

BSP - Implementation Guide

Technical transition - Sweden mFRR energy activation market

Business process: mFRR energy activation market

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Revision History

Version	Date	Changed by	Comments
1.0	20.10.2022	Nordic mFRR EAM project	First version of the guide for transition phase pre Go-live of mFRR EAM
1.01	1.11.2002	mFRR EAM project	Corrected max and min bid price. Technical linking is mandatory (until mFRR EAM Go-live).
1.02	18.09.2023	MFRR EAM project	Updated timeline and some clarifications on process.

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1 Scope

This document aims to clarify and describe the business processes for submitting bids and receiving activation orders for the mFRR Energy Activation Market for Balancing Services Provider (BSPs) operating in Swedish market areas.

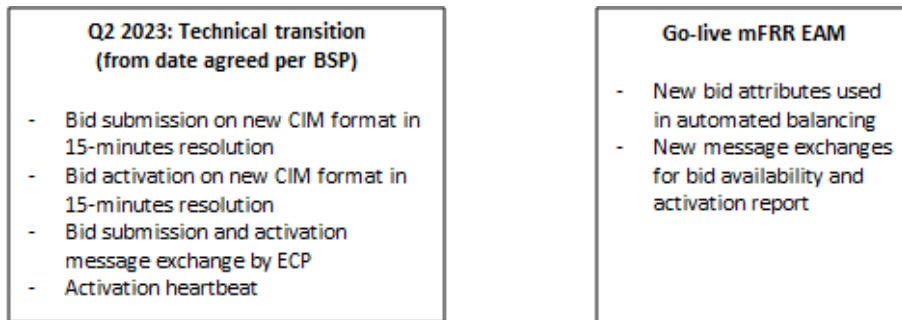
The processes and specifications in this guide will be valid from start of transition and represents the first step towards the NBM mFRR Energy Activation Market.

1.1 Terms and definitions

Acronym	Term	Definition
BRP	Balance Responsible Party	<i>A market participant or its chosen representative responsible for its imbalances</i>
BSP	Balancing Services Provider	<i>A market participant with reserve-providing units or reserve-providing groups able to provide balancing services to TSOs</i>
CIM	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>
FAT	Full Activation Time	<i>The period between the activation request by the connecting TSO and the corresponding full delivery of the concerned product</i>
ECP	Energy Communication Platform	<i>Reference implementation of MADES standard</i>
MOL	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>
MTU	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>
TSO	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>

2 Business context

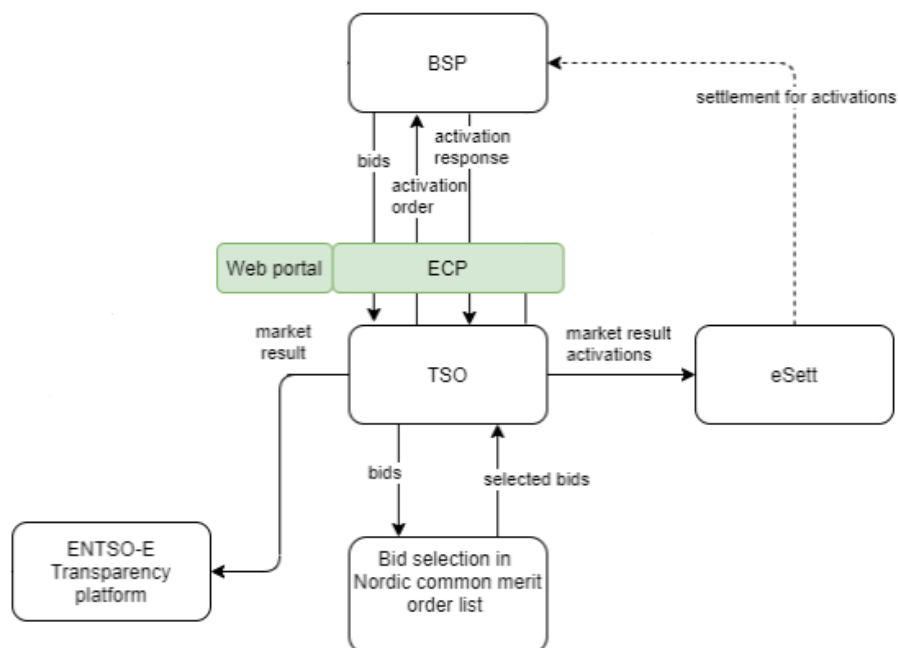
When NBM mFRR EAM is fully implemented bid submission and bid activation will support new product types and bid attributes, and the resolution for bidding and activation will be 15 minutes. The bid selection will be automated with algorithms respecting the new product types and bid attributes. This is a major change to the mFRR Energy Activation Market and therefore the change will be introduced in 2 steps as shown below.



This guide describes the changes introduced in the technical transition. The full set of changes introduced when NBM mFRR EAM goes live is described in the common Nordic Implementation guide for mFRR EAM which can be found at the NBM homepage <https://nordicbalancingmodel.net/>.

2.1 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.



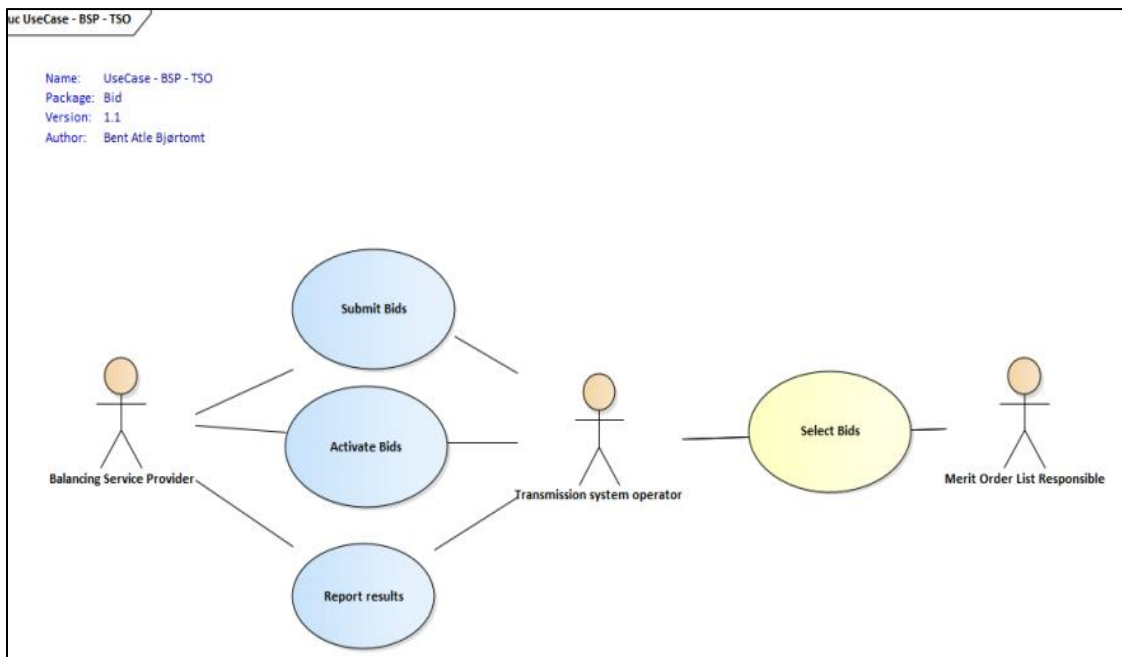
In addition to the information exchanges displayed in the diagram, the legacy EDI reports for prices and regulation will be sent, please refer to chapter 3.6.

3 Business process

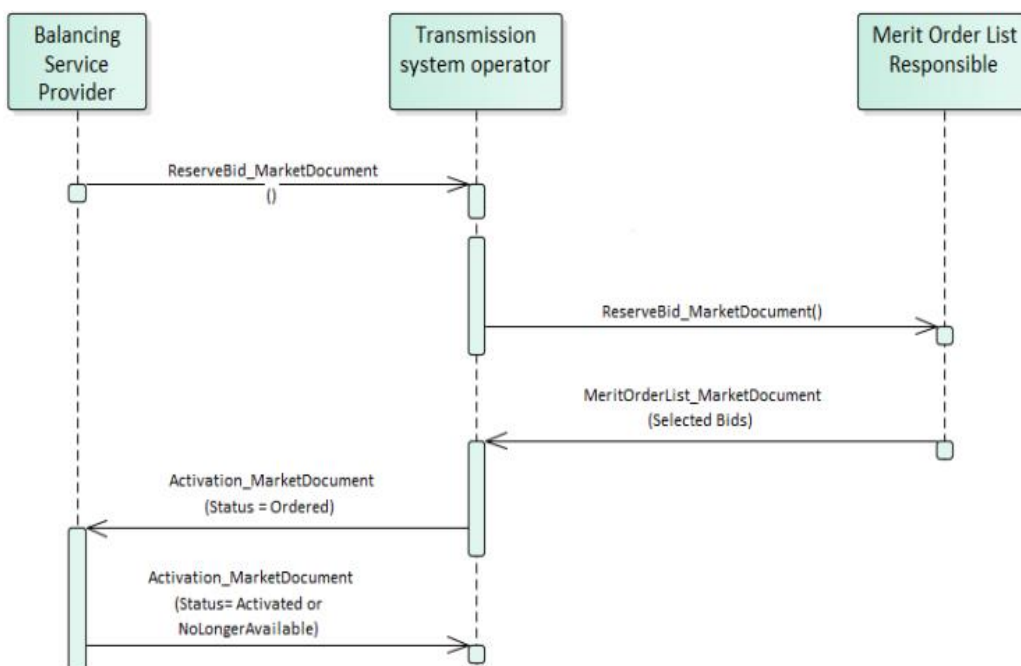
This chapter describes the mFRR EAM process from a BSP perspective with a focus on implementation of message exchanges. In addition to this implementation guide the BSPs need to comply with the relevant national Terms & Conditions.

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



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.

Bid submission must be done using the ENTSO-E CIM ReserveBid_MarketDocument and 15-minutes bid resolution. Four bids linked together with a technical link within each hour.

Currency	EUR
Maximum price	10 000 EUR/MWh
Minimum price	-10 000 EUR/MWh
Price granularity	0.5 EUR
Minimum bid size	5 MW
Maximum bid size	9999 MW
Bid granularity	1 MW
Activation granularity	1 MW
Bid time resolution for price and volume (minutes)	15 minutes

Gate closure for bid submission is 45 minutes before the hour. Consequently, the bid document must be received by the TSO before the gate closure of every bid in the document.

Each bid must be identified by a globally unique identifier (mRID). Two bids are not allowed to share the same bid ID.

Time out of 8 min for bid submission. Bids older than 8 minutes are rejected. Time out based on created date time (important that this is correct when sent from BSP).

Description of all the attributes used in the bid submission message can be found in Appendix 1 – Document attributes and dependencies.

3.3.1 New format and electronic channel for bid submission

All BSPs in Sweden must start using the new formats for bid submission and activation ordering over ECP communication channel by May 2023.

The 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.

The activation order will have the same resolution as the bids and refer to the bid to be activated using the bid identification which is increased in length in the new formats for bids and activations. BSPs must therefore start using the new format for activation before or at the same time as the new format for bid submission.

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

3.3.2 Fully supported bid attributes

Bids must be sent as four technically linked 15-minute bids where each of the four bids within an hour must have the same quantity. Simple bids without technical linking is not allowed until Go-live mFRR EAM.

The following bid attributes can be used from start of transition. Note the additional restrictions indicated after each attribute. These restrictions apply until Go-live of mFRR EAM.

- Technical linked bids – with same price, direction and resource for all the bids in a technical link
- Maximum duration – with same max. duration for all bids in a technical link, values must be divisible by 60, e.g. PT60M, PT120M, etc
- Resting time – with same resting time for all bids in a technical link, values must be divisible by 60, e.g. PT60M, PT120M, etc
- MarketProductType – must be either *Scheduled Activation (A05)* or *Scheduled and Direct Activation (A07)*. Bids will during the transition be activated as *Direct Activation* regardless of the MarketProductType.

3.3.3 Bid attributes that will be ignored

The following bid attributes can be used from start of transition. But until Go-live mFRR EAM these attributes will not be seen by the TSO operator and will therefore not affect the bid selection:

- MarketProductType "Scheduled activation only" (A05)
- MarketProductType "Scheduled and direct activation" (A07)
- Divisibility of bids and Minimum offered quantity
- Conditionally available bids (will be regarded as available bids)
- Conditionally unavailable bids (will be regarded as unavailable bids that cannot be activated) NB! If conditional unavailability is used, all bids in a technical link within one hour must be conditionally unavailable.
- Period shift

3.3.4 Bid attributes that will be rejected

The following bid attributes cannot be used before Go-live mFRR EAM:

- MarketProductType "Non-standard product " (A02)
- MarketProductType "Stand-alone period shift" (Z01)
- Complex bids: Exclusive group
- Complex bids: Multipart
- Complex bids: Inclusive bids

3.3.5 Update and cancellation of bids

To update or cancel bids previously sent, a new ReserveBid_MarketDocument 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

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.

When updating or cancelling bids only the updated bids should be sent in a new bid message. There is no need to resend unchanged bids.

Rules for updating bids:

- The time period of a bid cannot be changed
- The resource object of a bid cannot be changed
- The market product type of a bid cannot be changed
- The technical link id for a bid cannot be changed
- The price of a bid cannot be changed

In order to change time period, resource object, market product type, technical link for a bid or price of the bid, the bid has to be cancelled and a new bid must be submitted with the correct information. In case of this type of update, recommendation is to send delete and create for each bid in the same bid document.

3.3.6 Bid acknowledgement

When 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, a negative Acknowledgement will be returned and all bids in the document will be rejected. If the bid document is rejected that means that we have not received and registered any of the bids in the message i.e. for a update or cancellation to be accepted you need to send in a new bid document with the bids (with the right bid-ids) that you tried to cancel or update, that does not contain invalid bids and receive a positive acknowledgment. The negative Acknowledgement will contain error codes and text that indicate the reason for why the bids are not valid. For details check Chapter 5 Section 5.3 Acknowledgement document – Attributes and dependencies.

When receiving a negative acknowledgment show warning with information about the reason for rejection (so that the operator to remove faulty bid and resent the corrected bid message)

If no acknowledgment is received after time out, show warning with information that no acknowledgment was received and an instruction to troubleshoot the communication with Svk. If no problem is found on BSPs side, please contact IT-DC at Svk. Stop all planned continuous updates until problem is solved.

3.3.7 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.svk.se).

When adding bids in FiftyWeb a bid-ID is generated for each bid. The generated bid-id can be found in the exportable document of active bids.

3.4 Activate bid process

During the period from start of transition and until Go-live of mFRR EAM, the TSO will continue to send activation orders for selected bids to the respective BSPs every hour. Activations done by the operator for the upcoming hour gets sent out directly when ordered by the operator (at earliest after GCT H-45) with a start time at the hour shift.

Additionally, when there is a sudden need for activation, the TSO will send an activation order for selected bids. When the operator in the control room sends an activation during the hour, the system suggests a start time based on the activation time stated in the bid. This can either be accepted or changed by the operator so you can in fact get the activation message at any time before an activation. If no activation time is stated in the bid the system suggests a start time 10 minutes ahead.

3.4.1 Activation order message

The TSO orders activation of bids by sending an *Activation_MarketDocument* to the BSP. Each order document covers one hour and contains activation time series for up to four technically linked bids.

For the regular hourly activations, the order document will contain four time series covering the full hour.

For ad-hoc activation during the hour, the order document will contain time series for the remaining quarter hours.

If the TSO needs to order stop of activation before the end of the hour, the TSO will send an updated order document where the time series for the last quarter hour(s) are cancelled and/or shortened.

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 sends an activation response message, containing all relevant quarters in the same 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*" (A07).

If an activation order time series cannot be fulfilled the *Status* of that timeseries must be "*Unavailable*" (A11) and a reason should be provided in the *Reason*-element.

The BSP is required to return the activation response message to the TSO within 3 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.

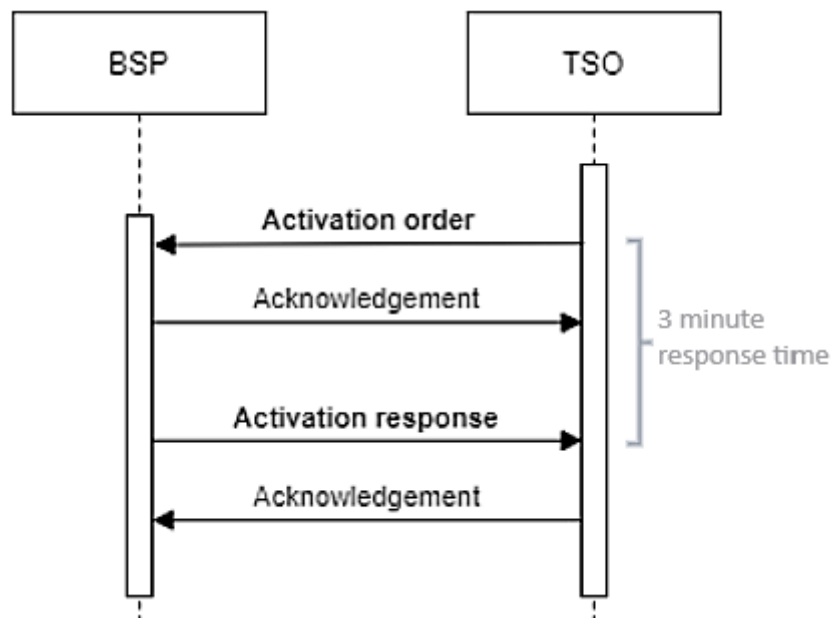
The TSO sends an *Acknowledgement_MarketDocument* to the BSP to confirm that the activation response message has been received.

3.4.2.1 Handling of activation response message:

If an activation response is received by the TSO later than the required 3 minutes, the response will be rejected.

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 when the BSP has responded unless BSP has responded with status "Activated" (A07) within the response time limit.



3.5 Activation heartbeat

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

The monitoring system is based on periodic heartbeat activation messages. A heartbeat activation is an "empty" activation order that BSPs shall receive, process and respond to like a real activation order with both Acknowledgements and Activation Response.

The processing of the order should, to the extent it is practical, be done by the same systems as for real activation orders in order to assess the real status of the activation process. The heartbeat activation should not result in any real balancing energy activation.

Heartbeat activation order will be sent from TSO to BSP once every 15-minutes at xx:10, xx:25, xx:40 and xx:55. The heartbeat will be sent regardless of whether the BSP has submitted bids or not.

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

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). The BSP should show a warning with information that the heartbeat message was not received and an instruction to troubleshoot the communication with SvK. If no problem is found on BSPs side, please contact IT-DC at SvK.

It is important that the BSP responds correctly and timely to both heartbeats and real activation orders. During transition and until Go-live of mFRR EAM the TSO operator will not be able to monitor the heartbeat status of each BSP. The TSO will however collect and log BSP-specific status. From Go-live mFRR EAM the TSO may consider bids to be unavailable when the BSP fails to respond to activation heartbeat.

3.6 Publication and reporting of market results

3.6.1 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).

Until Go-live mFRR EAM the legacy market prices and volumes report will also be sent in DELFOR EDIFACT message format to the BRP. For details, please check *Edielanvisningar* at <https://www.ediel.se/Info/edielanvisningar>.

3.6.2 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).

The report will be sent in DELFOR EDIFACT message format. For details, please check *Edielanvisningar* at <https://www.ediel.se/Info/edielanvisningar>.

4 General rules for messaging

The attribute BA Message ID in the ECP header should contain the mRID of the message sent.

4.1 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.

4.2 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).

4.3 Unique identifiers - UUID

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

4.4 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'.

4.5 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, please contact Svk for guidance. The upper limit of number of bid messages sent from a BSP during one MTU is 100.

5 Appendix 1 – Document attributes and dependencies

This chapter provides the attributes and dependencies for the documents used to support the transition to 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

5.1 Bid document – Attributes and dependencies

ReserveBid_MarketDocument		iec62325-451-7-reservebiddocument.xsd – version 7.2 alternatively the following schema may be used: urn:iec62325:ediel:nbm:reservebiddocument:7:2 (available at www.nordicbalancingmodel.net)
mRID	M	Unique identification of the document. Proper UUID is required.
revisionNumber	M	Constant value of 1
Type	M	A37 - Reserve bid document
process.processType	M	A47 – Manual frequency restoration reserve
sender_MarketParticipant.mRID	M	Identification of the party sending the document See 5.4 for supported coding schemes.
sender_MarketParticipant.marketRole.type	M	A46 - Balancing Service Provider (BSP)
receiver_MarketParticipant.mRID	M	Identification of the party receiving the document. Svenska kraftnät: 10X1001A1001A418 <hr/> A01 - EIC coding scheme
receiver_MarketParticipant.marketRole.type	M	A34 – 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). Every time series must be within this period. Start: YYYY-MM-DDTHH:MMZ End: YYYY-MM-DDTHH:MMZ
domain.mRID	M	EIC identification of the Control Area Sweden: 10YSE-1-----K ----- A01 - EIC coding scheme
subject_MarketParticipant.mRID	M	Identification of the party responsible for the bid See 5.4 for supported coding schemes.
subject_MarketParticipant.marketRole.type	M	A46 - 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	B74 – Offer
acquiring_Domain.mRID	M	10Y1001A1001A91G (Nordic Market Area)
		A01 - EIC coding scheme
connecting_Domain.mRID	M	The EIC identification of the bidding zone where the resource is located. Linked bids must be associated with the same bidding zone.
		A01 - EIC coding scheme
quantity_Measure_Unit.name	M	MAW – megawatt
currency_Unit.name	M	EUR – euro
Divisible	M	A01 = Yes - quantity may be reduced to the minimum bid size by increments of 1 MW A02 = No - no reduction possible on the quantity, the bid is indivisible
linkedBidsIdentification	M	Unique identification used to associate technically linked bids. Proper UUID is required. Only one bid per MTU may belong to the same technical link. Until mFRR EAM Go-live technical linking is mandatory.
Status	M	A06 – Available For conditionally linked bids, having one or several instances of Linked BidTimeseries: A65 – Conditionally available A66 – Conditionally unavailable

registeredResource.mRID	M	EIC or national code for the resource (regulation object) or sub-station.
flowDirection.direction	M	A01 - Up A02 - Down
energyPrice_Measure_Unit.name	M	MWH - Megawatt hours.
activation_ConstraintDuration.duration	O	Activation time - The minimum time for full activation of the physical resource including preparation time and ramping time. For bids that have a standard FAT (15 min) activation time can be left blank or omitted.
resting_ConstraintDuration.duration	O	Resting time for the resource object after an activation, in number of minutes, divisible by 60. E.g.: PT60M, PT120M, PT180M. Requires technical linking of bids.
maximum_ConstraintDuration.duration	O	Maximum duration of activation for the resource object, in number of minutes, divisible by 60. E.g.: PT60M, PT120M, PT180M. If maximum duration is specified and resting time is not specified, a resting time of 60 minutes will be assumed. Requires technical linking of bids.
standard_MarketProduct.marketProductType	M	A05 – Standard mFRR product eligible for scheduled activation only A07 – Standard mFRR product eligible for scheduled and direct activation Until Go-live of mFRR EAM both A05 and A07 will be used in the regular hourly bid activation process as well as for ad-hoc activation.
Series_Period – exactly one instance per BidTimeSeries		
timeInterval	M	Period covered (in ISO 8601 UTC format). Must be a quarter hour (15 minutes). There must be one, and only one, period for each Bid_TimeSeries. Start: YYYY-MM-DDTHH:MMZ

		End: YYYY-MM-DDTHH:MMZ
Resolution	M	PT15M – the time resolution.
Point – exactly one instance per Series_Period		
Position	M	Position is always 1
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.

Linked_BidTimeSeries (associated with BidTimeSeries) - no more than three instances referring to each of MTU-1 and MTU-2, respectively		
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>

Reason (associated with BidTimeSeries) – zero, one or two instances per BidTimeSeries		
code	O	Period shift activation may be ordered.

		Z64 = Period shift, beginning of period Z65 = Period shift, end of period
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Rules for evaluation of availability of conditional linked bids (please note that the conditional links will not be respected in the bid selection before Go-live mFRR EAM):

- 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.

5.2 Activation document – Attributes and dependencies

Activation_MarketDocument		iec62325-451-7-activationdocument – version 6.2
mRID	M	Unique identification of the document. Proper UUID is required.
revisionNumber	M	Constant value of 1
Type	M	<i>For the request:</i> A40 – DATCR activation (will be used both for regular hourly activation as well as for ad-hoc bid activation during the hour) <i>For the response:</i> A41 – Activation response
process.processType	M	A47 – Manual frequency restoration reserve
sender_MarketParticipant.mRID	M	Identification of the party sending the document See 5.4 for supported coding schemes.
sender_MarketParticipant.marketRole.type	M	<i>For the request:</i> A04 – System Operator

		<p><i>For the response:</i></p> <p>A46 – Balancing Service Provider (BSP)</p> <p>A27 – Resource Provider</p>
receiver_MarketParticipant.mRID	M	<p>Identification of the party receiving the document.</p> <p>See 5.4 for supported coding schemes.</p>
receiver_MarketParticipant.marketRole.type	M	<p><i>For the request:</i></p> <p>A46 – Balancing Service Provider (BSP)</p> <p>A27 – Resource Provider</p> <p><i>For the response:</i></p> <p>A04 – System Operator</p>
createdDateTime	M	<p>Date and time of document creation (in ISO 8601 UTC format)</p> <p>YYYY-MM-DDTHH:MM:SSZ</p>
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>
domain.mRID	M	<p>EIC identification of the Control Area</p> <p>Sweden: 10YSE-1-----K</p> <hr/> <p>A01 - EIC coding scheme</p>
subject_MarketParticipant.mRID	M	<p>Identification of the party for whom the bid document is submitted.</p> <p>See 5.4 for supported coding schemes.</p>
subject_MarketParticipant.marketRole.type	M	A46 – Balancing Service Provider (BSP)
order_MarketDocument.mRID	M	<p>Unique identification of the activation order. The same order id is used in the request and the response. UUID.</p>

order_MarketDocument.revisionNumber	M	The version of the activation order. Incremented with one for each transmission of the document from the System Operator. The same version is used in the request and the response.
TimeSeries – one or more instances		
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	A97 – Manual frequency restoration reserve
acquiring_Domain.mRID	M	The EIC identification of the Nordic Market Area - 10Y1001A1001A91G ----- A01 – EIC coding scheme
connecting_Domain.mRID	M	The EIC identification of the bidding zone where the resource is located ----- A01 – EIC coding scheme
measurement_Unit.name	M	MAW – megawatt
flowDirection.direction	M	A01 – Up A02 – Down
marketObjectStatus.status	M	<i>Only in the request:</i> A10 – Ordered <i>Only in the response:</i> A07 – Activated (confirmation that quantities in the time series have been activated) A11 – Unavailable
registeredResource.mRID	M	EIC or national code for the resource (regulation object).
Series_Period – exactly one instance per TimeSeries		
timeInterval	M	The start and end date and time of the time interval of the period of activation. (in ISO 8601 UTC format) Start: YYYY-MM-DDTHH:MMZ

		End: YYYY-MM-DDTHH:MMZ
resolution	M	The time resolution is always the difference between the Time Interval End and the Time Interval Start. E.g.: PT15M
Point – exactly one instance per Series_Period		
position	M	Position is always 1
quantity	M	Activated quantity
Reason – only in the request		
code	O	B22 – System regulation B49 – Balancing
text	O	
Reason – only in the response		
code	D	To be used to provide a reason when <i>marketObjectStatus.status</i> is <i>A11 - Unavailable</i> : B59 – Unavailability of reserve providing unit 999 – Errors not specifically identified
text	D	For activation response with status Unavailable a reason for the unavailability should be provided in free text format.

5.3 Acknowledgement document – Attributes and dependencies

Acknowledgement_MarketDocument		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 5.4 for supported coding schemes.
sender_MarketParticipant.marketRole.type	M	<i>One of:</i> A04 – System Operator A46 – Balancing Service Provider (BSP) A27 – Resource Provider A34 – Reserve Allocator
receiver_MarketParticipant.mRID	M	Identification of the party receiving the document. See 5.4 for supported coding schemes.
receiver_MarketParticipant.marketRole.type	M	<i>One of:</i> A04 – System Operator A46 – Balancing Service Provider (BSP) A27 – 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.
Reason – one or more instances		
code	M	A01 – Message fully accepted A02 – Message fully rejected More specific error codes may be used.

text	O	May be populated to provide additional explanation in free text format.
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Reason – zero or more instances per time series		
code	M	999 – 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.

5.4 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

6 Appendix 2 – Examples

Example messages for this implementation guide are available for at <https://integration.fifty.eu/> under the heading *TRANSITION PERIOD*.