

# BSP - Implementation Guide

## mFRR energy activation market

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**Business process:** mFRR energy activation market

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## Revision History

Version	Date	Changed by	Comments
1.0	17.12.2020	Nordic mFRR EAM project	First published version of the guide
1.1	14.06.2021	Nordic mFRR EAM project	<p><i>Added:</i></p> <p>National bid attributes and products:</p> <ul style="list-style-type: none"> <li>- Faster activation and earlier deactivation</li> <li>- InclusiveBids</li> <li>- Period shift activation</li> <li>- Slower product bids (specific product)</li> </ul> <p>New documents:</p> <ul style="list-style-type: none"> <li>- Bid availability document</li> <li>- Reserve allocation result document</li> <li>- Acknowledgement document</li> </ul> <p><i>Updated/added:</i></p> <ul style="list-style-type: none"> <li>- Conditional linking</li> <li>- Activation heartbeat description</li> <li>- General rules for messaging</li> <li>- TSO specific: implementation plans</li> <li>- TSO specific: alternative channels</li> </ul>
1.1.1	9.9.2021	Nordic mFRR EAM project	<p><i>Updated:</i></p> <ul style="list-style-type: none"> <li>- Small modification of "Update and cancellation principles"</li> <li>- Validation rule for not allowing change of bid period and resource object</li> <li>- Adjusted description of 3.4 Activate bid process</li> <li>- Codes for type and processtype to Acknowledgement document</li> <li>- Document codes, and naming of document time interval attribute for Activation document</li> <li>- Reason codes for ReserveBid document and ReserveAllocationResult document</li> <li>- Implementation plan Svk and SN: removed pilot</li> </ul>
1.1.2	16.11.2021		<p><i>Updated:</i></p> <ul style="list-style-type: none"> <li>- Activate bid process: updated description</li> <li>- General rules for messaging: Message size limit and detailing of update principle for bids</li> </ul>

			<ul style="list-style-type: none"> <li>- Bid document:                             <ul style="list-style-type: none"> <li>○ rule on connecting_Domain.mRID</li> </ul> </li> <li>- Activation document:                             <ul style="list-style-type: none"> <li>○ new version 6.2 w/support for proper UUID</li> <li>○ Document code for production smoothing (only Norway)</li> <li>○ Reason in response</li> </ul> </li> <li>- Implementation plan:                             <ul style="list-style-type: none"> <li>○ Statnett: description of transition</li> <li>○ Svenska kraftnät: description of transition</li> </ul> </li> </ul>
1.1.3	13.5.2022		<p><i>Updated:</i></p> <ul style="list-style-type: none"> <li>- Description of activation ordering process</li> <li>- Bid validation rules for non-standard product bids</li> <li>- Implementation plans</li> <li>- Transition phase Statnett and Svk</li> <li>- Other updates:                             <ul style="list-style-type: none"> <li>○ Message time series limit</li> <li>○ Reference to namespace for ReserveBidDocument</li> <li>○ Modified bid validation rule for complex bids</li> <li>○ ReserveAllocationResult document – added price and short explanation of use</li> </ul> </li> </ul>

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# 1 Introduction

This implementation guide describes the interface between BSP and TSO for the mFRR energy activation market. The guide will be updated based on feedback from the market participants and reassessment of the TSO's implementation plans.

## 1.1 Background

mFRR Energy activation market (mFRR EAM) is a project within Nordic Balancing Model (NBM) program. NBM is the program for updating the Nordic balancing process in order to facilitate increased volumes of variable renewable energy in the system, European market integration and improved balancing market efficiency, while maintaining operational security in the most cost-effective manner. This is a complex program having several great challenges to be resolved, including changing and automating critical system operation processes.

Information about the overall roadmap for the NBM program is available at the [www.nordicbalancingmodel.net](http://www.nordicbalancingmodel.net) webpage.

## 1.2 Scope

This document covers the implementation of Nordic mFRR energy activation market and provides information about the processes required to support this market. Both functional and technical aspects are covered. The intended users of this document are the participating BSPs<sup>1</sup>.

The main processes described are:

- Bid collection process, including
  - New CIM-based message format
  - New bid attributes
- Energy activation process
  - Scheduled activation, Direct activation, and (for Norway and Sweden) Period shift process
  - Changes to electronic ordering, including introduction of activation heartbeat

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<sup>1</sup> In Denmark the BSP role has not been separated from the BRP role, so in Denmark the target audience for this document is the BRP. Whenever the term BSP is used throughout this document it should be interpreted - for Denmark - as the «BRP acting as BSP»

### 1.3 Terms and definitions

Acronym	Term	Definition
<b>AOF</b>	Activation Optimization Function	<i>The role to operate the algorithm applied for the optimisation of the activation of Balancing Energy bids within a Coordinated Balancing Area.</i>
<b>BEGCT (BSP GCT)</b>	Balancing Energy Gate closure time	<i>The point in time when submission or update of a balancing energy bid is no longer permitted</i>
<b>BEGOT</b>	Balancing Energy Gate opening time	<i>The first point in time when submission of a balancing energy bid is permitted</i>
<b>BRP</b>	Balance Responsible Party	<i>A market participant or its chosen representative responsible for its imbalances</i>
<b>BSP</b>	Balancing Services Provider	<i>A market participant with reserve-providing units or reserve-providing groups able to provide balancing services to TSOs</i>
<b>CIM</b>	IEC Common Information Model	<i>A standard for describing information about an electrical network. The European style market profile is a profile derivation from the CIM to harmonize the energy market data exchanges in Europe.</i>
<b>CZC</b>	Cross Zonal Capacity	<i>The cross-zonal transmission capacity between two bidding zones</i>
<b>DA</b>	Direct activation / direct activatable bid	<i>Activation of standard mFRR product bid(s) at any point of time following the point of scheduled activation of the quarter hour and until the point of scheduled activation of the subsequent quarter hour.</i>
<b>FAT</b>	Full Activation Time	<i>The period between the activation request by the connecting TSO and the corresponding full delivery of the concerned product</i>
<b>ECP</b>	Energy Communication Platform	<i>Reference implementation of MADES standard</i>
<b>ISP</b>	Imbalance Settlement Period	<i>The time unit for which balance responsible parties' imbalance is calculated</i>
<b>MADES</b>	Market Data Exchange Standard	<i>Communication IEC standard designed by ENTSO-E</i>
<b>MOL</b>	Merit Order List	<i>A list of balancing energy bids sorted in order of their bid prices, used for the activation of those bids</i>
<b>MTU</b>	Market Time Unit	<i>The period for which the market price is established or the shortest possible common time period for the two bidding zones, if their market time units are different.</i>
<b>SA</b>	Scheduled activation / schedule activatable bid	<i>Activation of standard mFRR product bids at a specific point in time with respect to the period of time for which the bids were submitted. The scheduled activation time is once per quarter hour.</i>
<b>TSO</b>	Transmission System Operator	<i>A party that is responsible for a stable power system operation (including the organisation of physical balance) through a transmission grid in a geographical area. In the Nordic synchronous area, there are four TSOs: Svenska kraftnät, Fingrid, Energinet.dk and Statnett.</i>

	Connecting TSO	<i>the TSO that operates the scheduling area in which balancing service providers and balance responsible parties shall be compliant with the terms and conditions related to balancing;</i>
<b>TSO GCT</b>	TSO energy bid submission gate closure time	<i>The latest point in time when a connecting TSO can forward the balancing energy bids received from a balancing service provider to the activation optimisation function</i>

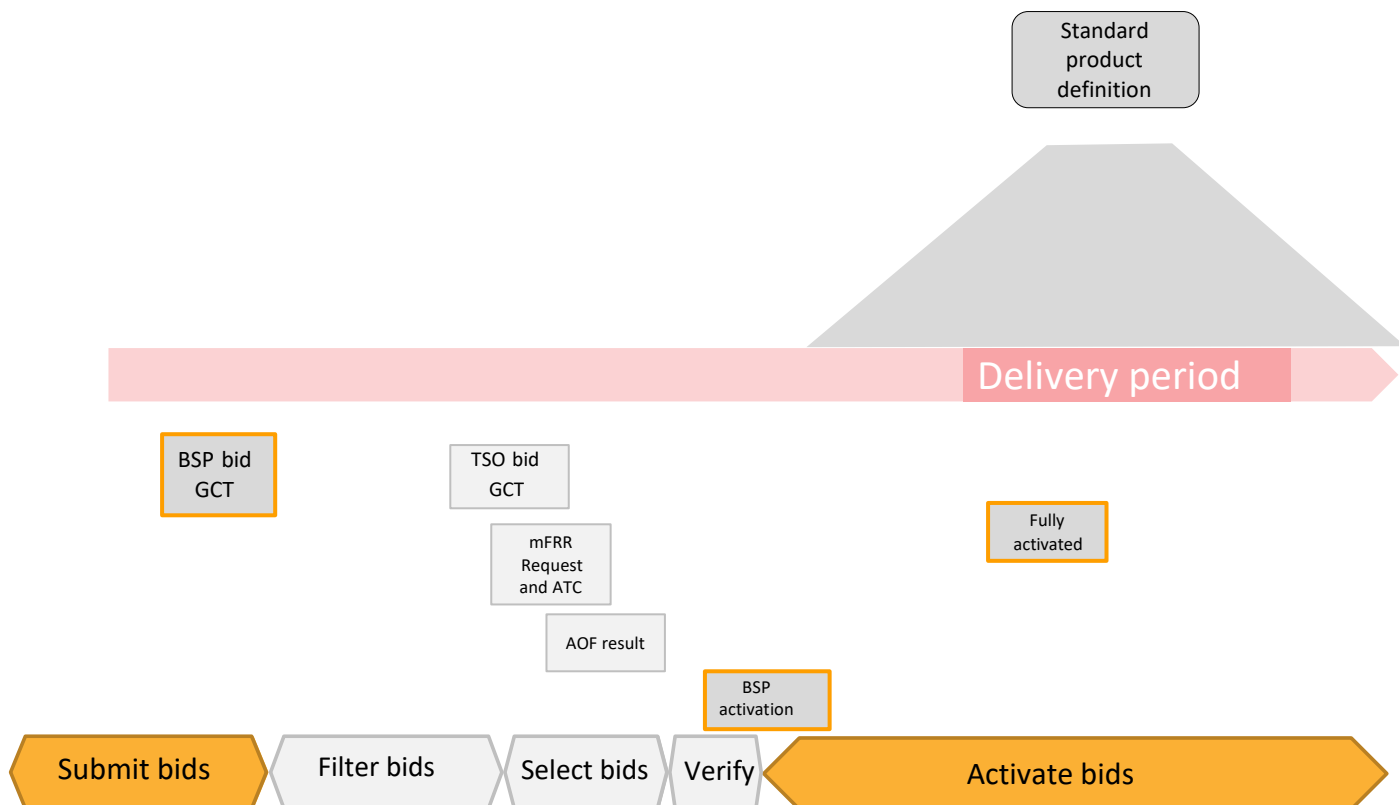
## 1.4 References

- Ref [1] mFRR Implementation Framework  
[https://consultations.entsoe.eu/markets/mfrr\\_implementation\\_framework/](https://consultations.entsoe.eu/markets/mfrr_implementation_framework/)
- Ref [2] Common Information Model (CIM) and CIM based documents. [ENTSO-E implementation guides, see ENTSO-E Electronic Data Interchange \(EDI\) Library](#)
- Ref [3] Acknowledgement: [IEC 62325-451-1: Acknowledgement Business Process And Contextual Model For CIM European Market.](#)
- Ref [4] EIC codes: [The Energy Identification Coding \(EIC\)](#)
- Ref [5] ENTSO-E codelist: [Common information model \(CIM\) European style market profile](#)
- Ref [6] European platform - MARI : [Manually Activated Reserves Initiative \(entsoe.eu\)](#)
- Ref [7] Nordic Trading System BRS: [This document is a Business Requirement Specification \(BRS\) detailing the document exchanges related to trade in the Nordic energy market](#)
- Ref [8] Nordic Operate BRS: [This document is a Business Requirement Specification \(BRS\) detailing the document exchanges related to operation of the Nordic energy market.](#)
- Ref [9] NMEG Code List Library: [Description of additional codes used for the Nordic Market, Code list schema.](#)
- Ref [10] Nordic TSOs - [Memo - Process for activating products](#)

## 2 Business context

### 2.1 Overall process and timeline

In the figure below the timing for the bidding and activation processes is illustrated. The subprocesses and timing where the BSP is involved are indicated in orange colour.



The timing of the processes will change at Go-live of mFRR EAM and further changes will be made at the latest when connecting to MARI. The reason for having a different timing of the processes at Go-live of mFRR EAM than later when connecting to MARI is to allow more time for the TSOs to assess bid availability and remediate grid congestions before and after the AOF bid selection process.

	Today	Go-live of mFRR EAM	Latest when connecting to MARI
BSP GCT (BEGCT bids)	H-45	H-45	QH-25 *)
TSO GCT	H-45	QH-17	QH-12
TSO mFRR request	NA	QH-15	QH-10
AOF run	NA	QH-15	QH-10



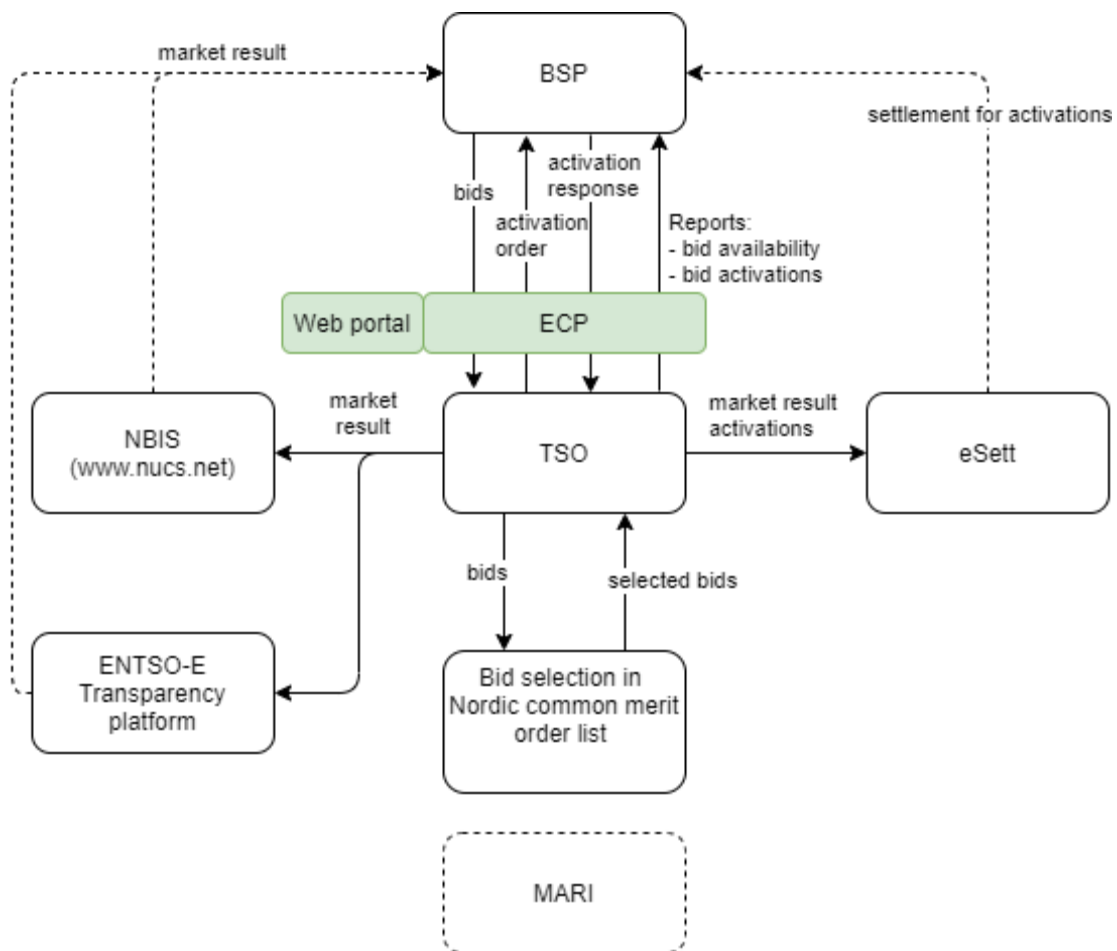
AOF results	NA	QH-13	QH-8
TSO verification period			
Activation orders are sent to BSPs	NA	QH-7.5	QH-7.5
Full Activation Time, FAT (minutes)	15	15	12.5

H-x means x minutes before the start of every hour. QH-x means x minutes before every quarter-hour.

\*) no later than when cross border 15 min Intraday trading starts

## 2.2 System context

The diagram below shows the system context of the mFRR energy activation market from a BSP viewpoint. This document provides detailed information about the message exchanges between BSP and TSO. The other exchanges are shown for information purposes only and are outside the scope of this document



## 2.3 Fallback

### 2.3.1 Bid collection

Each TSO will have redundant mechanisms to receive bids from BSPs. In addition to machine-to-machine via ECP, it could be a web solution, e-mail, etc. See more on the TSO specific details in chapter 4.

### 2.3.2 Bid selection

In cases where the automatic solutions don't work, there will be fall-back solutions in use by one or more TSOs. This fall-back algorithm does not take all bid attributes into account and cannot guarantee a bid selection where all bids that are in-the-money are selected (e.g. not selecting up regulation bid with lower bid price than the marginal price). Unforeseeably rejected bids can potentially happen in normal operation but is more likely to happen in fall-back situations.

### 2.3.3 Activation

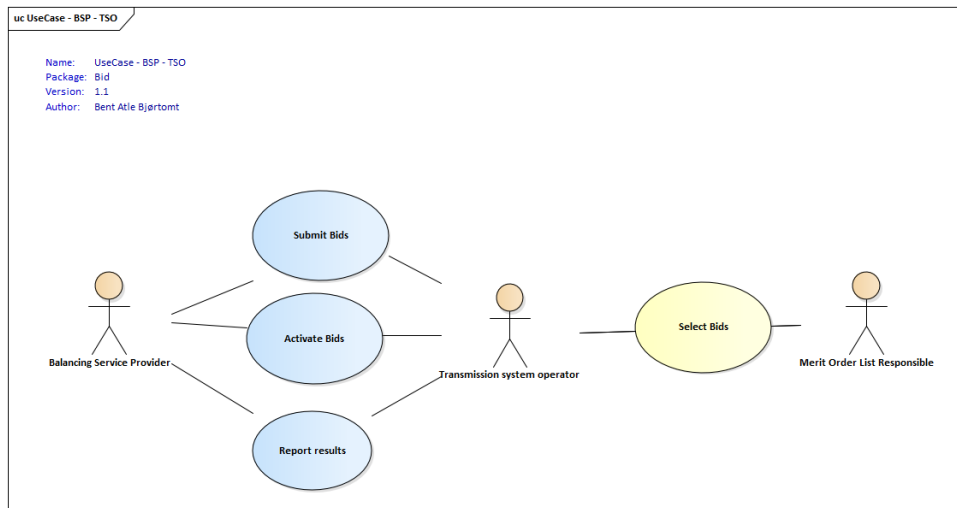
Each TSO will have a redundant mechanism to order bid activation. TSO specific details on the redundancy mechanism and handling of issues with communication with BSPs are described in chapter 4.

### 3 Business process

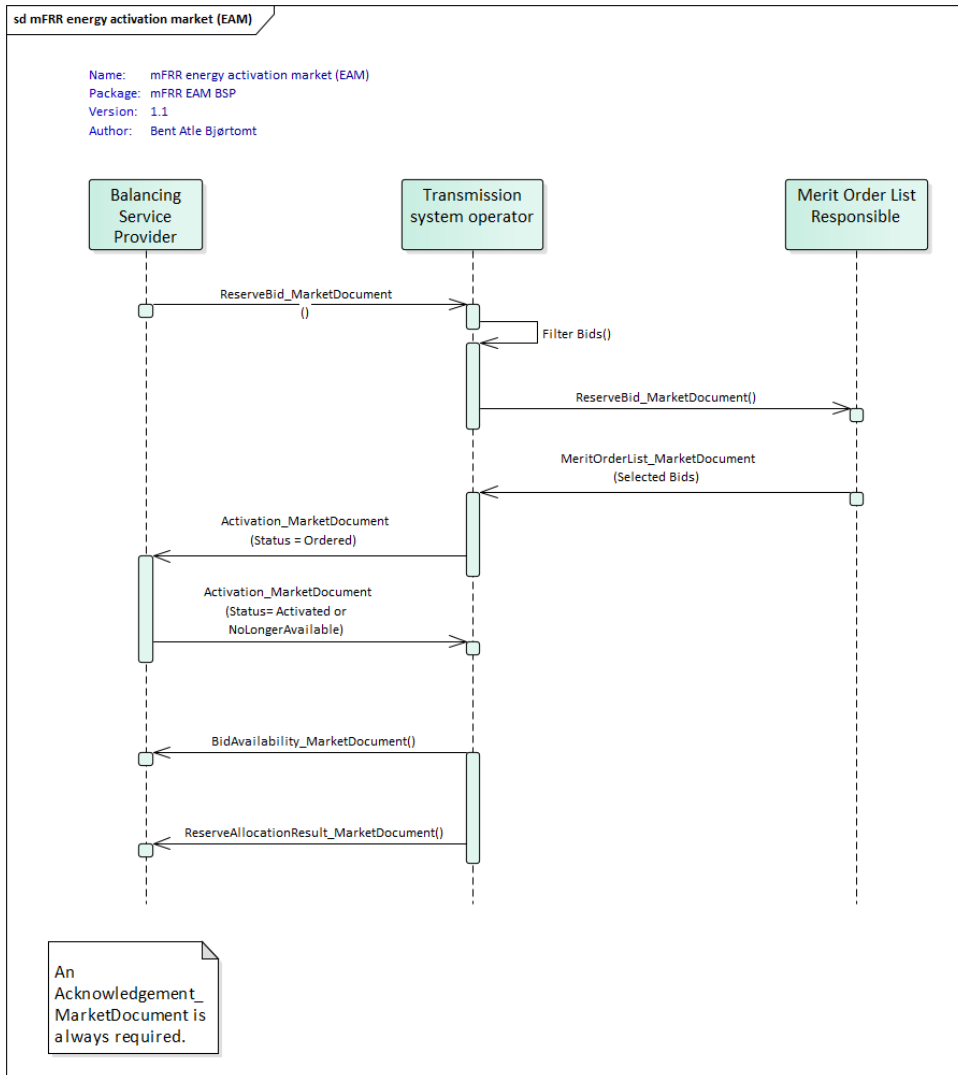
This chapter describes the mFRR EAM process from a BSP perspective with a focus on implementation of message exchanges. In addition to this implementation guide the BSPs need to comply with the relevant national Terms & Conditions, that will be updated accordingly.

#### 3.1 mFRR Business process

This is an overview of the business processes included in the mFRR energy activation market.



### 3.2 The mFRR energy activation market sequence diagram



The role "Merit Order List Responsible" will be common Nordic during the steps 1-3 prior to connecting to the European platform MARI step 4.

### 3.3 Submit bid process

Bids can be submitted in a *ReserveBid\_MarketDocument*. A bid is placed in the market when the TSO has provided a positive *Acknowledgement* referring to the bid document.

#### 3.3.1 Stepwise implementation of product characteristics

On the NBM web-page the Nordic TSOs has published "[Memo - Process for activating products](#)". In the memo bid characteristics and bid attributes to be used in the future are described. The content below is based on the table in the memo.

	Today	Go-live of mFRR EAM	Latest when connecting to MARI
Currency	EUR and local currency	EUR	EUR
Maximum/minimum price (EUR/MWh)	5000/no minimum price	5000/no minimum price	15000/-15000 At a later stage this will be changed to: 99 999/-99 999
Price granularity (EUR)	0.01 or 0.5	0.01 or 0.5 <sup>1</sup>	0.01
Minimum bid size (MW)	5 or 10 <sup>2</sup>	1 or 10 <sup>3</sup>	1
Maximum bid size (MW)	none or 50 <sup>4</sup>	9 999 (technical limit)	9 999 (technical limit)
Bid granularity (MW)	1	1	1
Activation granularity (MW)	1	1 or 0.1 <sup>5</sup>	1
BSP bid time resolution for price and volume (minutes).	60 and 15 <sup>6</sup>	15 and 60 <sup>7</sup>	15
Marginal price resolution (minutes)	60	60	15

<sup>1</sup> Statnett will continue the current practice with 0.5 EUR price granularity at "Go-live of mFRR EAM" but foresees to remove this constraint at the latest when connecting to MARI.

<sup>2</sup> The minimum bid size differs today depending on the bidding zone.

<sup>3</sup> Statnett will continue with a minimum bid volume of 10MW at "Go-live of mFRR EAM". Also in Sweden some preconditions will apply, see section 4.4.2.

<sup>4</sup> Energinet currently has maximum bid size of 50 MW.

<sup>5</sup> The normal activation granularity is 1 MW. In cases with multiple divisible bids on the same price as the clearing price the bids will be selected pro rata with activation granularity 0.1 MW.

<sup>6</sup> In Norway bid volume resolution is 15 min.

<sup>7</sup> How and when 15-minute bid resolution will be introduced will differ among the TSOs. See chapter 4 for TSO specific information on transition periods and handling of 60-minute resolution.

### 3.3.2 Attribute descriptions

In this chapter new bid attributes are described. The attributes are either common to all Nordic countries or specific to certain countries. In order to understand and utilize the bid attributes it is useful to define three *types* of bids:

- *Simple bids* have one price and are valid for one period. Simple bids are either *fully divisible*, *divisible* with a minimum volume or *indivisible*
- *Complex bids* are composed of a combination of simple bids for one period. The combination can be either an exclusive group or a multipart bid.
- *Linked bids* are linked between time periods. E.g. a bid in period 2 is linked to a bid in period 1. The link can be a technical link or a conditional link.

#### Attributes common for all Nordic countries

The following attributes are MARI standard product attributes that will be supported by the Nordic AOF from Go-live of mFRR EAM.

Type	Bid attribute	Description
<b>Simple bids</b>  One bid, one price	Minimum offered volume  CIM: Point.minimum_Quantity.quantity	Can be applied to set a minimum volume to be activated even though the bid is divisible.
	Indivisible Bids  CIM: BidTimeSeries.divisible	A standard mFRR balancing energy product bid, which cannot be activated partially. Therefore, the volume of an indivisible bid is always activated altogether.
<b>Complex bids</b>  Combination of simple bids	Exclusive Group Order  CIM: BidTimeSeries. exclusiveBidsIdentification	The exclusive bid is a group of bids where solely one of the bids can be activated; hence, the activation of a bid belonging to an exclusive bid excludes the activation of the other bids belonging to the same group.
	Multipart (Parent/child)  CIM: BidTimeSeries. multipartBidIdentification	A multipart bid consists of two or more simple bids within the same quarter hour. The bids must have different prices but may have the same or different volumes. A component of an upward multipart bid cannot be activated unless all other components with a lower price have been activated up to their entire offered volumes. A component of a downward multipart bid cannot be activated unless all other components with a higher price have been activated up to their entire offered volumes.
<b>Bids linked in time</b>	Conditional bids	Conditional linking is the linking of bids (only simple) in two or three subsequent quarter hours. Conditional linking is used to adjust the availability of a bid in QHO

Between consecutive quarter hours	CIM: BidTimeSeries. Linked_BidTimeSeries	(available/non-available) based on the activation outcome of linked bids in previous quarter hours QH-1 and/or QH-2.
	Technically linked bids  CIM: BidTimeSeries. linkedBidsIdentification	Technical linking is the linking of bids (simple or complex) in two or more subsequent quarter hours. Technical linking ensures that a bid in QH0 is not available for clearing if the bid in the previous quarter hour was activated in direct activation (DA). This is important in order not to activate the same balancing resource twice.
<b>Activation type</b>	Direct  CIM: BidTimeSeries. standard_MarketProduct. marketProductType	A standard mFRR balancing energy product bid that can be activated at any point of time following the point of scheduled activation of the quarter hour for which the bid is submitted and until the point of scheduled activation of the subsequent quarter hour. Every direct activatable bid is scheduled activatable bid as well.

### National bid attributes

See chapter 4 for TSO specific information on which attributes is planned to be implemented and additional information on usage of the bid attributes.

Bid attribute	Description
Maximum duration  CIM: BidTimeSeries. maximum_ConstraintDuration.duration	BSPs include information on the technical limitations regarding how long a bid can be activated. This attribute is necessary to allow BSP to send in bids in advance so that they do not need to update bid if they are activated.  When using maximum duration, technical linking of the bids must be used. All the linked bids must have the same maximum duration.
Resting time  CIM: BidTimeSeries. resting_ConstraintDuration.duration	The BSP can add information on the required minimum duration between the end of deactivation and the following activation.  When using resting time, technical linking of the bids must be used. All the linked bids must have the same resting time.
Inclusive bids  CIM: BidTimeSeries.inclusiveBidsIdentification)	If one bid is activated, another bid (e.g. a resource downstream) must also be activated.
Locational information on bids  CIM: BidTimeSeries.registeredResource.mRID	More detailed location on where the resources in the bid are situated, than bidding zone.

Period shift CIM: BidTimeSeries.Reason.code	Bids are activated for a shorter period than the whole Market Time Unit around period shift in order to resolve structural imbalances.
Faster activation CIM: BidTimeSeries.activation_ConstraintDuration.duration	Bids that can support a FAT that is faster than standard FAT (15 minutes from Go-live mFRR EAM).
Slower activation CIM: BidTimeSeries.activation_ConstraintDuration.duration	Bids that have a FAT that is slower than standard FAT (15 minutes from Go-live mFRR EAM).  Slower activation is only allowed for non-standard product (A02) bids.

### 3.3.3 Bid validation rules

#### *Document level*

- The bid document must be submitted by the BSP and received by the TSO after the BEGOT and before the BEGCT of every bid in the document.

#### *All bids:*

- Bid size min/max and resolution
- Price resolution
- Time period is within the document time period

#### *Exclusive group bid:*

- All bid components must have the same market product type
- All bid components must refer to the same market period
- All bid components must belong to the same bidding zone
- None of the bid components can be part of a multipart or inclusive bid

#### *Inclusive group bid:*

- All bid components must have the same price
- All bid components must be in the same direction
- All bid components must have the same market product type
- All bid components must refer to the same market period
- All bid components must belong to the same bidding zone
- None of the bid components can be part of an exclusive or multipart bid

#### *Multipart bid:*

- All bid components must have different prices
- All bid components must be in the same direction
- All bid components must have the same market product type



- All bid components must refer to the same market period
- All bid components must belong to the same bidding zone
- None of the bid components can be part of an exclusive or inclusive bid

*Technical linking:*

- Technical linking is allowed for both simple bids and for complex bids. All components of a technically linked complex bid (multipart or exclusive) must have the same value in the linkedBidIdentification attribute.
- Technical linking of simple bids can be used in combination with conditional linking.
- Technical linking ID must be unique within the MTU. That is, within an MTU only one simple bid or one complex bid (with all its bid components) can use a given technical link ID.
- All bids in a technical link must belong to the same bidding zone.

*Conditional linking:*

- Conditional linking is only allowed for simple bids. Both the referenced bids and the referencing bid must be simple.
- A bid in QH0 may be linked to maximum three bids in QH-1 and maximum three bids in QH-2
- It is not permitted to link a given bid in QH0 more than once to a given bid in QH-1 or QH-2
- For each link a condition must be associated
- Conditional bids that try to establish a link to a non-existing bid are not allowed. It is the responsibility of a BSP not to place bids with invalid links. For example, if a BSP cancels a bid, which has other bids linked to that bid, those links will become invalid. Any bid with an invalid link will not be considered in the bid selection.
- All bids in a conditional link must belong to the same bidding zone.

*Rules for updating bids:*

- A bid cannot be changed from simple bid to complex bid (exclusive, inclusive or multipart). Instead the original bid must be cancelled and a new bid submitted.
- A complex bid cannot be partially cancelled. All bids in a complex bid must be cancelled; or a bid must be converted to a simple bid and cancelled, then the rest of the complex bid will remain.
- The time period of a bid cannot be changed. If a bid has been submitted with incorrect time period the bid must be cancelled and a new bid (with new bid identification) must be submitted for the correct time period.
- The resource object of a bid cannot be changed. If a bid has been submitted with incorrect resource object the bid must be cancelled and a new bid (with new bid identification) must be submitted for the correct resource object.
- The market product type of a bid cannot be changed. If a bid has been submitted with incorrect market product type the bid must be cancelled and a new bid (with new bid identification) must be submitted for the correct market product type.

See chapter 5.7 for general rules on updating and cancellation of bids.

### 3.3.4 Bid validation rules for non-standard product bids

The following bid attributes are allowed for non-standard product bids (marketProductType = A02):

- Simple bids, divisible or indivisible
- Technical linking: all bid components must have the same market product type
- Maximum duration, Resting time
- Activation time

Non-standard product bids cannot use complex bid groups or conditional linking.

### 3.3.5 Bid acknowledgment

Each time a BSP submits a Reserve bid document to the TSO the TSO will return an Acknowledgement document. If all bids in the bid document are valid a positive Acknowledgement will be returned. If one or more of the bids in the bid document are invalid, according to the bid validation rules, a negative Acknowledgment will be returned and all bids in the document will be rejected. The negative Acknowledgement will contain error codes and text that indicate the reason for why the bids are not valid.

### 3.4 Activate bid process

The TSO will send activation orders for selected bids to the respective BSPs every 15 minutes for scheduled activation. Whenever there is a sudden need for activation, the TSO will send an activation order for selected bids for direct activation. Scheduled activation orders will cover only one period of 15 minutes. Direct activation orders will cover the remaining of the current 15-minute period and the next 15-minute period.

The activation process should be automated as much as possible, and ideally fully automated, to ensure timeliness and accuracy of activations.

#### 3.4.1 Activation order message

The TSO orders activation of bids by sending an *Activation\_MarketDocument* to the BSP. An activation document may contain activation orders for multiple bids.

The BSP is accountable<sup>2</sup> for the activation(s) once the order document is received by the ECP-endpoint of the BSP, and can immediately start preparing for ramp up of the activation(s).

The BSP sends an *Acknowledgement\_MarketDocument* to the TSO to confirm that the activation order document has been received.

#### 3.4.2 Activation response message

The BSP then sends an activation response message to the TSO to confirm that each of the activation orders will be fulfilled, or cannot be fulfilled if the resource has become unavailable for activation.

The activation response message is sent as an *Activation\_MarketDocument* where all the activation order time series from the activation order document are included. For each activation order time series that will be fulfilled the Status must be "Activated".

If an activation order time series cannot be fulfilled the *Status* of that timeseries must be "Unavailable" and a reason should be provided in the *Reason*-element.

The BSP is required to return the activation response message to the TSO within 2 minutes, measured from the time the activation order document is sent from the TSO until the time the response message is received by the TSO.

The TSO sends an *Acknowledgement\_MarketDocument* to the BSP to confirm that the activation response message has been received.

#### Handling of activation response message in Finland, Norway and Sweden:

If an activation response is received by the TSO later than 2 minutes, it will still be accepted. However, if late responses happen regularly, the BSP must take measures to improve the timeliness of activation responses to comply with the response time requirement.

The BSP may send an updated activation response message to change the status of one or more time series from "Activated" to "Unavailable", but not vice versa.

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<sup>2</sup> In Denmark, if the BSP responds with status "Unavailable", the BSP is no longer accountable, see text below.

The BSP is accountable for the activation regardless of the activation response. That is, the BSP is accountable both in the case of status "*Activated*" and status "*Unavailable*", as well as in the case of late response or no response.

#### Handling of activation response message in Denmark:

If the TSO receives an activation response message with status "*Unavailable*" within the response time limit and the reason for unavailability is acceptable, the BSP is no longer accountable for the activation.

The BSP may within the time limit send an updated activation response message to change status of one or more time series from "*Activated*" to "*Unavailable*", but not vice versa.

If the TSO receives activation response later than 2 minutes, the response will be rejected by a negative *Acknowledgement*. If late responses happen regularly, the BSP must take measures to improve the timeliness of activation responses to comply with the response time requirement.

The BSP is accountable for the activation unless the BSP has responded with status "*Unavailable*" within the response time limit.

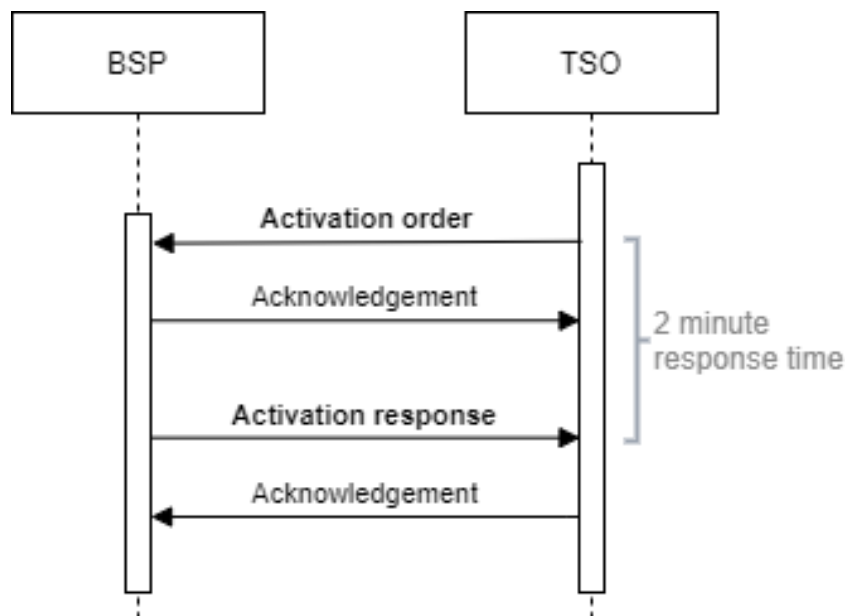


Figure 1 Activation ordering sequence diagram

Examples of activation responses from BSP:

Finland, Norway and Sweden:

Activation Response: activation time series status	When	What should BSP do	BSP accountable for activation?
<i>Activated</i>	< 2 min	BSP <u>should</u> activate	Yes
<i>Unavailable</i>	< 2 min	BSP <u>should NOT</u> activate	Yes
<i>Activated</i>	> 2 min	BSP <u>should</u> activate	Yes
<i>Unavailable</i>	> 2 min	BSP <u>should NOT</u> activate	Yes
<no response>		BSP <u>should</u> activate	Yes
Updated from <i>Activated to Unavailable</i>	< 2 min or > 2 min	BSP <u>should NOT</u> activate	Yes
Updated from <i>Unavailable to Activated</i>	< 2 min or > 2 min	BSP <u>should NOT</u> activate  This change of status is not allowed. Acknowledgement from TSO will have the status "Message fully rejected".	Yes

Denmark:

Activation Response: activation time series status	When	What should BSP do	BSP accountable for activation?
<i>Activated*</i>	< 2 min	BSP <u>should</u> activate	Yes
<i>Unavailable*</i>	< 2 min	BSP <u>should NOT</u> activate	No
<i>Activated</i>	> 2 min	BSP <u>should</u> activate  (Acknowledgement from TSO will have the status "Message fully rejected".)	Yes
<i>Unavailable</i>	> 2 min	BSP <u>should</u> activate  (Acknowledgement from TSO will have the status "Message fully rejected".)	Yes
<no response>		BSP <u>should</u> activate	Yes

\* BSP may update the activation response within the 2-minute time limit from Activated to Unavailable, but not vice versa.

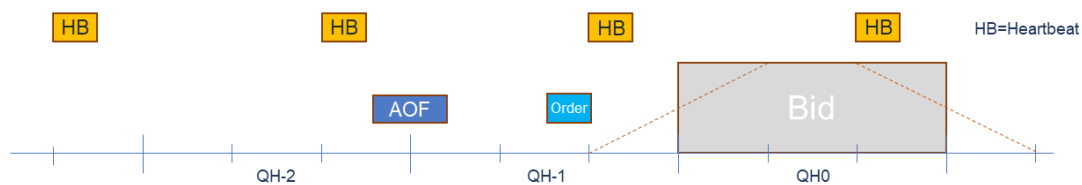
### 3.4.3 Activation heartbeat

Due to the high criticality of the activation process it is necessary to implement a way to monitor the status of the automated activation process and quickly and accurately detect issues.

The monitoring system is based on periodic heartbeat activations messages. A heartbeat activation is an "empty" activation order that BSPs shall receive, process and respond to like a real activation order. The processing of the order should be done by the same systems as for real activation orders. But the heartbeat activation order should not result in any real balancing energy activation.

The BSP should monitor the activation ordering process and correct issues if there is a problem with any of the activation messages (both heartbeats and real orders).

It is important that the BSP responds correctly and timely to both heartbeats and real activation orders. If the BSP does not respond to the heartbeat the TSO may consider the BSP to be unavailable for activation.



Heartbeat activation order will be sent for every 15-minute period to BSPs participating in mFRR EAM. Additional heartbeat may be sent between periods.

The heartbeat activation order will contain:

- order\_MarketDocument.mRID = unique order id
- A "dummy" time series with
- TimeSeries.mRID = "ACTIVATION\_HEARTBEAT"
- acquiring\_Domain.mRID = control area (bidding zone for a normal activation)
- registeredResource.mRID = "DUMMY\_RESOURCE"
- quantity = 0

#### Monitoring of activation heartbeat

The BSP should monitor the entire activation ordering process including the ECP endpoint and identify and correct issues if there is a problem with activation messages for heartbeat or real orders.

Please refer to chapter 4 for TSO specific handling of issues with the activation process.

## 3.5 Publication and reporting of market results

### 3.5.1 Publication of market prices and volumes

Market prices and volumes for the mFRR energy activation market will be published on the ENTSO-E Transparency platform ([transparency.entsoe.eu](https://transparency.entsoe.eu)) as well as the Nordic Transparency platform NBIS ([www.nucs.net](http://www.nucs.net)).

### 3.5.2 Activated bids per BSP

A report of each BSP's activated bids will be sent from the TSO to the BSP after each ISP (Imbalance settlement period) in a *ReserveAllocationResult\_MarketDocument*. Please see Appendix 1 for further details on the message document.

### 3.5.3 Bid availability report

Submitted bids must be available for activation ordering. If bids, for any reason, become unavailable for activation before BEGCT, the BSP must cancel the bids. In cases where bids become unavailable for activation after BEGCT, the BSP must inform the TSO as quickly as possible by phone.

The TSO will for each market period assess the availability of activation for each bid.

The TSO can mark a bid unavailable for the following reasons:

- local congestions
- unavailability of the BSP electronic ordering process
- to meet an activation constraint (max duration and resting time) stated in the bid

The TSO will inform the BSP about bids that have been marked unavailable for activation by sending a *BidAvailability\_MarketDocument*. Please see Appendix 1 for further details on the message document.

## 4 TSO specific information

### 4.1 Energinet

#### 4.1.1 Implementation plan

Process	Time	2022				2023			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>Bid submission</b> (all attributes not fully supported)			Test	Test	Test	Test	Test	Test	Go-live
<b>Activation</b> (all attributes not fully supported)			Test	Test	Test	Test	Test	Test	Go-live
<b>Health check</b>					Test	Test	Test	Test	Go-live
<b>Other messages</b> (availability report, market result)					Test	Test	Test	Test	Go-live
<b>Full support for all attributes</b>						Test	Test	Test	Go-live

- Bid submission**

BRPs will use the existing bid submission format and 60 minutes resolution until go-live of mFRR EAM in October 2023. After go-live the new CIM format described in this guide and 15 minutes resolution must be used. The new attributes will also be supported from that day. The old format and 60 minutes resolution is no longer supported after go-live. Testing of the new bid submission process will be possible from beginning of Q2 2022. Some complex bid attributes as well as national attributes will not be fully supported in the test environment before Q1 2023.
- Activation**

BRPs will receive activations in the existing format and in 60 minutes resolution until go-live in October 2023. After go-live activations will be in 15 minutes resolution and delivered in the new CIM format described in this guide. Change in the expected delivery shape – from ramping inside the hour to ramping symmetrically around the quarter hour shifts - will also occur at go-live in October 2023. Testing of the new activation process will be possible from beginning of Q2 2022. Some complex bid attributes as well as national attributes will not be fully supported in the test environment before Q1 2023.
- Health check**

The health check process will go-live in October 2023. After go-live the BRP's are expected to reply to the CIM heart beat signals being send from the TSO. Testing of the health check process will be supported from Q4 2022.
- Other messages**

After go-live in October 2023 the BRPs will receive new reports on bid availability and activated bids according to the formats in this guide. The new reports will be available for testing from Q4 2022.



#### 4.1.2 Handling of 60 minutes bids in transition period

A transition phase where both 60 minutes and 15 minutes bids can be used simultaneously is currently not planned. 60 minutes bids will be used prior to go-live in October 2023. New CIM format and 15 minute bids will be used after go-live.

#### 4.1.3 Submit bid process

##### Minimum bid volume

Energinet will allow a minimum bid volume of 1 MW from go-live in October 2023.

##### National bid attributes

Bid attribute	Planned to be implemented
Maximum duration	Yes
Resting time	Yes
Inclusive bids	No
Locational information on bids	Yes (Locational information will be a list of substations indicating where the bid is feeding into the grid)
Period shift	No
Faster activation	No
Slower activation	Yes (Bids with a FAT slower than the standard product will not be forwarded to the AOF, but may be activated locally when circumstances calls for it)

After go-live in October 2023 *start-* and *stop-gradient* as well as *deadtime* for the bid will no longer be supported.

##### Communication channel

Communication between BRP and Energinet after go-live in October 2023 is CIM-based and via ECP/EDX.

##### Fallback for bid submission and/or activation process

From go-live in October 2023 Energinet will introduce the concept of Emergency Volumes as fallback when the automated activation process fails. Detailed information on Emergency Volumes will be provided in a later version of this guide.

#### 4.1.4 TSO contact information

Any questions and concerns regarding this implementation guide, and the follow-up of the implementation in Energinet, can be directed to: [electricitymarket@energinet.dk](mailto:electricitymarket@energinet.dk)

## 4.2 Fingrid

### 4.2.1 Implementation plan

Process	Time	2022				2023			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Bid submission SA		Test	Test	Test	Test	Test	Test	Test	Go-live
Bid submission DA (not all conditional bids supported)		Test	Test	Test	Test	Test	Test	Test	Go-live
Activation SA			Test	Test	Test	Test	Test	Test	Go-live
Activation DA (not all conditional bids supported)				Test	Test	Test	Test	Test	Go-live
Other messages (availability report)			Test	Test	Test	Test	Test	Test	Go-live
Other messages (activated bids report)					Test	Test	Test	Test	Go-live
Full support for all conditional bids							Test	Test	Go-live
Heartbeat (optional)							Test	Test	Go-live
Activation 1h CIM format in production (optional)			Test	Test	Go-live				

- Bid submission:**  
 BSPs can start using the new bid submission format and the new bid attributes from go-live. 15 minutes bid resolution should be used with the new format. Bid submission using the legacy format and 60 minutes bid resolution is possible after go-live for a year period. See below for handling of 60 minutes bid resolution.  
 Testing of the new bid submission process has been possible since Q3 2021.
- Activation:**  
 BSPs must start using the format and process for bid activation described in this guide from go-live. The legacy format for bid activation can no longer be used from go-live. The new CIM format for activation can be used on 60 minutes resolution from Q3 2022.
- Other:**  
 After go-live the BSPs can start receiving the new reports on bid availability and activated bids according to the formats in this guide. Activation heartbeat for connection health check is optional for BSPs which have not automated their processes in Finland.

### 4.2.2 60 minutes bids

If BSP sends bids in 60 minutes resolution, Fingrid splits a bid into 4 identical bids for each 15 minutes. No new bid attributes can be used for 60 minutes bids. Transformed bids will be fully divisible (and technically linked within the hour). 60 minutes bids can be used both in scheduled and direct activation for the first three quarter hours and only for scheduled activation for the last quarter hour. Format for 60 minutes bids is described in a separate implementation guide (Fingrid Implementation Guide mFRR). Activation requests to BSPs are sent separately for every 15 minutes period. Support for 60 minutes bids resolution will end one year from go-live.

#### 4.2.3 Submit bid process

The Balancing energy gate opening time (BEGOT) for BSPs is 30 days. The preferred channel for bid submission is sending a reserve bid document via ECP/EDX<sup>3</sup>.

##### National bid attributes

Bid attribute	Planned to be implemented
Maximum duration	No
Resting time	No
Inclusive bids	No
Locational information on bids	Yes (Locational information will be related to the reserve resources)
Period shift	No
Faster activation	No
Slower activation	No

##### Alternative channel for bid submission

Additionally, bids may be submitted manually in TSO's MMS (Vaksi Web). More detailed description of manual bid submission can be found in Fingrid's reserve trading and information exchange guidelines (Fingridin reservikaupankäynti- ja tiedonvaihto-ohje). Sending conditionally linked bids will not be possible via Vaksi Web, and there are other limitations for technical linking and complex bids in Vaksi Web. Activate bid process

#### 4.2.4 Activate bid process

##### Notification of activation orders via SCADA

A Back-up channel for electronic activation which can be used simultaneously with ECP, is a notification in TSO's MMS (Vaksi Web) and an alert sent from TSO's SCADA to the BSP's SCADA via ELCOM. This back-up process requires a manual confirmation in Vaksi Web by the BSP.

#### 4.2.5 TSO contact information

Any questions and concerns regarding this implementation guide, and the follow-up of the implementation in Fingrid, can be directed to: [reservit@fingrid.fi](mailto:reservit@fingrid.fi)

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<sup>3</sup> [https://www.fingrid.fi/en/electricity-market/reserves\\_and\\_balancing/reserve-trading-and-information-exchange/ecp-messaging2/](https://www.fingrid.fi/en/electricity-market/reserves_and_balancing/reserve-trading-and-information-exchange/ecp-messaging2/)

## 4.3 Statnett

### 4.3.1 Implementation plan

Process	2022												2023											
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
<b>Bid submission and Activation: CIM-format and ECP</b>					Test		Transition period																	
<b>Bid submission and Activation: automated balancing</b>			Test								Functional verification test							Go-live						
<b>Health check</b>				Test		Start heartbeat																		
<b>Other messages</b> (market result, availability report)													Test					Go-live						

- **Bid submission and Activation: CIM-format and ECP**

All BSPs must start using the new formats for bid submission and activation ordering over ECP communication channel before March 1<sup>st</sup> 2023. A specific date for the transition for each respective BSP must be agreed with the TSO. After transition the old formats for bid submission and activation can no longer be used.

In the period from transition to the full Go-live of mFRR EAM the bid selection process will still be manual. In this period the process for electronic activation ordering will also remain the same as today (see description in current implementation guide for electronic ordering), except for the changes in format and resolution which is further described below.

Because of this only the following bid types and attributes are supported (other attributes will not be considered in the bid selection) until Go-live mFRR EAM:

- *Simple bids – fully divisible*
- *Technical linking – same price and resource for all the bids in a technical link*
- *Maximum duration and resting time – same values for all bids in a technical link, values must be divisible by 60, e.g. PT60M, PT120M, etc*

Other bid attributes will be treated as follows until Go-live mFRR EAM:

- *Exclusive group* will be handled as one bid with the largest volume
- *Multipart group* will be handled as separate independent simple bids
- *Conditionally available* linked bids will be handled as independent simple bids
- *Conditionally unavailable* linked bids will be rejected

BSPs must start using the new format for activation before or at the same time as the new format for bid submission due to increased length of bid identifications.

Until Go-live the activation orders will be sent per hour. The content of the activation order will have the same resolution as the bids. When the BSP starts sending bids with 15 -minute resolution the activation order from TSO will contain a time series for each bid to be activated. Until Go-live mFRR EAM, the activation order will typically contain four time series (for bids in a technical link) that together cover activation for the full hour. If multiple bids/station groups are to be activated at the same time there will be multiple activation orders (one for each technical link). After Go-live mFRR EAM an activation order will be sent for each 15-minute period but can contain activation time series for multiple bids for that 15-minute period.

Prior to the transition to CIM-formats and ECP each BSP must do a realistic integration test of the transition with the TSO.

- **Bid submission and Activation: automated balancing**

A self-service test environment is available for BSPs to test bid submission of the various bid types and attributes as well as receiving activation orders.

To test the full market function with the real mFRR EAM bid selection algorithm (AOF) and realistic market input the TSO plans to carry out a coordinated functional verification test where BSPs can submit realistic bids with relevant new bid attribute and receive realistic activation orders. BSPs can use the functional verification test to verify own bidding strategy and process and make adjustments before Go-live.

- **Health check heartbeat**

The health check heartbeat is planned to start at the same time as the transition to CIM-format and ECP. BSPs can test the heartbeat in the self-service test environment.

- **Other messages**

The new reports on activated bids and bid availability will be available from Go-live of mFRR EAM.

#### 4.3.2 Submit bid process

##### Bid price granularity and minimum bid volume

To limit the number of bids Statnett will continue the current practice with 0.5 EUR price granularity for bid prices. For operational reasons Statnett sees a risk of removing this constraint at Go-live of mFRR EAM. Statnett foresees to remove this constraint no later than when connecting to MARI.

Statnett will continue with a minimum bid volume of 10MW at Go-live mFRR EAM. Exceptions may apply in some bidding zones or for pilot projects.

##### National bid attributes

Bid attribute	Planned to be implemented
Maximum duration	Yes
Resting time	Yes
Inclusive bids	Yes
Locational information on bids	Yes
Period shift	Yes
Faster activation	Yes
Slower activation	Yes

##### Period shift bids

In standard mFRR product bids the BSP can indicate in the *Reason*-element that the bid can be used for period shift if it is not selected for scheduled activation.

If a BSP needs to provide period shift but does not want to submit a standard mFRR product bid the market product type "Period shift only" must be used. Period shift only bids must be simple indivisible bids. Period shift only bids may be linked with conditional linking.

#### Alternative channel for bid submission

The recommended method for bid submission is by sending a reserve bid document via ECP. Alternatively, bids may be submitted in the manual user interface FiftyWeb ([fiftyweb.statnett.no](https://fiftyweb.statnett.no)).

### 4.3.3 Activate bid process

#### Faster activation and deactivation

Faster activation and deactivation can be done for bids with activation time (*CIM:activation\_ConstraintDuration.duration*) shorter than the minimum requirement for the standard product. When circumstances call for it, the TSO can order activation of such bids on a shorter notice. See market terms and conditions for description of under what circumstances faster activation and/or deactivation can be used.

For faster activation the TSO will respect the bid's *activation time* (FAT) and will not request activation or deactivation on shorter notice than the activation time of the bid. For faster activation the *preparation time* (PT) is 1 minute. The last possible ordering time for faster activation is  $(FAT - PT)/2 + PT$  minutes before the middle of the ramp.

The TSO can also order faster deactivation of bids, both for standard product bids with 12,5 minutes FAT and faster bids. When ordering earlier deactivation, the TSO will send an updated activation request with the same order identification (*order\_MarketDocument.mRID*) and the same bid identification for the time series, and where the time period of the activation ends earlier than in the original activation request.

Preparation time of 1 minute and ramping time of 4 minutes is always assumed for faster deactivation. The ordering time for faster deactivation is thus always 3 minutes before the middle of the deactivation ramp.

#### Period shift activation

Period shift activations will be ordered periodically every 15 minutes based on the amount of structural imbalances around the period shift. All period shift activations for a given quarter hour will be ordered 7,5 minutes before the start of the quarter hour (T-7,5).

Each period shift activation will have a duration of 5 or 10 minutes in either the beginning of the quarter hour or in the end of the quarter hour. The period shift activation will be ordered using an *Activation\_MarketDocument*.

#### Legacy period shift handling

The legacy handling of period shift (*Produksjonsflytting*) will still remain and may be used in circumstances with insufficient availability of bids with support for the new period shift activation. Electronic ordering for legacy handling of period shift will use the codes and rules described in the legacy electronic ordering implementation guide<sup>4</sup>.

#### Production smoothing

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<sup>4</sup> Available at [ediel.no/Info/bruker-og-implementasjonsguider](https://ediel.no/Info/bruker-og-implementasjonsguider) ("Implementation guide – TCR Activation")

Production smoothing will continue until 15 min ISP is implemented. The process will continue to be as described in the old implementation guide for production smoothing available at ediel.no. The format for the activation document will however be upgraded to the new activation document described in this guide, chapter 6.2. Please take notice that the document type code for production smoothing is changed.

#### Non-standard product activation

This needs to be further discussed with market participant and will be described in a later version of the guide.

#### No longer supported

The new process for bid activation involves the following simplifications compared to the legacy process:

- The scheme for "recurring activations" is no longer supported.
- Adjustment of activation time period in the activation response from the BSP is no longer supported.

#### Notification of activation orders via SCADA

The BSP can opt to receive notifications of activation orders via SCADA signalling. A notification signal will then be sent from TSO SCADA to BSP SCADA through ELCOM each time an activation request is sent. Configuration of SCADA to listen for activation signal from TSO SCADA and to provide an acoustic alarm and presentation of the activation notification is required by the BSP.

#### Alternative channel for activation orders

This topic needs further discussions with market participants and a description will be added in a later version of this guide.

#### 4.3.4 TSO contact information

Any questions and concerns regarding this implementation guide, and the follow-up of the implementation in Norway, can be directed to: [BSP@statnett.no](mailto:BSP@statnett.no).

## 4.4 Svenska kraftnät

### 4.4.1 Implementation plan

Process	2022												2023											
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
<b>Bid submission and Activation: CIM-format and ECP</b>					Test				Trans. period															
<b>Bid submission and Activation: automated balancing</b>			Test										Functional verification test					Go-live						
<b>Health check</b>				Test					Start heartbeat															
<b>Other messages (market result, availability report)</b>														Test				Go-live						

- ***Bid submission and Activation: CIM-format and ECP***

All BSPs must start using the new formats for bid submission and activation ordering over ECP communication channel between January 17<sup>th</sup> and February 17<sup>th</sup>. A specific date for the transition for each respective BSP must be agreed with the TSO. After transition the old formats for bid submission and activation can no longer be used.

In the period from transition to the full Go-live of mFRR EAM the bid selection process will still be manual. In this period the process for electronic activation ordering will also remain the same as today (see description in current implementation guide for electronic ordering), except for the changes in format and resolution which is further described below.

Because of this only the following bid types and attributes are supported (other attributes will not be considered in the bid selection) until Go-live mFRR EAM:

- *Simple bids – fully divisible*
- *Technical linking – same price and resource for all the bids in a technical link*
- *Maximum duration and resting time – same values for all bids in a technical link, values must be divisible by 60, e.g. PT60M, PT120M, etc*

Other bid attributes will be treated as follows until Go-live mFRR EAM:

- *Exclusive group* will be handled as one bid with the largest volume
- *Multipart group* will be handled as separate independent simple bids
- *Conditionally available* linked bids will be handled as independent simple bids
- *Conditionally unavailable* linked bids will be rejected

BSPs must start using the new format for activation before or at the same time as the new format for bid submission due to increased length of bid identifications.

Until Go-live the activation orders will be sent per hour. The content of the activation order will have the same resolution as the bids. When the BSP starts sending bids with 15 -minute resolution the activation order from TSO will contain a time series for each bid to be activated. Until Go-live mFRR EAM, the activation order will typically contain four time series (for bids in a technical link) that together cover activation for the full hour. If multiple bids/station groups are to be activated at the same time there will be multiple activation orders (one for each technical link). After Go-live mFRR EAM an activation order will be sent for each 15-minute period but can contain activation time series for multiple bids for that 15-minute period.

Prior to the transition to CIM-formats and ECP each BSP must do a realistic integration test of the transition with the TSO.

- ***Bid submission and Activation: automated balancing***

A self-service test environment is available for BSPs to test bid submission of the various bid types and attributes as well as receiving activation orders.

To test the full market function with the real mFRR EAM bid selection algorithm (AOF) and realistic market input the TSO plans to carry out a coordinated functional verification test where BSPs can submit realistic bids with relevant new bid attribute and receive realistic activation orders. BSPs can use the functional verification test to verify own bidding strategy and process and make adjustments before Go-live.



- **Health check heartbeat**  
The health check heartbeat is planned to start at the same time as the transition to CIM-format and ECP. BSPs can test the heartbeat in the self-service test environment.
- **Other messages**  
The new reports on activated bids and bid availability will be available from Go-live of mFRR EAM.

#### Electronic ordering

From November 1<sup>st</sup> 2022 all BSPs in Sweden must use electronic ordering.

#### 4.4.2 Submit bid process

##### Minimum bid volume

Svk plans to allow minimum bid size of 1 MW from Go-live mFRR EAM given some preconditions and that operational processes are sufficiently developed.

##### National bid attributes

Bid attribute	Planned to be implemented
Maximum duration	Yes
Resting time	Yes
Inclusive bids	Yes
Locational information on bids	Yes
Period shift	Yes
Faster activation	No
Slower activation	Yes

##### Period shift bids

In standard mFRR product bids the BSP can indicate in the *Reason*-element that the bid can be used for period shift if it is not selected for scheduled activation.

##### Alternative channel for bid submission

The recommended method for bid submission is by sending a reserve bid document via ECP. Alternatively, bids may be submitted in the manual user interface [FiftyWeb](#).

#### 4.4.3 Activate bid process

##### Period shift activation

Period shift activations will be ordered periodically every 15 minutes based on the amount of structural imbalances around the period shift. All period shift activations for a given quarter hour will be ordered 7,5 minutes before the start of the quarter hour (T-7,5).

Each period shift activation will have a duration of 5 or 10 minutes in either the beginning of the quarter hour or in the end of the quarter hour. The period shift activation will be ordered using an *Activation\_MarketDocument*.

Alternative channel for activation orders

This topic needs further discussions with market participants and a description will be added in a later version of this guide.

#### 4.4.4 TSO contact information

Any questions and concerns regarding this implementation guide, and the follow-up of the implementation in Sweden, can be directed to: [mfr@svk.se](mailto:mfr@svk.se).

## 5 General rules for messaging

### 5.1 Date and time

Date and Times are based on ENTSO-E Standards and shall be expressed in universal time (UTC+0) in compliance with ISO 8601 as YYYY-MM-DDThh:mm:ssZ. The last 'Z' stands for Zero and indicates UTC+0.

### 5.2 Document coverage

The beginning and ending date and time of the period covered by the document must be on the same CET/CEST day.

### 5.3 Daylight saving time

The day is always expressed in local time, i.e.:

- A day is from 23:00 to 23:00 during winter time.
- A day is from 22:00 to 22:00 during summer time (daylight saving time).
- When changing from winter time to summer time there are 23 hours in the time series (from 23:00 to 22:00).
- When changing from summer time to winter time there are 25 hours in the time series (from 22:00 to 23:00).

### 5.4 Unique identifiers - UUID

Unique identifiers should be proper UUIDs as per RFC 4122 (UUID v1, v4 or v5).

### 5.5 Document identification and revision number

The document identification must be unique over time for the sender in question and should be a proper UUID. The document identification will then not have any significant meaning. The revision number is not used and shall always be equal to '1'.

### 5.6 Message size limit

The maximum allowed number of time series in a message is 2000.

If a BSP wants to submit more bids than this limit the bids must be split into several messages. In order to avoid risk of rejected bids, it is advised not to split complex bids or conditionally linked bids across multiple messages. If linked bids are sent in multiple messages the BSP must make sure bids for preceding MTUs are submitted and acknowledged before bids for the subsequent MTUs are sent.

The upper limit of number of bid messages sent from a BSP during one MTU is 100.

## 5.7 Update and cancellation principles

To update or cancel time series previously sent a new document is sent with the following information:

- A new unique document mRID (document identification)
- Fixed revision number (always equal to '1')
- A newer created date-time than the previously sent document

For *ReserveBid\_MarketDocument* and *Activation\_MarketDocument* updates are done by sending the affected time series with new data. Cancellation of time series is done by sending value 0 for quantity. To ensure update of the correct time series the bid identification of the original time series must be used.

To update bids for upcoming MTUs only the updated bids should be sent in a new bid message. There is no need to resend unchanged bids.

It is not allowed to include bids for MTUs which are closed for bidding in a bid message, ref. 3.3.3 Bid validation rules.

For *BidAvailability\_MarketDocument* and *ReserveAllocationResult\_MarketDocument* a new document completely replaces a previously sent document for the same *period*. Cancellation of time series is thus done by omitting the time series in the new document.

## 5.8 Acknowledgment

For each electronic data interchange defined in this document, an acknowledgement document, as defined in IEC 62325-451-1, should be generated either accepting the whole received document or rejecting it completely.

- All received messages shall be validated at both a technical and an application level.
- The Acknowledgement document shall be used as the tool to exchange errors.
- At a technical level, the reason code in the acknowledgement document shall reflect the error type, and the reason text should have a reference to the element containing the error.
- At the application level, the reason code shall reflect the error type and the reason text should reflect the appropriate business rule that is broken.
- An Acknowledgement document may contain many reason objects, to reflect multiple errors in the received document.

## 5.9 Energy communication platform

All the messages described in this document shall be communicated over the Energy communication platform (ECP) provided by each TSO.

Implementation guide for ECP can be requested from the respective TSO.

## 6 Appendix 1 – Document attributes and dependencies

This chapter provides the attributes and dependencies for the documents used to support the mFRR energy activation market.

The following classifications are used for the attributes:

- M – Must be used for the document in the process described in this guide
- D – Must be used if a defined condition is met
- O – Optional, can be used

### 6.1 Bid document – Attributes and dependencies

<b>ReserveBid_MarketDocument</b>		<p>iec62325-451-7-reservebiddocument.xsd – version 7.2</p> <p>if using inclusiveBidsIdentification and/or production type the following schema must be used:</p> <p>urn:iec62325:ediel:nbm:reservebiddocument:7:2 (available at <a href="http://www.nordicbalancingmodel.net">www.nordicbalancingmodel.net</a>)</p>
mRID	M	<p>Unique identification of the document.</p> <p>Proper UUID is required.</p>
revisionNumber	M	Constant value of <b>1</b>
Type	M	<b>A37</b> - Reserve bid document
process.processType	M	<b>A47</b> – Manual frequency restoration reserve
sender_MarketParticipant.mRID	M	<p>Identification of the party sending the document</p> <p>See 6.6 for supported coding schemes.</p>
sender_MarketParticipant.marketRole.type	M	<p><b>A46</b> - Balancing Service Provider (BSP)</p> <p>In Denmark BRPs act as BSP and must use the BSP-role.</p>
receiver_MarketParticipant.mRID	M	<p>Identification of the party receiving the document.</p> <p>One of:</p>

		<ul style="list-style-type: none"> <li>- Energinet.dk</li> <li>- Fingrid</li> <li>- Statnett</li> <li>- Svenska kraftnät</li> </ul> <hr/> <p><b>A01</b> - EIC coding scheme</p>
receiver_MarketParticipant.marketRole.type	M	<b>A34</b> – Reserve Allocator
createdDateTime	M	Date and time of document creation (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:SSZ
reserveBid_Period.timeInterval	M	The period covered by the document (in ISO 8601 UTC format) Start: YYYY-MM-DDTHH:MMZ End: YYYY-MM-DDTHH:MMZ
domain.mRID	M	EIC identification of the Control Area Denmark: <b>10Y1001A1001A796</b> Finland: <b>10YFI-1-----U</b> Norway: <b>10YNO-0-----C</b> Sweden: <b>10YSE-1-----K</b> <hr/> <b>A01</b> - EIC coding scheme
subject_MarketParticipant.mRID	M	Identification of the party responsible for the bid See 6.6 for supported coding schemes.
subject_MarketParticipant.marketRole.type	M	<b>A46</b> - Balancing Service Provider (BSP)

BidTimeSeries		
mRID	M	Unique identification of the bid. Proper UUID is required.
auction.mRID	O	Constant value of MFRR_ENERGY_ACTIVATION_MARKET
businessType	M	<b>B74</b> – Offer
acquiring_Domain.mRID	M	<b>10Y1001A1001A91G</b> (Nordic Market Area)
		<b>A01</b> - EIC coding scheme
connecting_Domain.mRID	M	The EIC identification of the bidding zone where the resource is located. Associated multipart, linked, conditional, inclusive and exclusive bids must be associated with the same bidding zone.
		<b>A01</b> - EIC coding scheme
quantity_Measure_Unit.name	M	<b>MAW</b> – megawatt
currency_Unit.name	M	<b>EUR</b> – euro
price_Measure_Unit.name	R	<del><b>MAW</b> – megawatt</del> <del><b>MWH</b> – Megawatt hours.</del>
Divisible	M	<b>A01</b> = Yes - quantity may be reduced to the minimum bid size by increments of 1 MW <b>A02</b> = No - no reduction possible on the quantity, the bid is indivisible
linkedBidsIdentification	O	Unique identification used to associate technically linked bids. Proper UUID is required. Not used if bid is not technically linked.
multipartBidIdentification	O	Unique identification used to associate multipart bids. Proper UUID is required. If bid with flowDirection.direction=A01 (Up) is accepted, then all associated bids with inferior price must also be accepted. If bid with flowDirection.direction=A02 (Down) is accepted, then all associated bids with superior price must also be accepted. Not used if bid is not multipart.

exclusiveBidsIdentification	O	<p>Unique identification used to associate exclusive group bids. Proper UUID is required.</p> <p>If one bid is selected, then none of the other with the same "bid family" identification can be selected.</p> <p>Not used if bid is not part of exclusive group bid.</p>
inclusiveBidsIdentification	O	<p>Optional for bids in Norway and Sweden.</p> <p>Unique identification used to associate inclusive group bids. Proper UUID is required.</p> <p>All or none of the bids with the same "bid family" identification must be selected.</p>
Status	M	<p><b>A06</b> – Available</p> <p>For conditionally linked bids, having one or several instances of Linked BidTimeseries:</p> <p><b>A65</b> – Conditionally available</p> <p><b>A66</b> – Conditionally unavailable</p>
registeredResource.mRID	M	EIC or national code for the resource (regulation object) or sub-station.
flowDirection.direction	M	<p><b>A01</b> - Up</p> <p><b>A02</b> - Down</p>
energyPrice_Measure_Unit.name	M	<b>MWH</b> - Megawatt hours.
activation_ConstraintDuration.duration	O	<p>Activation time - The minimum time for full activation of the physical resource including preparation time and ramping time.</p> <p>For bids that have a standard FAT of 12,5 min (or 15 min in <i>Automated operation</i>) activation time can be left blank or omitted.</p> <p><i>Applicable only to bids in Norway:</i></p> <p>For bids that can be activated faster than 12,5 minutes the activation time should be specified and should assume a preparation time of 1 minute.</p> <p>E.g.</p> <p>PT3M (if ramping time is 2 min)</p> <p>PT5M (if ramping time is 4 min)</p> <p>PT10M (if ramping time is 9 min)</p> <p><i>Applicable only to slower activation bids (in Denmark and Sweden):</i></p> <p>For bids with slower full activation time than 12,5</p>



		minutes (15 minutes from Go-live mFRR EAM ) the activation time must be specified.
resting_ConstraintDuration.duration	O	<p><i>Applicable to bids in Norway, Sweden, Denmark</i></p> <p>Resting time for the resource object after an activation, in number of minutes, divisible by 15. E.g.: PT45M, PT60M, PT90M.</p> <p>Requires technical linking of bids.</p>
maximum_ConstraintDuration.duration	O	<p><i>Applicable to bids in Norway, Sweden, Denmark</i></p> <p>Maximum duration of activation for the resource object, in number of minutes, divisible by 15. E.g.: PT45M, PT60M, PT90M.</p> <p>If maximum duration is specified and resting time is not specified, a resting time of 15 minutes will be assumed.</p> <p>Requires technical linking of bids.</p>
standard_MarketProduct.marketProductType	M	<p><b>A05</b> – Standard mFRR product eligible for scheduled activation only</p> <p><b>A07</b> – Standard mFRR product eligible for scheduled and direct activation</p> <p><b>A02</b> – Non-standard product not eligible for the scheduled or direct activation processes. Must be used for bids with activation time longer than 12,5 min (15 min during Automated operation).</p> <p><b>Z01</b> – Stand-alone period shift. To be used when period shift is not combined with standard mFRR product (A05 or A07). Must be simple bids with no linking. Applicable only to bids in Norway.</p> <p>Associated multipart and exclusive bids must have the same value.</p>
<b>Series_Period – exactly one instance per BidTimeSeries</b>		
timeInterval	M	<p>Period covered (in ISO 8601 UTC format). Must be 15 or 60 minutes. There must be one, and only one, period for each Bid_TimeSeries.</p> <p>Start: YYYY-MM-DDTHH:MMZ</p> <p>End: YYYY-MM-DDTHH:MMZ</p>

Resolution	M	<b>PT15M</b> or <b>PT60M</b> – the time resolution. Must equal the duration of the timeInterval.
<b>Point – exactly one instance per Series_Period</b>		
Position	M	Position is always <b>1</b>
quantity.quantity	M	Offered quantity
energy_Price.amount	M	The price of the product offered
minimum_Quantity.quantity	D	The minimum quantity of energy that can be activated at a given time position  It must be used for divisible bids and can be 0 (fully divisible) but must not be used for indivisible bids.

<b>Linked_BidTimeSeries (associated with BidTimeSeries) - no more than three instances referring to each of MTU-1 and MTU-2, respectively</b>		
mRID	O	mRID of a simple bid in MTU-1 or MTU-2
status	D	<p>One of the following values shall be used when bid in MTU0 is conditionally available, i.e. BidTimeSeries.status = A65:</p> <p>A55 = Not available if linked bid activated                      A56 = Not available if linked bid not activated                      A59 = Not available if linked bid subject to SA                      A60 = Not available if linked bid subject to DA                      A57 = Not available for DA if linked bid subject to DA                      A58 = Not available for DA if linked bid subject to SA</p> <p>One of the following values shall be used when bid in MTU0 is conditionally unavailable, i.e. BidTimeSeries.status = A66:</p> <p>A67 = Available if linked bid activated                      A68 = Available if linked bid not activated                      A69 = Available if linked bid subject to SA                      A70 = Available if linked bid subject to DA                      A71 = Available for DA if linked bid subject to DA                      A72 = Available for DA if linked bid subject to SA</p> <p>(SA = scheduled activation, DA = direct activation, MTU = market time unit)</p> <p>Also see note below.</p>

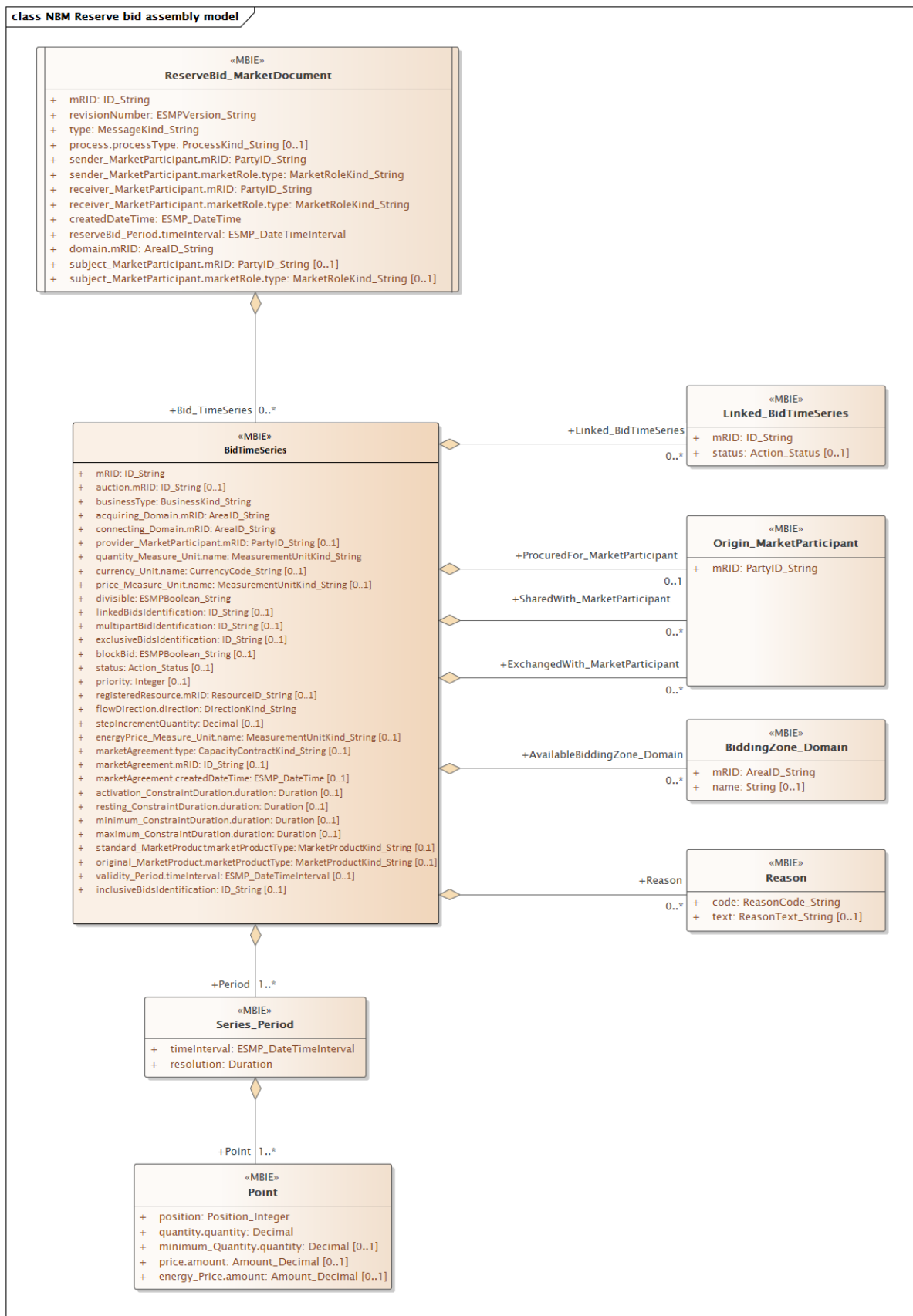
<b>Reason (associated with BidTimeSeries) – zero, one or two instances per BidTimeSeries</b>		
code	O	Optional for mFRR standard product bids in Norway and Sweden.

	<p>Period shift activation may be ordered.</p> <p>Z64 = Period shift, beginning of period</p> <p>Z65 = Period shift, end of period</p>
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Rules for evaluation of availability of conditional linked bids:

- A bid is regarded as activated if the TSO has sent activation order for the bid to the BSP, regardless of the response from the BSP.
- A conditionally available bid in MTU0 (i.e. bid with status A65) becomes completely unavailable when at least one of the conditional links indicate unavailability due to the outcome of the linked bid in MTU-1 or MTU-2
- A conditionally available bid in MTU0 becomes unavailable for direct activation when at least one of the conditional links indicate unavailability for direct activation due to the outcome of the linked bid in MTU-1 or MTU-2
- A conditionally unavailable bid in MTU0 (i.e. bid with status A66) becomes available when at least one of the conditional links indicate availability due to the outcome of the linked bid in MTU-1 or MTU-2
- A conditionally unavailable bid in MTU0 becomes available for direct activation when at least one of the conditional links indicate availability for direct activation due to the outcome of the linked bid in MTU-1 or MTU-2.

6.1.1 ReserveBid\_MarketDocument assembly model



Note: the cardinalities indicated in the assembly model are further restricted for the implementation according to this guide, please see Attributes and dependencies table above.

## 6.2 Activation document – Attributes and dependencies

<b>Activation_MarketDocument</b>		iec62325-451-7-activationdocument – version 6.2
mRID	M	Unique identification of the document. Proper UUID is required.
revisionNumber	M	Constant value of <b>1</b>
Type	M	<p><i>For the request:</i></p> <p><b>A39</b> – SATCR activation (Scheduled activation)  <b>A40</b> – DATCR activation (Direct activation)  <b>Z37</b> – Faster than standard FAT  <b>Z38</b> – Faster than standard deactivation time  <b>Z39</b> – Slower than standard FAT  <b>Z40</b> – Period shift activation  <b>Z41</b> – Production smoothing (applicable only in Norway)</p> <p><i>For the response:</i></p> <p><b>A41</b> – Activation response</p>
process.processType	M	<b>A47</b> – Manual frequency restoration reserve
sender_MarketParticipant.mRID	M	<p>Identification of the party sending the document</p> <p>See 6.6 for supported coding schemes.</p>
sender_MarketParticipant.marketRole.type	M	<p><i>For the request:</i></p> <p><b>A04</b> – System Operator</p> <p><i>For the response:</i></p> <p><b>A46</b> – Balancing Service Provider (BSP)  <b>A27</b> – Resource Provider</p>
receiver_MarketParticipant.mRID	M	<p>Identification of the party receiving the document.</p> <p>See 6.6 for supported coding schemes.</p>
receiver_MarketParticipant.marketRole.type	M	<p><i>For the request:</i></p> <p><b>A46</b> – Balancing Service Provider (BSP)  <b>A27</b> – Resource Provider</p> <p><i>For the response:</i></p> <p><b>A04</b> – System Operator</p>
createdDateTime	M	Date and time of document creation (in ISO 8601 UTC format)

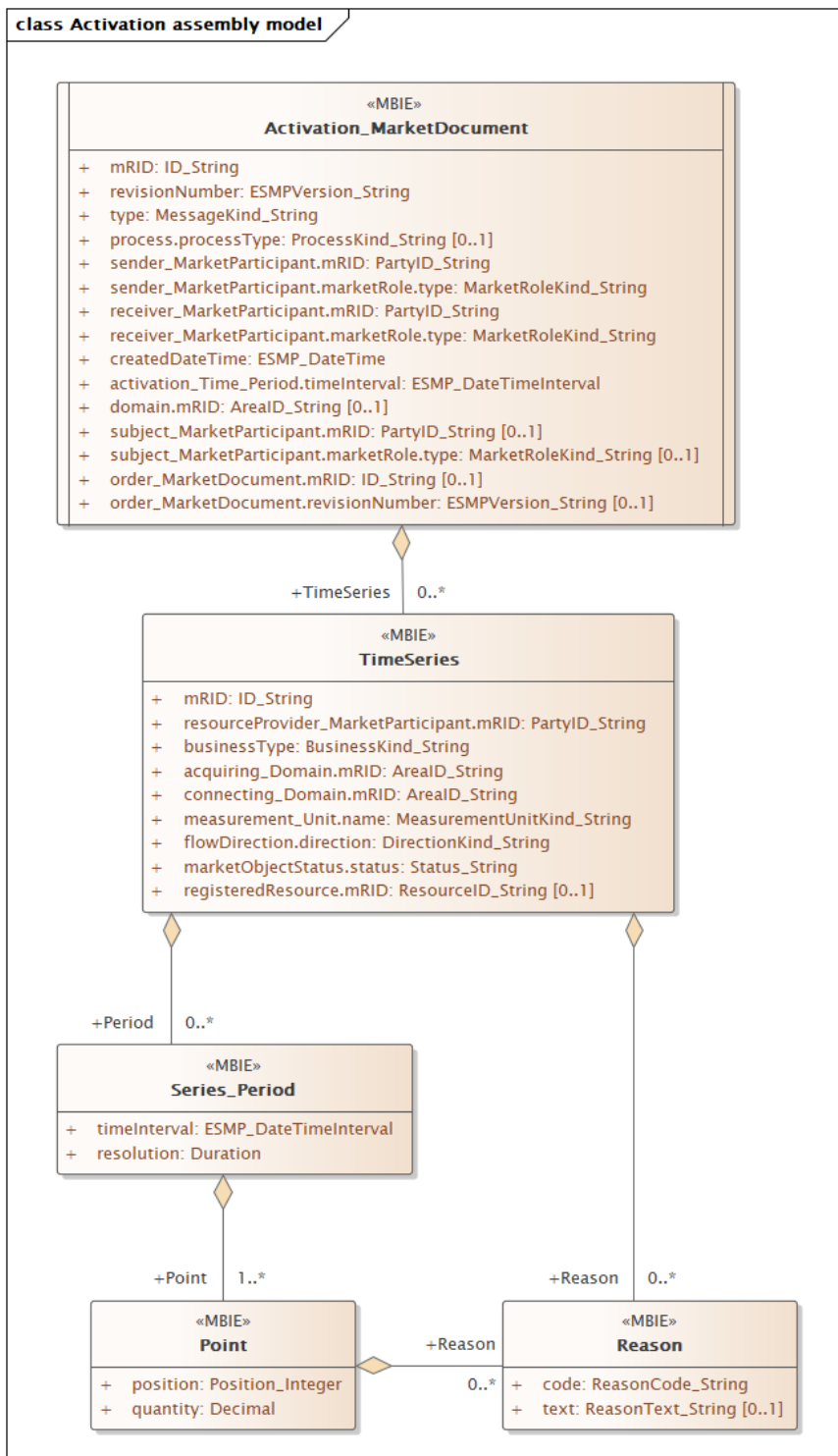
		YYYY-MM-DDTHH:MM:SSZ
activation_Time_Period.timeInterval	M	<p>The period covered by the document (in ISO 8601 UTC format)</p> <p>Start: YYYY-MM-DDTHH:MMZ</p> <p>End: YYYY-MM-DDTHH:MMZ</p> <p>---</p> <p>1 MTU (Market Unit Time – 15 min) for Scheduled activation (SA).</p> <p>2 MTUs ( 30 min.) for Direct activation (DA).</p>
domain.mRID	M	<p>EIC identification of the Control Area</p> <p>Denmark: <b>10Y1001A1001A796</b></p> <p>Finland: <b>10YFI-1-----U</b></p> <p>Norway: <b>10YNO-0-----C</b></p> <p>Sweden: <b>10YSE-1-----K</b></p> <hr/> <p><b>A01</b> - EIC coding scheme</p>
subject_MarketParticipant.mRID	M	<p>Identification of the party for whom the bid document is submitted.</p> <p>See 6.6 for supported coding schemes.</p>
subject_MarketParticipant.marketRole.type	M	<b>A46</b> – Balancing Service Provider (BSP)
order_MarketDocument.mRID	M	<p>Unique identification of the activation order.</p> <p>The same order id is used in the request and the response. UUID.</p>
order_MarketDocument.revisionNumber	M	<p>The version of the activation order.</p> <p>Incremented with one for each transmission of the document from the System Operator. The same version is used in the request and the response.</p>
<b>TimeSeries – one or more instances</b>		
mRID	M	Reference to the bid to be activated. Proper UUID is required.
resourceProvider_MarketParticipant.mRID	M	The identification of the Resource Provider.

businessType	M	<b>A97</b> – Manual frequency restoration reserve
acquiring_Domain.mRID	M	The EIC identification of the Nordic Market Area - 10Y1001A1001A91G <b>A01</b> – EIC coding scheme
connecting_Domain.mRID	M	The EIC identification of the bidding zone where the resource is located (repeat from Acquiring Area) <b>A01</b> – EIC coding scheme
measurement_Unit.name	M	<b>MAW</b> – megawatt
flowDirection.direction	M	<b>A01</b> – Up <b>A02</b> – Down
marketObjectStatus.status	M	<i>Only in the request:</i> <b>A10</b> – Ordered  <i>Only in the response:</i> <b>A07</b> – Activated (confirmation that quantities in the time series have been activated) <b>A11</b> – Unavailable
registeredResource.mRID	O/M	EIC or national code for the resource (regulation object).
<b>Series_Period – exactly one instance per TimeSeries</b>		
timeInterval	M	The start and end date and time of the time interval of the period of activation.
resolution	M	The time resolution is always the difference between the Time Interval End and the Time Interval Start. <b>E.g.:</b> <b>PT15M (for a scheduled activation)</b> <b>PT24M (for a direct activation with duration of 24 minutes)</b>
<b>Point – exactly one instance per Series_Period</b>		
position	M	Position is always <b>1</b>
quantity.quantity	M	Activated quantity
<b>Reason – only in the request</b>		

code	O	<b>B22</b> – System regulation <b>B49</b> – Balancing
text	O	
<b>Reason – only in the response</b>		
code	D	To be used to provide a reason when <i>marketObjectStatus.status</i> is <i>A11 - Unavailable</i> : <b>B59</b> – Unavailability of reserve providing unit <b>999</b> – Errors not specifically identified
text	D	For activation response with status Unavailable a reason for the unavailability should be provided in free text format.



6.2.1 Activation\_MarketDocument assembly model



Note: the cardinalities indicated in the assembly model are further restricted for the implementation according to this guide, please see Attributes and dependencies table above.

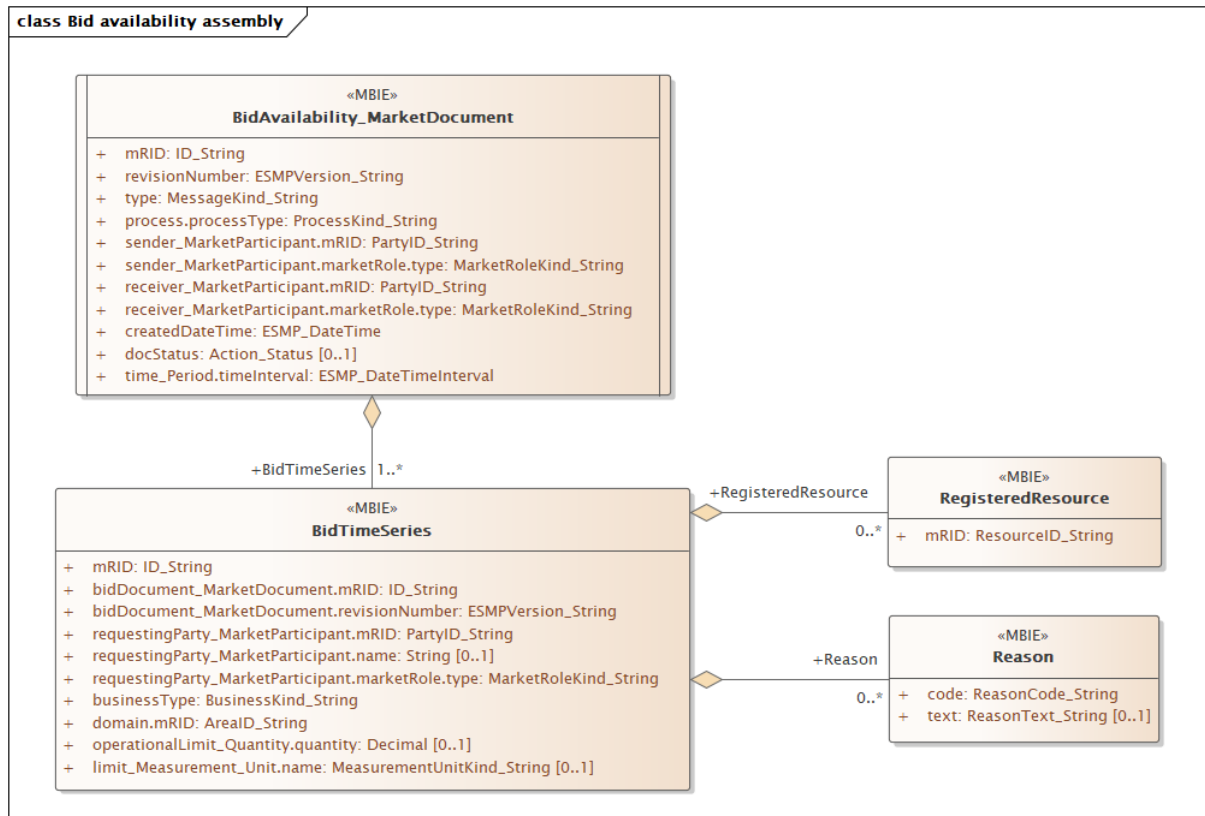
### 6.3 Bid availability document – Attributes and dependencies

<b>BidAvailability_MarketDocument</b>		urn:iec62325.351:tc57wg16:451-n:bidavailabilitydocument:1:0
mRID	M	Unique identification of the document. Proper UUID is required.
revisionNumber	M	Constant value of <b>1</b>
Type	M	<b>B45</b> – Bid availability document
process.processType	M	<b>A47</b> – Manual frequency restoration reserve
sender_MarketParticipant.mRID	M	Identification of the party sending the document. One of: <ul style="list-style-type: none"> <li>- Energinet.dk</li> <li>- Fingrid</li> <li>- Statnett</li> <li>- Svenska kraftnät</li> </ul> <b>A01</b> – EIC coding scheme
sender_MarketParticipant.marketRole.type	M	<b>A04</b> – System Operator
receiver_MarketParticipant.mRID	M	Identification of the party receiving the document. See 6.6 for supported coding schemes.
receiver_MarketParticipant.marketRole.type	M	<b>A46</b> – Balancing Service Provider (BSP)
createdDateTime	M	Date and time of document creation (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:SSZ
reserveBid_Period.timeInterval	M	The period(s) covered by the bid(s) referenced in the document (in ISO 8601 UTC format) Start: YYYY-MM-DDTHH:MMZ End: YYYY-MM-DDTHH:MMZ
<b>BidTimeSeries – one or more instances</b>		
mRID	M	Unique identification of the bid
bidDocument_MarketDocument.mRID	M	Constant value of <b>NA</b>
bidDocument_MarketDocument.revisionNumber	M	Constant value of <b>1</b>

requestingParty_MarketParticipant.mRID	M	EIC code of Party that requested the update of bid availability
requestingParty_MarketParticipant.marketRole.type	M	<b>A46</b> – Balancing Service Provider <b>A49</b> – Transmission System Operator <b>A50</b> – Distribution System Operator
businessType	M	<b>C40</b> – Conditional bid <b>C41</b> – Thermal limit <b>C42</b> – Frequency limit <b>C43</b> – Voltage limit <b>C44</b> – Current limit <b>C45</b> – Short-circuit current limits <b>C46</b> – Dynamic stability limit
acquiring_Domain.mRID	M	The EIC identification of the Nordic Market Area - 10Y1001A1001A91G <b>A01</b> – EIC coding scheme
domain.mRID	M	The EIC identification of the bidding zone where the resource is located <b>A01</b> – EIC coding scheme
<b>Reason – exactly one instance per time series *)</b>		
Code	M	When business type = C40 the following reasons apply: B16 = Tender unavailable in MOL list When business type = C42 one of the following reasons apply: B58 – Insufficiency of reserves B59 – Unavailability of reserve providing units When business type = C41, C43, C44, C45 or C46 one of the following reasons apply: B18 – Failure B46 – Internal congestion B47 – Operational security constraints B60 – Unavailability of automatic protection systems
text	O	May be populated to provide additional explanation in free text format
<b>RegisteredResource (associated with BidTimeSeries) – only when BusinessType is Thermal Limit = C41</b>		
mrID	O	EIC code of concerned network element

\*) The business types and reasons can be subject to changes to do the development of the MARI-project.

### 6.3.1 BidAvailability\_MarketDocument assembly model



Note: This is the MARI definition. The cardinalities indicated in the assembly model are further restricted for the implementation according to this guide, please see Attributes and dependencies table above.

## 6.4 Reserve allocation result document – Attributes and dependencies

The reserve allocation result will be sent from TSO to BSP after each imbalance settlement period (ISP). The report will include start time, stop time, quantity and price for every agreed activation during the ISP.

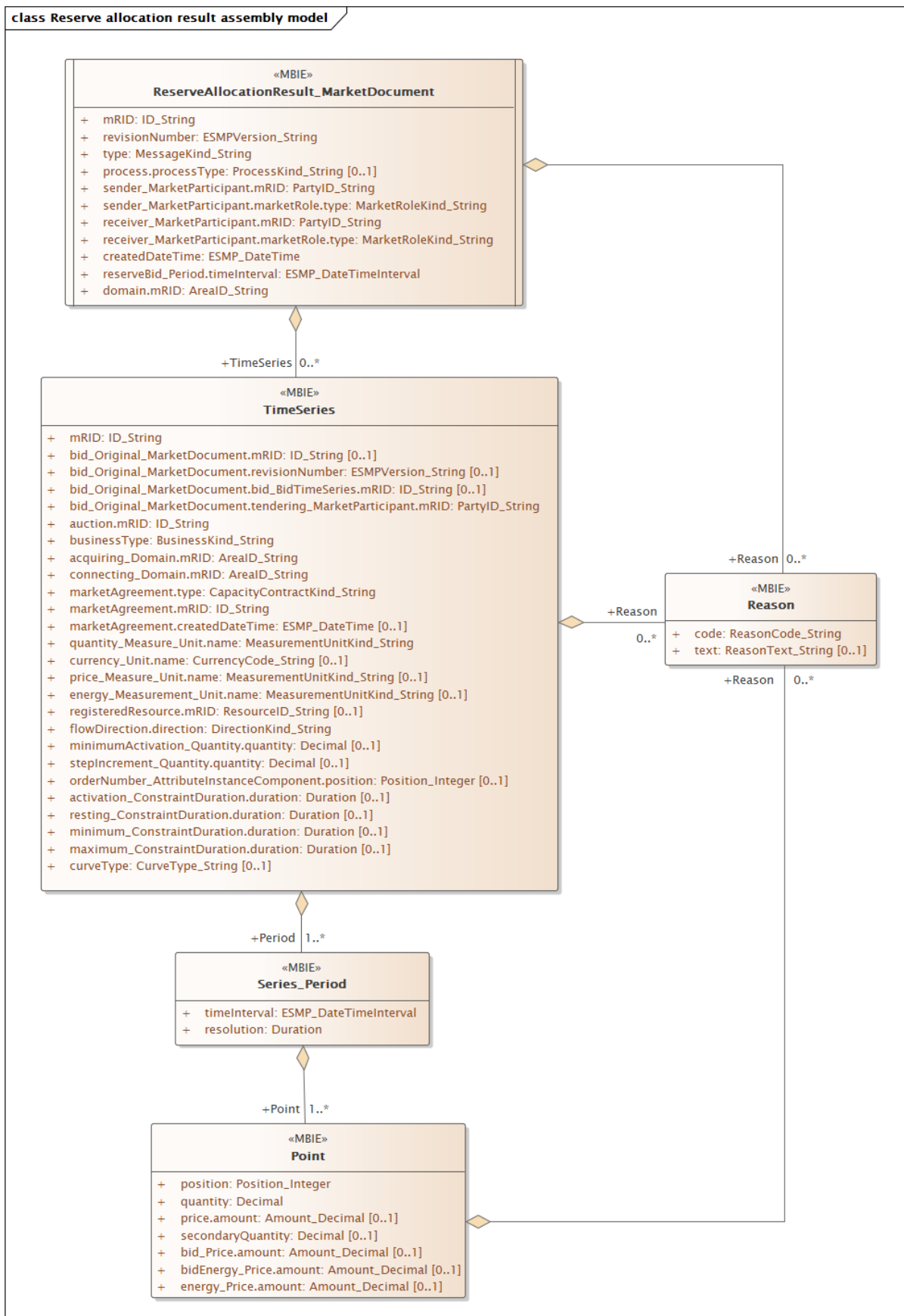
ReserveAllocationResult_MarketDocument		iec62325-451-7-reserveallocationresult.xsd –version 6.0
mRID	M	Unique identification of the document. Proper UUID is required.
revisionNumber	M	Constant value of 1
Type	M	<b>A38</b> – Reserve allocation result document

process.processType	M	<b>A47</b> – Manual frequency restoration reserve
sender_MarketParticipant.mRID	M	<p>Identification of the party sending the document. One of:</p> <ul style="list-style-type: none"> <li>- Energinet.dk</li> <li>- Fingrid</li> <li>- Statnett</li> <li>- Svenska kraftnät</li> </ul>
		<b>A01</b> – EIC
sender_MarketParticipant.marketRole.type	M	<b>A04</b> – System Operator
receiver_MarketParticipant.mRID	M	<p>Identification of the party receiving the document.</p> <p>See 6.6 for supported coding schemes.</p>
receiver_MarketParticipant.marketRole.type	M	<b>A46</b> – Balancing Service Provider (BSP)
createdDateTime	M	<p>Date and time of document creation (in ISO 8601 UTC format)</p> <p>YYYY-MM-DDTHH:MM:SSZ</p>
reserveBid_Period.timeInterval	M	<p>The period covered by the document (in ISO 8601 UTC format)</p> <p>Start: YYYY-MM-DDTHH:MMZ</p> <p>End: YYYY-MM-DDTHH:MMZ</p> <p>---</p> <p>1 MTU (Market Unit Time – 15 min) for Scheduled activation (SA).</p> <p>2 MTUs ( 30 min.) for Direct activation (DA).</p>
domain.mRID	M	<p>EIC identification of the Control Area</p> <p>Denmark: <b>10Y1001A1001A796</b></p> <p>Finland: <b>10YFI-1-----U</b></p> <p>Norway: <b>10YNO-0-----C</b></p> <p>Sweden: <b>10YSE-1-----K</b></p>
		<b>A01</b> – EIC coding scheme
<b>TimeSeries – one or more instances</b>		
mRID	M	Unique identification of the time series
bid_Original_MarketDocument.mRID	M	Constant value of <b>NA</b>

bid_Original_MarketDocument.revisionNumber	M	Constant value of <b>1</b>
bid_Original_MarketDocument.bid_TimeSeries.mRID	M	Reference to the bid (unique bid identification)
bid_Original_MarketDocument.tendering_MarketParticipant.mRID	M	Identification of the tendering party (BSP) according to the original bid document.
auction.mRID		Constant value of MFRR_ENERGY_ACTIVATION_MARKET
businessType	M	<b>A97</b> – Manual frequency restoration reserve
acquiring_Domain.mRID	M	The EIC identification of the Nordic Market Area - 10Y1001A1001A91G <b>A01</b> – EIC coding scheme
connecting_Domain.mRID	M	The EIC identification of the bidding zone where the resource is located (repeat from Acquiring Area) <b>A01</b> – EIC coding scheme
marketAgreement.type	M	Constant value of "NA"
marketAgreement.mrID	M	Constant value of "NA"
measurementquantity_Measure_Unit.name	M	<b>MAW</b> – megawatt
currency_Unit.name	M	<b>EUR</b> – euro
energyPrice_Measure_Unit.name	M	<b>MWH</b> - Megawatt hours
flowDirection.direction	M	<b>A01</b> – Up <b>A02</b> – Down
<b>Series_Period – exactly one instance per TimeSeries</b>		
timeInterval	M	The start and end date and time of the time interval of the period of activation.
Resolution	M	The time resolution is always the difference between the Time Interval End and the Time Interval Start.
<b>Point – exactly one instance per Series_Period</b>		
Position	M	Position is always <b>1</b>
quantity.quantity	M	Activated quantity

		The agreed delivery. Will be 0 for bids not activated.
energy_Price.amount	M	The energy price for the activation
<b>Reason – zero, one or multiple instances per TimeSeries</b>		
Code	M	<p><b>B22</b> – System regulation  <b>B49</b> – Balancing  <b>Z58</b> – Scheduled activation  <b>Z59</b> – Direct activation  <b>Z60</b> – Faster than standard FAT  <b>Z61</b> – Faster than standard deactivation  <b>Z62</b> – Slower than standard FAT  <b>Z63</b> – Period shift activation</p> <p>E.g.</p> <ul style="list-style-type: none"> <li>- for a scheduled activation for balancing purpose two reasons will be sent, B49 and Z58.</li> <li>- for a direct activation for system purpose two reasons will be sent, B22 and Z59.</li> </ul>
Text	O	May be populated to provide additional explanation in free text format

6.4.1 ReserveAllocationResult\_MarketDocument assembly model



Note: the cardinalities indicated in the assembly model are further restricted for the implementation according to this guide, please see Attributes and dependencies table above.



## 6.5 Acknowledgement document – Attributes and dependencies

<b>Acknowledgement_MarketDocument</b>		iec62325-451-1-acknowledgement.xsd – version 8.1
mRID	M	Unique identification of the document.
createdDateTime	M	Date and time of document creation (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:SSZ
sender_MarketParticipant.mRID	M	Identification of the party sending the document. See 6.6 for supported coding schemes.
sender_MarketParticipant.marketRole.type	M	<i>One of:</i> <b>A04</b> – System Operator <b>A46</b> – Balancing Service Provider (BSP) <b>A27</b> – Resource Provider <b>A34</b> – Reserve Allocator
receiver_MarketParticipant.mRID	M	Identification of the party receiving the document. See 6.6 for supported coding schemes.
receiver_MarketParticipant.marketRole.type	M	<i>One of:</i> <b>A04</b> – System Operator <b>A46</b> – Balancing Service Provider (BSP) <b>A27</b> – Resource Provider
received_MarketDocument.mRID	M	The unique identification of the received document.
received_MarketDocument.revisionNumber	M	The revision of the received document.
received_MarketDocument.type	M	The type of the received document.
received_MarketDocument.process.processType	M	The processType of the received document.
received_MarketDocument.createdDateTime	M	The date and time of the creation of the received document.
<b>Reason – one or more instances</b>		
code	M	<b>A01</b> – Message fully accepted <b>A02</b> – Message fully rejected

		More specific error codes may be used.
text	O	May be populated to provide additional explanation in free text format.

Reason – zero or more instances per time series		
code	M	<b>999</b> – Errors not specifically identified More specific error codes may be used.
text	O	May be populated to provide additional explanation in free text format.  For rejected bids a specific reason for the rejection will be provided.

## 6.6 Supported coding schemes for sender/receiver identification

The following coding schemes are supported for identification of sender/receiver.

**A01** – EIC

**A10** – GS1

**NSE** – Swedish national coding scheme

**NFI** – Finnish national coding scheme. It will be decided in the autumn 2021 whether NFI will still be supported.

## 7 Appendix 2 – Examples

Example messages for this implementation guide are available for download at [nordicbalancingmodel.net](https://nordicbalancingmodel.net).