FINGRID

Bidding mFRR capacity

Implementation Guide for Finnish national mFRR capacity market

Version 1.0
3.10.2022

Contents

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. The weekly market is 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 starts to procure capacity for down-regulation. The demand for down-regulation capacity is 150 MW in the beginning 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

1.3 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 latest D-1 at 10:30 EET/EEST. The timeline below demonstrates the different operational phases of the capacity market.
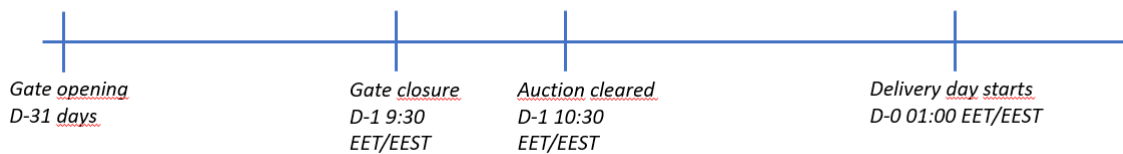

Figure 1 Timeline of the operational phases of the national mFRR capacity market

For each hour, Fingrid places the bids in price order, with the principle of giving priority to the cheapest bid. In case the operational situation in the network requires, bids can also be selected in another order. 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 → Balancing capacity market → Hourly markets → mFRR capacity bid input (English)
- Säätömarkkinat → Säätökapasiteettimarkkinat → Tuntimarkkinat → Tuntitarjousten 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:

- Direction (up/down)
- Regulation area (North/South)
- Price
  - o Price cannot be negative and must be at least 0,01 €

- Volume
  - o A bid can contain volume for 1 – 24 hours. Bid selection is done independently for each hour.
- Bid ID is 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 the RO code for the bid, but this is not required.

Min. [MW] is used to inform the divisibility of the bid. For fully divisible bids, the field is left empty. For fully indivisible bids, Min. [MW] = volume of the bid. Min. [MW] must be lower or equal to the lowest volume within a single bid.

Capacity bid input

BSP: TESTI2
15.09.2022 01 Date
Search Clear Close
Save Add row

Bid number	BSP	Direction	Regulation area	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		10	10	10			10	10	10																
2	TESTI2	Up	South		5,00	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
3	TESTI2	Down	South	Powerplantgroup1_DU	2,50	5	5	6	7	8	9	10	10	10	10							10	10	10	10	10	10	10	10	10
Sum	up						15	15	15	5	5	15	15	15	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Sum	down						5	6	7	8	9	10	10	10	10	0	0	0	0	0	0	10	10	10	10	10	10	10	10	10

Figure 3 example bids submitted through Vaksi Web

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. The template will be published at a later stage.

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/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. 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 In the user interface bids are deleted by clicking on the garbage bin

4. Auction Results

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

- Balancing market → Balancing capacity market → Hourly markets → mFRR capacity sale report (English)
- Säätömarkkinat → Säätökapasiteettimarkkinat → Tuntimarkkinat → Tuntikauppojen raportointi (Finnish)

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

Figure 5 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 bid is partially accepted (in some hours), also hours where no volume is accepted, are marked yellow.

By clicking on "show all bids", all submitted bids (accepted and not accepted) are shown. If no volume is accepted from a bid, the bid is not highlighted.

Capacity sale report

BSP
TESTI2
29.09.2022 01 📅 🕐 Date

Search Clear ❌ Close
☑ Show all bids

Bid number	BSP	Direction	Regulation area	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		5,00 €		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2	TESTI2	Up	South		10,00 €		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
3	TESTI2	Down	North		15,00 €		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
4	TESTI2	Down	South		20,00 €		0	0	0	0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
5	TESTI2	Down	South		30,00 €		0	0	0	0	0	0	0	0	0	10	10	10	25	25	25	30	30	30	30	30	30	30	30	30
6	TESTI2	Up	South		40,00 €		0	5	10	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
7	TESTI2	Up	North		70,00 €		0	0	0	5	10	15	20	20	20	20	20	20	20	20	20	35	35	35	35	35	35	35	35	35
8	TESTI2	Up	South		100,00 €		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5	5	5	5	5
9	TESTI2	Down	South		50,00 €		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	20	20	20	20	20	20	20
10	TESTI2	Down	South		100,00 €		30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
11	TESTI2	Up	North		200,00 €		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Sum	up						20	25	30	65	70	75	80	80	80	80	80	80	80	80	80	100	100	100	100	100	100	100	100	100
Sum	down						10	10	10	10	10	10	20	20	20	30	30	30	45	45	45	70	70	70	70	70	70	70	70	70
Price	up						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	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

Figure 6 Bids that are not accepted are shown grey when "show all bids" is activated

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.

5. Message Implementation Guide

When the national mFRR capacity market is launched at 1.12.2022, it is not yet possible to submit bids through electronic messages. The following part of the document is valid when Fingrid informs market participants that electronic messages are implemented. This part of the document is still subject to changes.

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]

5.1 Reserve bid document

5.1.1 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

5.1.2 Mapping table

Reserve Bid	
Document Identification	*Unique identification of the document in UUID-format*
Revision Number	Fixed **1**
Document Type	**B40** Complete set of bids
Process Type	**A47** Manual frequency restoration reserve
Sender Identification	*EIC party code (X) of the BSP or their service provider* **XXXXXXXXXXXXXX** (BSP or their service provider) codingScheme = **A01** (EIC)
Sender Role	**A46** Balancing Service Provider, if sender is BSP **A39** Service Provider, if sender is BSPs Service provider
Receiver Identification	**10X1001A1001A264** (Fingrid) codingScheme = **A01** (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	**10YFI-1--------U** codingScheme = **A01** (EIC)
Subject Party	*EIC party code (X) of the BSP* **XXXXXXXXXXXXXX** (BSP) codingScheme = **A01** (EIC)
Subject Role	**A46** Balancing Service Provider
Bid Time Series	
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	**B74** Offer
Acquiring Area	*EIC code for the national area* **10YFI-1--------U** *"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-0--------3 for North-Finland** **10YFI-2--------K for South 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
Registered Resource	Regulation object code, information is not mandatory codingScheme = **NFI** (kansallinen koodi)
Direction	**A01** Up **A02** 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.*

Reserve Allocation Result

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 = **A01** (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	**10YFI-1--------U** codingScheme = **A01** (EIC)

Bid Time Series

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	**B95** Procured Capacity
Acquiring Area	*EIC code for the national area* **10YFI-1--------U** *"The area where the resource is contracted for use"* codingScheme = **A01** (EIC)
Connecting Area	*EIC code for the national area* **10YFI-1--------U** 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	**A01** Up **A02** Down

Reason (within timeseries level)	
Code	**A73 -** Tender in question has been accepted **A72 -** The original bid quantity has been divided to enable it to be accepted. **B09 -** Bid not accepted
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*
Reason (within point-level)	
Code	**A73 -** 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"*

5.1.3 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 missing.* *-DocumentType 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 days.* *-Document 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 missing.* *-ReceiverIdentification 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 missing.* *-ReserveBidIdentification 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-1--------U	Bid	*-Acquiring domain must be 10YFI-1--------U.* *-Connecting domain must be 10YFI-1--------U, 10YFI-0--------3 or 10YFI-2--------K*

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	*-Divisibility information is missing* *-Divisibility must be specified*
Direction must be specified	Bid	*-Direction must be A01*
marketAgreement type must be specified correctly	Bid	*-MarketAgreementType missing.* *-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*
Quantity is required	Bid	*-Quantity required, must be bigger than 1 MW*
Quantity must be within accepted limits	Bid	*-Minimum quantity 1 MW and maximum quantity 50 MW for mFRR capacity bids*
Quantity must be defined as a whole number	Bid	*-Quantity cannot contain any decimals*
Quantity smaller than minimum quantity	Bid	*-Quantity must be at least minimum quantity*
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	*-In divisible bids, minimum quantity must be present* *-In indivisible bids, minimum quantity must not be present*
Price is required	Bid	*-Price required*
Prices cannot be negative	Bid	*-Price is lower than the lower limit*
Price can contain a maximum of two decimals	Bid	*-Price contains too many decimals; position 1.*

5.2 Example messages

Example messages to be added as soon as possible.