

# Bidding mFRR capacity

Implementation Guide for Finnish national mFRR capacity market

Version 1.3 3.7.2023

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#### 1. Introduction

Since 2016 Fingrid has been procuring mFRR capacity (up-regulation) on a weekly market to maintain enough mFRR balancing bids to cover the dimensioning fault in Finland. Due to changes in the Finnish electricity production palette, the demand for mFRR capacity is rising and due to this, Fingrid is also developing the national mFRR capacity market. In December 2022, the weekly market was transformed into an hourly market, where the hourly capacities for each day are procured through auctions on the previous day (pre-spot market). From the beginning of 2023, Fingrid also started to procure capacity for down-regulation. The demand for down-regulation capacity was 150 MW at first and is increased stepwise to cover the dimensioning fault in the down-direction.

This implementation guide contains information about the process for bidding of manual Frequency Restoration Reserves to Finnish national capacity market manually through the web user interface and by electrical messages. The document describes the business rules as well as provides detailed information about the messages exchanged between Fingrid and Balance Service Provider or their service provider (both referred later as BSP).

#### 1.1 Abbreviations

BSP Balance Service Provider

mFRR Manual Frequency Restoration Reserve

GOT Gate Opening Time, after which bids can be submitted GCT Gate Closure Time, until which bids can be submitted

#### 1.2 Change log

Version	Release	Date	Changed by	Comments
1.0	Initial version	3.10.2022	Antti Hyttinen	First released version
1.1		26.10.2022	Antti Hyttinen	<ul> <li>Use of the column "Min MW" updated</li> <li>Location of new screens in Vaksi Web updated</li> <li>Other small updates</li> </ul>
1.2		18.11.2022	Antti Hyttinen	<ul> <li>Validation error table updated</li> <li>Additions to the bid submission display</li> </ul>
1.3		3.7.2023	Antti Hyttinen	<ul> <li>New screen "billing report" in Vaksi Web</li> <li>clipping board option removed from manual bid submission</li> <li>Area code for Central Finland added to the message implementation guide</li> </ul>

#### 1.3 References

- [1] urn:iec62325.351:tc57wg16:451-7:reservebiddocument:7:1
- [2] urn:iec62325.351:tc57wg16:451-1:acknowledgementdocument:8:1
- [3] urn:iec62325.351:tc57wg16:451-7:reserveallocationresultdocument:6:4

#### 2. General Rules

#### 2.1 Trade process

The Gate opening time (GOT) for the Finnish national mFRR capacity market is D-31 days. The gate closure time for bids (GCT) is D-1 at 9:30 EET/EEST. The auction is cleared, and the results are published at the latest D-1 10:30 EET/EEST. The timeline below demonstrates the different operational phases of the capacity market.



Figure 1 Timeline of the operational phases of the national mFRR capacity market

For each hour, Fingrid places the bids in price order, with the principle of giving priority to the cheapest bid. Bids can also be selected in another order due to the operational situation in the network. If this is done, BSPs are informed of this by changing the status of the bids in question to "unavailable". A necessary number of the bids is used in the price order, separately for up and down regulation.

#### 3. Manual bid submission

BSPs can enter bids manually into VaksiWeb under the menu:

- Balancing market → Hourly markets → mFRR capacity bid input (English)
- Säätömarkkinat → Säätökapasiteettimarkkinat 1h → 1h säätökapasiteettitarjousten syöttö (Finnish)

After choosing the correct party and correct date, new bids can be added by adding new rows.



Figure 2 In the Web interface, new bids can be added by clicking on the "add row" button

#### 3.1 Information required in the bid

Each bid must contain the following information:

- Bid number column is filled out automatically when adding a new row
- BSP column is filled out automatically when adding a new row
- Direction (up/down)
- Regulation area (North/South)
- Price



- o Price cannot be negative and must be between 0,01 10 000 €
- Volume
  - $\circ$  A bid can contain volume for 1-24 hours. Bid selection is done independently for each hour.
- Bid ID created automatically by the system when a new row is added
- Further details column is filled out automatically when adding a new row

The BSP can also specify optional information for the bid:

- RO-code (selected from the drop-down menu)
- Unique informal identification in addition to the Bid ID (Free text)

Min. [MW] is used to inform the divisibility of the bid. For fully divisible bids, the field should contain 0 or 1. For fully indivisible bids, the field is left empty. If the field is empty, the bid is automatically marked with the text "indivisible" and each volume of the bid is handled as fully indivisible. Min. [MW] must be lower or equal to the lowest volume within a single bid.

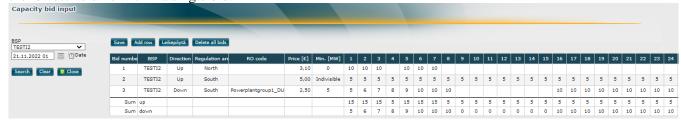


Figure 3 example bids submitted through Vaksi Web. Bid number 1: All volumes are fully indivisible. Bid number 2: All volumes of the bid are fully indivisible. Bid number 3: At least 5 MW must be accepted from each volume of the bid.

#### 3.2 Excel – input

Bids can also be copy-pasted to the user interface from e.g. Excel. Before pasting bids, the following steps should be taken:

- 1. correct subject party and date must be selected
- 2. A single bid row must be added in order to copy bids from excel

The amount of bid rows in Vaksi Web does not need to be the same as the number of rows copied from excel. The copied bids do not need to contain the following information:

- Bid number (this is automatically created by Vaksi)
- BSP (This is automatically created by Vaksi)
- Bid ID (This is automatically created by Vaksi)
- Further details

An excel template will be provided for market participants alongside this implementation guide

#### 3.3 Bid submission through electronic messages

It is also possible to submit bids to the market using ECP/MADES network. The process uses the cim document schema ReserveBid\_MarketDocument version 7.1 [1]

#### 3.3.1 General rules

The time interval of a reserve bid document is always an entire CET/CEST day.

The regulation area (North/Central/South) is defined using acquiring and connecting domain. It is mandatory to define the regulation area for the bid. BSP can also provide RO-code as a voluntary information.

A bid time series can include several periods if all periods are within the time interval of the bid document (an entire CET/CEST day). Periods are not allowed to overlap with each other.

#### 3.3.2 Updating and deleting of bids

In general, a new received bid document will always completely replace a previously received document. Updating or deleting of any individual bid is done by sending a new bid document honoring these rules:

- A new document mRID
- Revision number always "1"
- Newer creation date & time for the document
- Same document interval (same CET/CEST day)
- Same domain on document-level (Finnish domain)
- Same auction mRID
- Same subject market participant

A BSP can also delete all bids for a given day by sending a new bid document that contains a single dummy Bid\_TimeSeries that includes the element "status" and value A09 = cancelled. In this case all bids from the day in question are deleted and the content of the dummy timeseries is ignored. The bid document is not allowed to contain any other Bid\_TimeSeries.

BSPs can see valid bids in Vaksi Web user interface. Bids can also be updated and deleted manually in the user interface.

Deleting bids in the user interface is done by pressing on the "bin" icon at the end of each row (Figure 4). All bids for a certain day can be deleted by clicking on the "delete all bids" button (Figure 5).

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Bid id	Further details	Free text	
	10	10	10													e8dc6c5f26314da781f99d8a8218cee4	Domestic bid		Û
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	41ab88ab58264039b68139096d182f2e	Domestic bid		Û
10	10	10	10	10	10					10	10	10	10	10	10	50678285f3294a3797649a5eed1792e8	Domestic bid		ŵ
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
15	25	25	25	15	15	5	5	5	5	15	15	15	15	15	15				

Figure 4 In the user interface bids are deleted by clicking on the garbage bin



Figure 5 Deleting all bids for an entire day can be done by clicking the "Delete all bids" button

#### 4. Auction Results

Auction results can be viewed in the Vaksi user interface under the menu:

- Balancing market → Hourly markets → mFRR capacity sale report (English)
- Säätömarkkinat → Säätökapasiteettimarkkinat 1h → 1h säätökapasiteettikauppojen raportointi (Finnish)

After searching for the correct date, all bids with accepted volumes are presented:

Capacit	y sale r	eport												_				V												
	Clear	<b>∨</b> Date																												
Only sa Sales as Sales as	nd unaccept nd all bids		Regulation are	RO code	Price	Min. [MW]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	TESTI2	Up	North		3,10 €	0	3	1	0		0	0	0		_															
2	TESTI2	Up	South		5,00 €	Indivisible	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4	TESTI2	Up	North		5,00€	0	0	0	0	0	0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
5	TESTI2	Up	South		10,00€	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
9	TESTI2	Up	South		40,00€	0	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
10	TESTI2	Up	North		70,00€	0	0	0	0	0	0	0	0	33	34	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
11	TESTI2	Up	South		100,00€	0	45	45	45	44	44	44	43	0	0	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
14	TESTI2	Up	North		200,00€	0	0	0	0	0	0	0	0	0	0	4	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Sum	up						103	101	100	99	99	99	98	98	99	149	155	155	155	155	155	155	155	155	155	155	155	155	155	155
Sum	down						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Price	up						100,	100,0	100,	(100,0	100,0	100,0	100,0	70,00	70,00	200,0	200,0	200,0	200,0	200,0	200,0	200,	200,	200,0	200,0	200,0	200,0	200,	(200,0	200,0
Price	down						0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Figure 6 View of how accepted volumes are presented in Vaksi Web

The green color implicates that the volume of the bid in this hour was fully accepted. Yellow color implicates that the accepted volume was smaller than the original bid volume. If a bid is partially accepted (in some hours), also hours where no volume is accepted, are marked yellow. If, due to constraints in the transmission network, some bids cannot be accepted, these bids are marked with the status "unusable, transfer limitation" (*Epäkäytettävä*, *siirtorajoitus*) and are presented with a grey color.

Marginal prices of the clearing are shown in the last two rows of the table.

The user can choose to show also unaccepted bids or all bids (the underlying bids for any sales) by selecting the option "Sales and unaccepted bids" or "Sales and all bids". If no volume is accepted from a bid, the bid is not highlighted in any color.

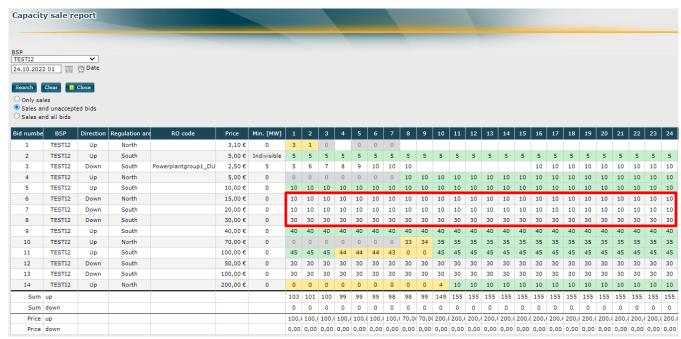


Figure 7 Bids that are not accepted are shown when "Sales and unaccepted bids" is activated

#### 5. Billing report

Vaksi contains a separate screen called "Billing Report" that can be used as a basis for invoicing. The screen can be found in the Vaksi user interface under the menu:

- Balancing Market → hourly markets → Billing report (english)
- Säätömarkkinat → Säätökapasiteettimarkkinat 1h → Laskutusraportti (Finnish)

In the billing report, capacity compensation is calculated for each hour & direction separately based on the capacity sales and energy bids on the mFRR energy market. A maximum of 1 month of information can be displayed at the same time.

#### 6. Message Implementation Guide

The bidding process can be summarized in the following steps:

- 1. Bids are submitted by BSP using the CIM Reserve Bid Document [1]
- 2. Fingrid will always acknowledge a bid document using a CIM Acknowledgement Document [2]
- 3. Bid results are distributed to BSP using the CIM Reserve Allocation Result Document [3]
- 4. BSP acknowledges the receival of the Allocation Result Document [2]

#### 6.1 Reserve bid document

#### 6.1.1 Business rules

- Recommended maximum number of bids within the bid document is 2 000.
- Bid can have volume for 1 to 24 hours.
- Bid price can have two decimals. Bid price is the same for all hours.
- Decimal separator must be a period. Bid quantity must be submitted at 1 MW granularity (no decimals). Bid volume shall be in integer
- A minimum volume for bid acceptance can be defined. The minimum volume is the same for all hours. Bid volume for each hour must be equal or higher than the minimum volume.
- Document identification and bid identification must be in UUID format.
- EIC code shall be used as sender identification code and subject party code.

	mFRR capacity up regulation	mFRR capacity down regulation
Minimum bid size (MW)	1	1
Maximum bid size (MW)	50	50

#### 6.1.2 Mapping table

Reserve Bid							
Document Identification	Unique identification of the document in UUID-format						
Revision Number	Fixed 1						
Document Type	<b>B40</b> Complete set of bids						
Process Type	A47 Manual frequency restoration reserve						
Sender Identification	EIC party code (X) of the BSP or their service provider  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX						

Sender Role	A46 Balancing Service Provider, if sender is BSP A39 Service Provider, if sender is BSPs Service provider
Receiver Identification	<b>10X1001A1001A264</b> (Fingrid) codingScheme = <b>A01</b> (EIC)
Receiver Role	A04 TSO
Creation Date Time	Date and time for creation of the document YYYY-MM-DDTHH:MM:SSZ (ISO 8601 UTC format)
Reserve Bid Time Interval	The beginning and ending date and time of the period covered by the document. Must always be an entire CET day YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format)
Domain	<b>10YFI-1</b> U codingScheme = <b>A01</b> (EIC)
Subject Party	EIC party code (X) of the BSP  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Subject Role	A46 Balancing Service Provider
<b>Bid Time Series</b>	
Reserve Bid Identification	Unique identification of the Bid Time series in UUID-format
Auction Identification	Fixed "MFRR_CAPACITY_MARKET"  Note: the element should not be checked
Business Type	<b>B74</b> Offer
Acquiring Area	EIC code for the national area  10YFI-1U  "The area where the resource is contracted for use"  codingScheme = A01 (EIC)
Connecting Area	EIC code for the area within Finland where the resource is located 10YFI-03 for North Finland 10YFI-2K for South Finland 10YFI-39R for Central Finland codingScheme = A01 (EIC)
Measure Unit Quantity	MAW
Currency	EUR
Measure Unit Price	MAW
Divisible	A01 Yes A02 No
Linked Bids Identification	Not used
Exclusive Bids Identification	Not used
Block Bid	Not used
Status	The element is optional.  If the element is present, it must contain the value A09 (Cancelled) and is used for being able to cancel all bids for a given delivery date and market. In that case, the content of the time series is ignored.

Registered Resource	If a time series with such a status is part of the document, it must be the only time series in the document.  Regulation object code, information is optional codingScheme = <b>NFI</b> (kansallinen koodi)
Direction	<b>A01</b> Up <b>A02</b> Down
Market Agreement Type	Fixed 1
Resting duration constraint	Not used
Maximum duration constraint	Not used
Period	
Time Interval	Period covered. The bid can contain several periods. Periods are not allowed to overlap.  YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format) This shall be included in the Time Period Covered
Resolution	PT60M or PT1H
Point	
Pos	Position within the time interval. Sequential value beginning with 1
Qty	Offered volume
Price	The price of the product offered
Minimum Quantity	The minimum quantity must be present if bid is marked as divisible (A01) and must not be present when the bid is market as indivisible (A02).  Must be specified as the same value across all points across all periods of the bid.
Reason (within TimeSeries-le	evel)
code	Optional to use Reason code. If used, $A95 = complementary$ information
text	Free text or identification for the BID. Does not affect the BID ID.

<b>Reserve Allocation Result</b>	
Document Identification	Unique identification of the document in UUID format
Document Version	Fixed 1
Document Type	A38 Reserve Allocation Result Document
Process Type	A47 Manual frequency restoration reserve
Sender Identification	10X1001A1001A264 (Fingrid) codingScheme = A01 (EIC)

Sender Role	A04 TSO
Receiver Identification	EIC party code (X) of sender of the bid document codingScheme = <b>A01</b> (EIC)
Receiver Role	A46 Balance Service Provider, if receiver is BSP A39 Service Provider, if receiver is BSPs service provider
Creation Date Time	Date and time for creation of the document YYYY-MM-DDTHH:MM:SSZ (ISO 8601 UTC format)
Reserve Bid Time Interval	The beginning and ending date and time of the period covered by the document. Must always be an entire CET day. YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format)
Domain	<b>10YFI-1</b> U codingScheme = <b>A01</b> (EIC)
<b>Bid Time Series</b>	
Reserve Bid Identification	Unique identification of the time series in UUID format
Original bid time series	The identification of the time series that was used in the original bid document - the reference to the bid
Original tendering party	EIC party code (X) of the sender of the original tender
Auction Identification	Fixed "MFRR_CAPACITY_MARKET"
Business Type	<b>B95</b> Procured Capacity
Acquiring Area	EIC code for the national area  10YFI-1U  "The area where the resource is contracted for use"  codingScheme = A01 (EIC)
Connecting Area	EIC code for the national area 10YFI-1U codingScheme = A01 (EIC)
Market Agreement type	A01 Daily
Measure Unit Quantity	MAW
Currency	EUR
Measure Unit Price	MAW
Registered Resource	RO-code of the original bid, if available
Direction	<b>A01</b> Up <b>A02</b> Down
Reason (within timeseries leve	1)
Code	<ul> <li>A73 - Tender in question has been accepted</li> <li>A72 - The original bid quantity has been divided to enable it to be accepted.</li> <li>B09 - Bid not accepted</li> </ul>
Reason (within timeseries leve	1)

Code	If Bid has an informal identification: <b>A95</b> Complementary information
text	Identification submitted with the Bid
Period	
Time Interval	Period covered. Always an entire CET day. YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format)
Resolution	PT60M
Point	
Pos	Position within the time interval. Sequential value beginning with 1
Qty	The accepted quantity for a point
Price	Marginal price for the hour in question. If accepted volume for the hour is 0, this field is empty.
Secondary quantity	Original volume of the bid
Bid price	Original price of the bid
<b>Reason (within point-level)</b>	
Code	<b>B16</b> - Tender unavailable  This reason code is used if the TSO cannot accept the bid due to internal congestion
Text	"Bid could not be accepted due to constraints in the transmission network"



#### 6.1.3 Validation of bid document

An acknowledgement document is generated either accepting the completely received document or rejecting it completely. Partly accept is never used.

Following error codes are applied:

- A01 successfully received document.
- A02 discarded document.

The table below contains the list of error messages that will be included in the Acknowledgement document in case validation of a bid document fails:

Description	Level of validation	Error message
Reserve Bid Document:		
Document Identification is mandatory	Message	-Message reference missing.
Document Identification must be in UUID format	Message	-Document Identification must be in correct format
Document type must be filled out correctly	Message	-DocumentType missingDocumentType must be B40
Process type must be filled out correctly	Message	-ProcessType not valid
Message must be received within a given time	Message	-Message was received after deadline. Gate closure for mFRR capacity bids is D-1 9:30 EET
Message can only include bids for next 31 days Message time interval must be one full day in CET time zone	Message	-Message contains data for more than next 31 daysDocument start and end interval must define an entire CET Day
Sender Identification must be connected to the Subject Party	Message	-SenderIdentification missing -Sender is not connected to the Subject Party.
Message must contain correct Receiver Identification	Message	-ReceiverIdentification missingReceiverIdentification is wrong
Message must contain correct subject party	Message	-Subject party missing -Subject party not found.
Time stamp of the document must be in correct format	Message	-createdDatetime format is incorrect -Decimals are not allowed in createdDatetime
Time interval of the document must be in correct format	Message	-ReserveBidTimeInterval not in correct format
Bid Times Series:		
Bid Identification is mandatory Bid Identification must be in UUID format	Bid	-ReserveBidIdentification missingReserveBidIdentification must be in correct format
Business type must be correct	Bid	-Business type missing -Message can only contain mFRR capacity bids
Acquiring domain must be 10YFI-1U	Bid	-Acquiring domain must be 10YFI-1U. -Connecting domain must be 10YFI-03 or 10YFI-2

Connecting domain must be either Finland or flow area in Finland		
Quantity Measure unit must be MAW	Bid	-Quantity unit must be MAW.
Currency must be EUR	Bid	-Currency must be EUR.
Price Measure unit must be MAW	Bid	-Price unit must be MAW
Divisibility must be specified	Bid	-Divisible must be A01 or A02 -Divisible required.
Direction must be specified	Bid	-Direction required -Direction must be A01or A02
marketAgreement type must be specified correctly	Bid	-Market agreement type required -MarketAgreementType must be A01
Bid Times Series Interval:		
Time interval of the bid must be in correct format	Bid	-Period TimeInterval not in correct format
Bid interval must be included in document time interval Bid Periods are not allowed to overlap Resolution not specified correctly Point position within a period must begin with 1	Bid	-Period is not in header timeinterval -Periods are overlapping -Resolution must be PT60M or PT1H -Point position within a period must begin with 1 -Point position 'x' is missing from period -Position 'x' is not valid for period -Points must be in order by position number
Quantity is required	Bid	-Quantity required -Quantity cannot contain any decimals
Quantity must be within accepted limits	Bid	- Quantity must be between 1-50
Quantity must be defined as a whole number	Bid	-Quantity cannot contain any decimals
Minimum Quantity must be present if bid is defined as divisible (A01) Minimum quantity must not be present if bid is defined as indivisible	Bid	-Minimum quantity required for divisible bid -Minimum quantity must not be used for indivisible bid
Price is required	Bid	-Price required
Prices cannot be negative	Bid	-Price is lower than the lower limit 0.01
Price can contain a maximum of two decimals	Bid	-Price contains too many decimals

### 6.2 Example messages

Example messages are provided upon asking Fingrid experts.