td>
</tr>
<tr>
<td>MarketRole</td>
<td>TC57CIM::IEC62325::MarketCommon::MarketRole</td>
</tr>
<tr>
<td>Measure_Unit</td>
<td>TC57CIM::IEC62325::MarketManagement::Unit</td>
</tr>
<tr>
<td>MktPSRType</td>
<td>TC57CIM::IEC62325::MarketManagement::MktPSRType</td>
</tr>
<tr>
<td>Percentile_Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Quantity</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Probability_Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Quantity</td>
</tr>
<tr>
<td>ProcessType_Process</td>
<td>TC57CIM::IEC62325::MarketManagement::Process</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>ShortMediumTermAdequacyPrognosis_MarketDocu</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>Time_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>
6.2 Short medium term adequacy prognosis assembly model

6.2.1 Overview of the model

Figure 22 - Short medium term adequacy prognosis assembly model

Figure 22 shows the model.
6.2.2 IsBasedOn relationships from the European style market profile

Table 22 - IsBasedOn dependency shows the traceability dependency of the classes used in this package towards the upper level.

Table 22 - IsBasedOn dependency

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentile_Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Quantity</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>ShortMediumTermAdequacyPrognosis_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>

6.2.3 Detailed Short medium term adequacy prognosis assembly model

6.2.3.1 ShortMediumTermAdequacyPrognosis_MarketDocument root class

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

Table 23 - Attributes of Short medium term adequacy prognosis assembly model::ShortMediumTermAdequacyPrognosis_MarketDocument shows all attributes of ShortMediumTermAdequacyPrognosis_MarketDocument.

Table 23 - Attributes of Short medium term adequacy prognosis assembly model::ShortMediumTermAdequacyPrognosis_MarketDocument

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID ID_String</td>
<td>The unique identification of the document being exchanged within a business process flow.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>revisionNumber ESMPVersion_String</td>
<td>The identification of the version that distinguishes one evolution of a document from another.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>processType_Process.processType ProcessKind_String</td>
<td>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.</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. --- The MarketParticipant associated with an electronic document header.</td>
</tr>
<tr>
<td>5</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. --- The MarketParticipant associated with an electronic document header. --- The role associated with a MarketParticipant.</td>
</tr>
<tr>
<td>6</td>
<td>[1..1]</td>
<td>receiver_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. --- The MarketParticipant associated with an electronic document header.</td>
</tr>
<tr>
<td>7</td>
<td>[1..1]</td>
<td>receiver_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. --- The MarketParticipant associated with an electronic document header. --- The role associated with a MarketParticipant.</td>
</tr>
</tbody>
</table>
### Table 24 - Association ends of Short medium term adequacy prognosis assembly model::ShortMediumTermAdequacyPrognosis_MarketDocument with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
</table>

### 6.2.3.2 Percentile.Quantity

The quantity attribute provides the information relative to the percentage level of quality of the prognosis quantity.

#### Table 25 - Attributes of Short medium term adequacy prognosis assembly model::Percentile.Quantity

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>type String</td>
<td>The description of the type of the quantity.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>quantity Decimal</td>
<td>The quantity value. The association role provides the information about what is expressed.</td>
</tr>
</tbody>
</table>

### 6.2.3.3 Point

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

#### Table 26 - Attributes of Short medium term adequacy prognosis assembly model::Point

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>position Position_Integer</td>
<td>A sequential value representing the relative position within a given time interval.</td>
</tr>
</tbody>
</table>
### Table 27 - Association ends of Short medium term adequacy prognosis assembly model::Point with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>[0..*]</td>
<td>Percentile_Quantity, Percentile_Quantity</td>
<td>The percentile quantity value provided. Association Based On: Short medium term adequacy prognosis contextual model::Point.[] Short medium term adequacy prognosis contextual model::Percentile_Quantity.Percentile_Quantity[0..*]</td>
</tr>
</tbody>
</table>

### 6.2.3.4 Series_Period

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

### Table 28 - Attributes of Short medium term adequacy prognosis assembly model::Series_Period

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>timeInterval, ESMP_DateTimeInterval</td>
<td>The start and end time of the period.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>resolution, Duration</td>
<td>The definition of the number of units of time that compose an individual step within a period.</td>
</tr>
</tbody>
</table>

### Table 29 - Association ends of Short medium term adequacy prognosis assembly model::Series_Period with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>[1..*]</td>
<td>Point, Point</td>
<td>The Point information associated with a given Series_Period.within a TimeSeries. Association Based On: Short medium term adequacy prognosis contextual model::Series_Period.[] Short medium term adequacy prognosis contextual model::Point.Point[1..*]</td>
</tr>
</tbody>
</table>
### 6.2.3.5 TimeSeries

A set of time-ordered quantities being exchanged.

Table 30 - Attributes of Short medium term adequacy prognosis assembly model::TimeSeries shows all attributes of TimeSeries.

#### Table 30 - Attributes of Short medium term adequacy prognosis assembly model::TimeSeries

<table>
<thead>
<tr>
<th>Order</th>
<th>mut.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID ID_String</td>
<td>A unique identification of the time series.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>businessType BusinessKind_String</td>
<td>The identification of the nature of the time series.</td>
</tr>
<tr>
<td>2</td>
<td>[1..1]</td>
<td>curveType CurveType_String</td>
<td>The identification of the coded representation of the type of curve being described.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>measurement_Unit.name MeasurementUnitKind_String</td>
<td>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.</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>domain.mRID AreaID_String</td>
<td>The unique identification of the domain. --- The domain associated with a TimeSeries.</td>
</tr>
<tr>
<td>5</td>
<td>[0..1]</td>
<td>mktPSRType.psrType PsrType_String</td>
<td>The coded type of a power system resource. --- The identification of the type of resource associated with a TimeSeries.</td>
</tr>
<tr>
<td>6</td>
<td>[0..1]</td>
<td>flowDirection.direction DirectionKind_String</td>
<td>The coded identification of the direction of energy flow. --- The flow direction associated with a TimeSeries.</td>
</tr>
</tbody>
</table>

Table 31 - Association ends of Short medium term adequacy prognosis assembly model::TimeSeries with other classes shows all association ends of TimeSeries with other classes.

#### Table 31 - Association ends of Short medium term adequacy prognosis assembly model::TimeSeries with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mut.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>[1..*]</td>
<td>Series_Period Series_Period</td>
<td>The time interval and resolution for a period associated with a TimeSeries. Association Based On: Short medium term adequacy prognosis contextual model::TimeSeries[]. --- Short medium term adequacy prognosis contextual model::Series_Period.Series_Period[1..*]</td>
</tr>
</tbody>
</table>
6.2.4 Datatypes

The list of datatypes used for the Short medium term adequacy prognosis assembly model is as follows:

- ESMP_DateTimeInterval compound
- AreaID_String datatype, codelist CodingSchemeTypeList
- BusinessKind_String datatype, codelist BusinessTypeList
- CurveType_String datatype, codelist CurveTypeList
- DirectionKind_String datatype, codelist DirectionTypeList
- ESMP_DateTime datatype
- ESMPVersion_String datatype
- ID_String datatype
- MarketRoleKind_String datatype, codelist RoleTypeList
- 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
- YMDHM_DateTime datatype
6.2.5 **ShortMediumTermAdequacyPrognosis_MarketDocument XML schema**

The XSD file to be used with this implementation guide is:

```
urn:iec62325.351:tc57wg16:451-n:smtaprognosisdocument:1:0
```

**Figure 23 - ShortMediumTermAdequacyPrognosis_MarketDocument schema structure**
6.3 Short medium term adequacy results contextual

6.3.1 Overview of the model

Figure 24 - Short medium term adequacy results contextual shows the model.
### 6.3.2 IsBasedOn relationships from the European style market profile

Table 32 - IsBasedOn dependency shows the traceability dependency of the classes used in this package towards the upper level.

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConnectingLine.RegisteredResource</td>
<td>TC57CIM::IEC62325::MarketCommon::RegisteredResource</td>
</tr>
<tr>
<td>Domain</td>
<td>TC57CIM::IEC62325::MarketManagement::Domain</td>
</tr>
<tr>
<td>MarketParticipant</td>
<td>TC57CIM::IEC62325::MarketCommon::MarketParticipant</td>
</tr>
<tr>
<td>MarketRole</td>
<td>TC57CIM::IEC62325::MarketCommon::MarketRole</td>
</tr>
<tr>
<td>Measure_Unit</td>
<td>TC57CIM::IEC62325::MarketManagement::Unit</td>
</tr>
<tr>
<td>MktPSRType</td>
<td>TC57CIM::IEC62325::MarketManagement::MktPSRType</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Process</td>
<td>TC57CIM::IEC62325::MarketManagement::Process</td>
</tr>
<tr>
<td>Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Quantity</td>
</tr>
<tr>
<td>Reason</td>
<td>TC57CIM::IEC62325::MarketManagement::Reason</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>ShortMediumTermAdequacyResults_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>Time_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>
6.4 Short medium term adequacy results assembly

6.4.1 Overview of the model

Figure 25 - Short medium term adequacy results assembly shows the model.
### 6.4.2 IsBasedOn relationships from the European style market profile

Table 33 - IsBasedOn dependency shows the traceability dependency of the classes used in this package towards the upper level.

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Reason</td>
<td>TC57CIM::IEC62325::MarketManagement::Reason</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>ShortMediumTermAdequacyResults_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>

### 6.4.3 Detailed Short medium term adequacy results assembly

#### 6.4.3.1 ShortMediumTermAdequacyResults_MarketDocument root class

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

Table 34 - Attributes of Short medium term adequacy results assembly::ShortMediumTermAdequacyResults_MarketDocument shows all attributes of ShortMediumTermAdequacyResults_MarketDocument.

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID ID_String</td>
<td>The unique identification of the document being exchanged within a business process flow. In the ESMP context, the &quot;model authority&quot; is defined as a party (originator of the exchange) that provides an identification in the context of a business exchange such as document 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.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>revisionNumber ESMPVersion_String</td>
<td>The identification of the version that distinguishes one evolution of a document from another.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>process.processType ProcessKind_String</td>
<td>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.</td>
</tr>
<tr>
<td>Order</td>
<td>mult.</td>
<td>Attribute name / Attribute type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. In the ESMP context, the &quot;model authority&quot; 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 MarketParticipant associated with an electronic document header.</td>
</tr>
<tr>
<td>5</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. --- The MarketParticipant associated with an electronic document header. --- The role associated with a MarketParticipant.</td>
</tr>
<tr>
<td>6</td>
<td>[1..1]</td>
<td>receiver_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. In the ESMP context, the &quot;model authority&quot; 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 MarketParticipant associated with an electronic document header.</td>
</tr>
<tr>
<td>7</td>
<td>[1..1]</td>
<td>receiver_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. --- The MarketParticipant associated with an electronic document header. --- The role associated with a MarketParticipant.</td>
</tr>
<tr>
<td>8</td>
<td>[1..1]</td>
<td>createdDateTime ESMP_DateTime</td>
<td>The date and time of the creation of the document.</td>
</tr>
<tr>
<td>9</td>
<td>[1..1]</td>
<td>time_Period.timeInterval ESMP_DateTimeInterval</td>
<td>The start and end date and time for a given interval. --- The time interval that is associated with an electronic document and which is valid for the whole document.</td>
</tr>
</tbody>
</table>

Table 35 - Association ends of Short medium term adequacy results assembly::ShortMediumTermAdequacyResults_MarketDocument with other classes shows all association ends of ShortMediumTermAdequacyResults_MarketDocument with other classes.
### 6.4.3.2 Point

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

Table 36 - Attributes of Short medium term adequacy results assembly::Point shows all attributes of Point.

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>position</td>
<td>A sequential value representing the relative position within a given time interval.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Position_Integer</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>quantity</td>
<td>The principal quantity identified for a point.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decimal</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>[0..1]</td>
<td>posFR_Quantity.quantity</td>
<td>The quantity value.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decimal</td>
<td>The association role provides the information about what is expressed.</td>
</tr>
<tr>
<td>3</td>
<td>[0..1]</td>
<td>negFR_Quantity.quantity</td>
<td>The quantity value.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decimal</td>
<td>The association role provides the information about what is expressed.</td>
</tr>
</tbody>
</table>

Table 37 - Association ends of Short medium term adequacy results assembly::Point with other classes shows all association ends of Point with other classes.

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>[0..*]</td>
<td>Reason</td>
<td>The Reason information associated with a Point providing motivation information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason</td>
<td>Association Based On:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason</td>
<td>Short medium term adequacy results contextual::Reason.Reason[0..*]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reason</td>
<td>Short medium term adequacy results contextual::ShortMediumTermAdequacyResults_MarketDocument.[]</td>
</tr>
</tbody>
</table>

### 6.4.3.3 Reason

The motivation of an act.

Table 38 - Attributes of Short medium term adequacy results assembly::Reason shows all attributes of Reason.
### Table 38 - Attributes of Short medium term adequacy results assembly::Reason

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>code</td>
<td>ReasonCode_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The motivation of an act in coded form.</td>
</tr>
<tr>
<td>1</td>
<td>[0..1]</td>
<td>text</td>
<td>ReasonText_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The textual explanation corresponding to the reason code.</td>
</tr>
</tbody>
</table>

#### 6.4.3.4 Series_Period

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

Table 39 - Attributes of Short medium term adequacy results assembly::Series_Period shows all attributes of Series_Period.

### Table 39 - Attributes of Short medium term adequacy results assembly::Series_Period

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>timeInterval</td>
<td>ESMP_DateTimeInterval</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The start and end time of the period.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>resolution</td>
<td>Duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The definition of the number of units of time that compose an individual step within a period.</td>
</tr>
</tbody>
</table>

Table 40 - Association ends of Short medium term adequacy results assembly::Series_Period with other classes shows all association ends of Series_Period with other classes.

### Table 40 - Association ends of Short medium term adequacy results assembly::Series_Period with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>[1..*]</td>
<td>Point</td>
<td>Point</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The Point information associated with a given Series_Period.within a TimeSeries. Association Based On:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Short medium term adequacy results contextual::Point.Point[1..*]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Short medium term adequacy results contextual::Series_Period.[]</td>
</tr>
</tbody>
</table>

#### 6.4.3.5 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 41 - Attributes of Short medium term adequacy results assembly::TimeSeries shows all attributes of TimeSeries.
### Table 41 - Attributes of Short medium term adequacy results assembly::TimeSeries

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID ID_String</td>
<td>A unique identification of the time series. In the ESMP context, the &quot;model authority&quot; 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.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>businessType BusinessKind_String</td>
<td>The identification of the nature of the time series.</td>
</tr>
<tr>
<td>2</td>
<td>[1..1]</td>
<td>product EnergyProductKind_String</td>
<td>The identification of the nature of an energy product such as power, energy, reactive power, etc.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>curveType CurveType_String</td>
<td>The identification of the coded representation of the type of curve being described.</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>measurement_Unit.name MeasurementUnitKind_String</td>
<td>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.</td>
</tr>
<tr>
<td>6</td>
<td>[0..1]</td>
<td>in_Domain.mRID AreaID_String</td>
<td>The unique identification of the domain. In the ESMP context, the &quot;model authority&quot; 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 domain associated with a TimeSeries.</td>
</tr>
<tr>
<td>7</td>
<td>[0..1]</td>
<td>out_Domain.mRID AreaID_String</td>
<td>The unique identification of the domain. In the ESMP context, the &quot;model authority&quot; 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 domain associated with a TimeSeries.</td>
</tr>
<tr>
<td>Order</td>
<td>mult.</td>
<td>Attribute name / Attribute type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>---------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>8</td>
<td>[0..1]</td>
<td>connectingLine_RegisteredResource.mRID ResourceID_String</td>
<td>The unique identification of a resource. In the ESMP context, the &quot;model authority&quot; 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 resource associated with a TimeSeries.</td>
</tr>
<tr>
<td>9</td>
<td>[0..1]</td>
<td>mktPSRType.psrType PsrType_String</td>
<td>The coded type of a power system resource. --- The identification of the type of resource associated with a TimeSeries.</td>
</tr>
</tbody>
</table>

Table 42 - Association ends of Short medium term adequacy results assembly::TimeSeries with other classes shows all association ends of TimeSeries with other classes.

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>[1..*]</td>
<td>Series_Period Period</td>
<td>The time interval and resolution for a period associated with a TimeSeries. Association Based On: Short medium term adequacy results contextual::Series_Period.Period[1..*] ..... Short medium term adequacy results contextual::TimeSeries[,]</td>
</tr>
<tr>
<td>11</td>
<td>[0..*]</td>
<td>Reason Reason</td>
<td>The reason information associated with a TimeSeries providing motivation information. Association Based On: Short medium term adequacy results contextual::Reason.Reason[0..*] ..... Short medium term adequacy results contextual::TimeSeries[,]</td>
</tr>
</tbody>
</table>
6.4.4 Datatypes

The list of datatypes used for the Short medium term adequacy results assembly is as follows:

- ESMP_DateTimeInterval compound
- AreaID_String datatype, codelist CodingSchemeTypeList
- BusinessKind_String datatype, codelist BusinessTypeList
- CurveType_String datatype, codelist CurveTypeList
- EnergyProductKind_String datatype, codelist EnergyProductTypeList
- ESMP_DateTime datatype
- ESMPVersion_String datatype
- ID_String datatype
- MarketRoleKind_String datatype, codelist RoleTypeList
- 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
- ReasonCode_String datatype, codelist ReasonCodeTypeList
- ReasonText_String datatype
- ResourceID_String datatype, codelist CodingSchemeTypeList
- YMDHM_DateTime datatype
6.4.5 ShortMediumTermAdequacyResults_MarketDocument XML schema

The XSD file to be used with this implementation guide is:

urn:iec62325.351:tc57wg16:451-n:smtaresultsdocument:1:0

Figure 26 - ShortMediumTermAdequacyResults_MarketDocument schema structure
7 Advices for Acknowledgement document

Acknowledgment document is an IEC standard and its ownership has passed to IEC, so ENTSO-E cannot publish the Implementation Guide for Acknowledgement document. In case you want to get it, you must purchase it at IEC website. The version of Acknowledgement standard to be used in STA project is IEC 62325-451-1:2017.

Acknowledgement XSD (iec62325-451-1-acknowledgement_v8_0.xsd) is available on EDI Library for free.

The acknowledgement business process is generic and can be used in all electricity market business processes at two levels:
- Technical level: To detect syntax errors (XML parsing errors, etc.)
- Application level: To detect semantic errors (invalid data, wrong process, etc.).

The acknowledgement document shall contain both technical and application quality checks of TSOs input files. Technical test corresponds to the test on document structure to check whether inputs correspond to XSD document. Application checks correspond to the business rules to check whether they are respected or not.

The next figure provides the sequence diagram of the STA acknowledgement process.

![Figure 27 - Acknowledgement process](image)

One can specify various errors (reasons per timeseries). In the reason attributes one can introduce the reason code that one can find in the ENTSO-E Codelist. In the reason text attribute, one can be more specific and write a message describing the error.

The application checks shall be designed by the software vendor. Business requirements for application test shall be designed together with vendor in cooperation with TF&PG evaluation group.
8 File naming convention

Please be aware that this file naming convention is in the context of the STA business application. The STA business application will reject a file that does not follow the naming rules. Be aware also that the protocol (ECP) does not take care about the file naming convention.

8.1 Naming Convention for Load data input file
The naming of the file should be:

Load_{XXX}_YYYY-MM-DD_{YYYY-MM-DDTHHmm}

with following order and detailed information:

<table>
<thead>
<tr>
<th>Part</th>
<th>Element Definition</th>
<th>Description</th>
<th>Size</th>
<th>Applicability</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>_</td>
<td>Underscore</td>
<td>This information separates each part of the name.</td>
<td>The length of this information is 1 symbol character.</td>
<td>This information is mandatory</td>
<td>_</td>
</tr>
<tr>
<td>Load</td>
<td>The principal quantity identified for a point.</td>
<td>The document type identifies the information flow characteristics.</td>
<td>The length is 4 alpha characters.</td>
<td>This information is mandatory.</td>
<td>Load</td>
</tr>
<tr>
<td>XXX</td>
<td>Name of the TSO or bidding area of a TSO (DK1, DK2 or D8)</td>
<td>This information provides the name of sender referring to UCTE codification (refer to country ISO code list in Annex 1.)</td>
<td>The maximum length of this information is 3 alphanumeric characters.</td>
<td>This information is mandatory.</td>
<td>e.g.: DK1 or D8</td>
</tr>
<tr>
<td>First day of the period</td>
<td>The identification of the 1st day of the week period</td>
<td>This information provides the start date of the period Time Interval.</td>
<td>Date and time must be expressed in CET/CEST time as: YYYY-MM-DD</td>
<td>This information is mandatory.</td>
<td>e.g.: 2017-03-28</td>
</tr>
<tr>
<td>Created Date Time</td>
<td>The date and time of the creation of the document.</td>
<td>The date and time that the document was prepared for transmission by the application of the sender.</td>
<td>Date and time must be expressed in UTC as YYYY-MM-DDTHHmm</td>
<td>This information is mandatory.</td>
<td>e.g.: 2017-03-19T2303</td>
</tr>
</tbody>
</table>
8.2 Naming Convention for Generation input file

The naming of the file should be:

\[ \text{Gen}_\text{XXX}_\text{YYYY-MM-DD}_\text{YYYY-MM-DDTHMM} \]

with following order and detailed information:

<table>
<thead>
<tr>
<th>Part</th>
<th>Element Definition</th>
<th>Description</th>
<th>Size</th>
<th>Applicability</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>___</td>
<td>Underscore</td>
<td>This information separates each part of the name.</td>
<td>The length of this information is 1 symbol character.</td>
<td>This information is mandatory</td>
<td>___</td>
</tr>
<tr>
<td>Gen</td>
<td>The principal quantity identified for a point.</td>
<td>The document type identifies the information flow characteristics.</td>
<td>The length is 3 alpha characters.</td>
<td>This information is mandatory</td>
<td>Gen</td>
</tr>
<tr>
<td>___</td>
<td>Name of the TSO or bidding area of a TSO (DK1, DK2 or D8)</td>
<td>This information provides the name of sender referring to UCTE codification (refer to country ISO code list in Annex 1.)</td>
<td>The maximum length of this information is 3 alphanumeric characters.</td>
<td>This information is mandatory.</td>
<td>e.g.: DK1 or D8</td>
</tr>
<tr>
<td>First day of the period</td>
<td>The identification of the 1st day of the week period</td>
<td>This information provides the start date of the period Time Interval.</td>
<td>Date and time must be expressed in CET/CEST time as: YYYY-MM-DD</td>
<td>This information is mandatory.</td>
<td>e.g.: 2017-03-28</td>
</tr>
<tr>
<td>Created Date Time</td>
<td>The date and time of the creation of the document.</td>
<td>The date and time that the document was prepared for transmission by the application of the sender.</td>
<td>Date and time must be expressed in UTC as YYYY-MM-DDTHHHHMM.</td>
<td>This information is mandatory.</td>
<td>e.g.: 2017-03-19T2303</td>
</tr>
</tbody>
</table>
8.3 Naming Convention for NTC input file

The naming of the file should be:

**NTC_XXX_YYYY-MM-DD_YYYY-MM-DDTHHMM**

with following order and detailed information:

<table>
<thead>
<tr>
<th>Part</th>
<th>Element Definition</th>
<th>Description</th>
<th>Size</th>
<th>Applicability</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>_</td>
<td>Underscore</td>
<td>This information separates each part of the name.</td>
<td>The length of this information is 1 symbol character.</td>
<td>This information is mandatory</td>
<td>_</td>
</tr>
</tbody>
</table>
| NTC  | The principal quantity identified for a point. | The document type identifies the information flow characteristics.  
- Timeframe : Week Ahead  
- Quantity : STA NTC | The length is 3 alpha characters. | This information is mandatory. | NTC |
| XXX  | Name of the TSO or bidding area of a TSO (DK1, DK2 or D8) | This information provides the name of sender referring to UCTE codification (refer to country ISO code list in Annex 1.) | The maximum length of this information is 3 alphanumeric characters. | This information is mandatory. | e.g.: DK1 or D8 |
| First day of the period | The identification of the 1st day of the week period | This information provides the start date of the period Time Interval. | Date and time must be expressed in CET/CEST time as: YYYY-MM-DD | This information is mandatory. | e.g.: 2017-03-28 |
| Created Date Time | The date and time of the creation of the document. | The date and time that the document was prepared for transmission by the application of the sender. | Date and time must be expressed in UTC as YYYY-MM-DDTHHMM | This information is mandatory. | e.g.: 2017-03-19T2303 |
8.4 Naming Convention for Result output file

The naming of the file should be:

\[ \text{STAResult}_\text{XXX}_\text{YYYY-MM-DD}_\text{YYYY-MM-DDTHHHMM} \]

with following order and detailed information:

<table>
<thead>
<tr>
<th>Table 46 - Naming Convention for Results data output file</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>–</td>
</tr>
<tr>
<td>STAResult</td>
</tr>
<tr>
<td>First day of the period</td>
</tr>
<tr>
<td>Created Date Time</td>
</tr>
</tbody>
</table>
9 Annex

9.1 Annex 1 – Country ISO code list
You can find the list of ISO codes (ISO 3166-1) in the following link.

9.2 Annex 2 – EIC-code list
You can find the list of EIC codes in the following link.

9.3 Annex 3 – ENTSO-E code list
You can find the ENTSO-E code list in the following link.