FINGRID

Bidding FFR capacity

Implementation Guide

Version 1.12
14.3.2024

FINGRID

1. Introduction

This guide contains information about the process for bidding of Fast Frequency Reserves by electrical messages. The document presents an overview to 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
FFR	Fast Frequency Reserve
FCR-D up	Frequency Containment Reserve, Disturbance upwards
FCR-N	Frequency Containment Reserve, Normal Operation

1.2 Change log

- Version 0.3 on the 29.1.2021
  First published version
- Version 1.1 on the 5.2.2024
  Document for reporting results per bid added
  Specified that bid linking is with FCR-D up
- Version 1.12 on the 14.3.2024
  FFR + FCR-N combination bid added

1.3 References

[1] urn:iec62325.351:tc57wg16:451-7:reservebiddocument:7:4
[2] urn:iec62325.351:tc57wg16:451-1:acknowledgementdocument:8:1
[3] Terms and conditions for providers of Fast Frequency Reserves (FFR)
   (official version in Finnish:-Ehdot ja edellytykset nopean taajuusreservin (FFR) toimittajalle)
[4] https://docstore.entsoe.eu/Documents/EDI/Library/cim_based/schema/Reserve_bid_document_UML_model_and_schema_v1.1.pdf
[5] urn:entsoe.eu:wgedi:errp:reserveallocationresultdocument:5:0
[6] urn:iec62325.351:tc57wg16:451-7:reserveallocationresultdocument:6:4

2. General Rules

2.1 Trade process

BSP can submit hourly bids to the FFR markets D-1 18.00 Finnish time (EET/EEST). For each hour, Fingrid places the bids in price order, with the principle of giving priority to the cheapest bid. A necessary number of the bids is used in the price order. [3] Combination bid of FFR and FCR-D up or FFR and FCR-N is first processed on FFR markets, after which the bid is correspondingly sent to FCR-D up or FCR-N markets if not used in FFR.

2.2 Technical Aspects

Bid documents, Allocation Result documents and Acknowledgement documents will be exchanged between the parties using the ECP/MADES network.

If the ECP connection is not working properly, the BSP should, if possible, use the Vaksi Web trading system as a back-up to check the status of the submitted bids.

2.3 Updating and deleting of bids

BSP can update bids by sending a new bid with the same bid ID. Latest successfully received bid is valid.

Bids can be deleted by sending a new bid with the same bid ID and zero amount. This removes bid totally from Vaksi trading system.

The price and capacity of a bid can be updated. The time interval of the bid cannot be updated.

BSP can see valid bids in Vaksi Web trading system. Bids can be deleted manually in Vaksi Web.

3. Message Implementation Guide

The bidding process can be summarized in the following steps:

1. Bids are submitted by BSP using the ENTSO-E Reserve Bid Document [1]
2. Fingrid will always acknowledge a bid document using a standard ENTSO-E Acknowledgement Document [2]
3. Results are sent to BSP using ENTSO-E Reserve Allocation Result Document [5]
4. Allocations per bid are notified using ENTSO-E CIM Reserve Allocation Result Documents [6]

3.1 Reserve bid document

3.1.1 Business rules
- Recommended maximum number of bids within the bid document is 2 000.
- Bid price can have two decimals.
- Bid volume can have one decimal.
- FFR bid is an indivisible bid which is fully accepted, FCR bid is a divisible bid which can be partially accepted.
- Decimal separator must be a period.
- Document identification mRID must be in UUID (Universally unique identifier) - format
- EIC code shall be used as sender identification code and subject party code.
- Each BidTimeSeries can only contain a single bid
- All bid periods must be included in the header Time Interval

3.1.2 FFR & FCR-D up or FFR & FCR-N combination bid

- Combination of FFR and FCR-D up bid or FFR and FCR-N bid is created by exclusively linking one FFR bid and one FCR-D up bid or one FFR bid and one FCR-N bid, respectively
- Both parts of a combination bid must be included in the same bid document
- Exclusively linked bids must have same volume and same time interval
- Exclusively linked bids can have different prices, and the prices must be bigger or equal to zero
- If bids are linked without a valid FCR agreement with Fingrid, the document, including the FFR bid, is fully rejected
- Exclusive Bid Identifier used to link the bids must be unique for each FFR/FCR-D up pair or FFR/FCR-N pair

	FFR	FCR-D	FCR-N
Minimum bid size (MW)	1,0	1,0	0,1
Granularity (after minimum size)	0,1	0,1	0,1
Maximum bid size (MW)	10,0	10,0	5
Minimum price (€/MW,h)	0	0	0

3.1.3 Mapping table

ReserveBid_MarketDocument	urn:iec62325.351:tc57wg16:451-7:reservebiddocument:7:4
mRID	*Unique identification of the document in UUID format*
revisionNumber	Fixed **1**
type	**A24** Bid document
process.processType	**Z14** Fast Frequency Reserve (FFR) Process
sender_MarketParticipant.mRID	*EIC party code (X) of the BSP or their service provider* **XXXXXXXXXXXXX** (BSP or their service provider) codingScheme = **A01** (EIC)
sender_MarketParticipant.marketRole.type	**A46** Balance Service Provider **A45** Service provider (Energy Service Company)
receiver_MarketParticipant.mRID	**10X1001A1001A264** (Fingrid) codingScheme = **A01** (EIC)
receiver_MarketParticipant.marketRole.type	**A04** System operator (TSOs)
createdDateTime	*The beginning and ending date and time of the period covered by the document* <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> (ISO 8601 UTC format)
reserveBid_Period.timeInterval	*The beginning and ending date and time of the period covered by the document* YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format)
domain.mRID	**10YFI-1--------U** codingScheme = **A01** (EIC)

subject_MarketParticipant.mRID	*EIC party code (X) of the BSP* **XXXXXXXXXXXXXX** (BSP) codingScheme = **A01** (EIC)
subject_MarketParticipant.marketRole.type	**A46** Balance Service Provider
Bid Time Series	
mRID	*Unique over time identification of the of the bid given by the sender. Cannot only be a running number, must contain also some other char. Recommended to contain time stamp of the bid.*
auction.mRID	*Auction identification* **"FFR"** for FFR **"FCR"** for FCR-D up or FCR-N part of exclusive bid
businessType	**Z85** Fast Frequency Reserve **C27** FCR-D, Frequency Containment Reserves, Disturbance **Z94** FCR-D, Frequency Containment Reserves, Disturbance, one step activation **C26** FCR-N, Frequency Containment Reserves, Normal
acquiring_Domain.mRID	*EIC code for the national area* **10YFI-1--------U** *"The area where the resource is contracted for use"* codingScheme = **A01** (EIC)
connecting_Domain.mRID	*EIC code for the national area* **10YFI-1--------U** *"The area where the resource is located"* codingScheme = **A01** (EIC)
quantity_Measure_Unit.name	**MAW**
currency_Unit.name	**EUR**
price_Measure_Unit.name	**MAW**
divisible	**A01** Yes for FCR-D up and FCR-N **A02** No for FFR
linkedBidsIdentification	Not used
multipartBidIdentification	Not used
exclusiveBidsIdentification	Optional. *Unique identification is used when linking two exclusive bids together, i.e. FFR and FCR-D / FCR-N bid have same exlusiveBidsIdentification*
blockBid	Not used
registeredResource.mRID	*For FFR & FCR-D up* **Kulutus / Tuotanto / Aggregoitu** codingScheme = **NFI** (kansallinen tunnus) *For FCR-N* Not used
flowDirection.direction	**A01** Up (FFR & FCR-D up) **A03** Up and down (FCR-N)
marketAgreement.type	Optional. Is used for FCR-D up / FCR-N combination bid. Empty for FFR bid. **A04** for yearly market

	A13 for hourly market
standard_MarketProduct.marketProductType	Optional, *Only for FCR-D:* Z02 – Dynamic FCR-D Z03 - Static FCR-D
Period	
timeInterval	*The hour of the bid in question, the time interval can be only one hour* <start>YYYY-MM-DDTHH:MMZ</start> <end>YYYY-MM-DDTHH:MMZ</end> (ISO 8601 UTC format) This shall be included in the Time Period Covered
resolution	**PT60M** or **PT1H**
Point	
position	**1** *For all bids*
quantity.quantity	*The volume of the bid in question,*
price.amount	*The price expressed for the bid. For FCR-D up / FCR-N yearly market bid, price 0 should be used.*

3.1.4 Validation of bid document

An acknowledgement document is generated either accepting the completely received document or rejecting it completely. Partly accept is never used. Figure 1 shows an example of the acknowledgement document.

Following error codes are applied:
- A01 successfully received document.
- A02 discarded document.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="true"?>
- <Acknowledgement_MarketDocument xmlns="urn:iec62325.351:tc57wg16:451-1:acknowledgementdocument:8:1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
    <mRID>839061c29ca546debb331af01c5a3092</mRID>
    <createdDateTime>2021-01-29T09:57:02Z</createdDateTime>
    <sender_MarketParticipant.mRID codingScheme="A01">10X1001A1001A264</sender_MarketParticipant.mRID>
    <sender_MarketParticipant.marketRole.type>A27</sender_MarketParticipant.marketRole.type>
    <receiver_MarketParticipant.mRID codingScheme="A01">44X-DummyBSP100</receiver_MarketParticipant.mRID>
    <received_MarketDocument.mRID>75e56646-8cce-4fd6-8ca3-aaeca7a0a461</received_MarketDocument.mRID>
    <received_MarketDocument.revisionNumber>1</received_MarketDocument.revisionNumber>
    <received_MarketDocument.createdDateTime>2020-12-30T08:57:00Z</received_MarketDocument.createdDateTime>
  - <Reason>
        <code>A01</code>
    </Reason>
</Acknowledgement_MarketDocument>
```

Figure 1 Example of acknowledgement message to bid 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	Error message
Reserve Bid Document:	
Document Identification is mandatory	*-Message reference missing.*
Document Identification must be in UUID format	*-Document Identification must be in correct format*
Document type must be filled out correctly	*-DocumentType missing.* *-DocumentType must be A24*
Process type must be filled out correctly	*-ProcessType not valid*
Message must be received within a given time	*-Message was received after deadline.*
Message can only include bids for next 30 days	*-Message contains data for more than next 30 days.*
Sender Identification must be connected to the Subject Party	*-SenderIdentification missing* *-Sender is not connected to the Subject Party.*
Message must contain correct Receiver Identification	*-ReceiverIdentification missing.* *-ReceiverIdentification is wrong*
Message must contain correct subject party	*-Subject party missing* *-Subject party not found.*
Time stamp of the document must be in correct format	*-createdDatetime format is incorrect* *-Decimals are not allowed in createdDatetime*

Time interval of the document must be in correct format	*-ReserveBidTimeInterval not in correct format*
Bid Times Series:	
Bid Identification is mandatory	*-ReserveBidIdentification missing.*
Business type must be correct	*-Business type missing* *-Message can only contain FFR bids and FCR bids*
FFR/FCR agreement with Fingrid must be valid	*-SubjectParty is not allowed to submit FFR quotes.* *-SubjectParty is not allowed to submit FCR quotes.*
Quantity Measure unit must be MAW	*-Quantity unit must be MAW.*
Currency must be EUR	*-Currency must be EUR.*
Price Measure unit must be MAW	*-Price unit must be MAW*
Exclusive Bid Identification is missing	*-ExclusiveBidIdentification missing*
FFR bid must be linked to only one FCR bid	*-Duplicate Exclusive bid Identification in FCR part* *-Duplicate Exclusive bid Identification in FFR part*
Exclusive bids must have same volume and same time interval	*-Linked bids must have same quantity* *-Linked bids must have same time interval*
Direction must be specified	*-Direction must be A01*
marketAgreement type must be specified for FCR part	*-MarketAgreementType missing.* *-MarketAgreementType must be A04 or A13*
Bid Times Series Interval:	
Time interval of the bid must be in correct format	*-Period TimeInterval not in correct format*
Bid interval must be included in document time interval	*-Period is not in header timeinterval*
Quantity is required	*-Quantity required*
FFR/FCR quantity cannot be negative	*-Quantities must be 0 or larger*
FFR/FCR quantity must be within accepted limits	*-Minimum quantity 1 MW and maximum quantity 10 MW for FFR/FCR-D.* *- Minimum quantity 0,1 MW and maximum quantity 5 MW for FCR-N*
Quantity can contain a maximum of one decimal	*-Quantity contains too many decimals; position 1.*
Price is required	*-Price required*
Prices cannot be negative	*-Price is lower than the lower limit*
Price can contain a maximum of two decimals	*-Price contains too many decimals; position 1.*

3.2 Reserve allocation result document

3.2.1 Business rules

- The time series will include volume and megawatt price per hour (EUR/MW/h).
- The result will not have any reference to the bids.
- This contains only FFR results. FCR part of combination bids is reported with FCR results.
- The time series will include result per hour. Result is sum of all accepted bids.

- Reserve Allocation Result Document is sent to a BSP only, if the BSP has submitted bids for that day to Fingrid.

3.2.2 Mapping table

Reserve Allocation Result	urn:entsoe.eu:wgedi:errp:reserveallocationresultdocument:5:0
Document Identification	*Unique identification of the document*
Document Version	Fixed **1**
Document Type	**A38** Reserve Allocation Result
Process Type	**Z14** Fast Frequency Reserve (FFR) Process
Sender Identification	**10X1001A1001A264** (Fingrid) codingScheme = **A01** (EIC)
Sender Role	**A04** System operator (TSOs)
Receiver Identification	**XXXXXXXXXXXX** (BSP or their service provider) codingScheme = **A01** (EIC)
Receiver Role	**A46** Balance 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* YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format)
Domain	**10YFI-1--------U** (Finland) codingScheme = **A01** (EIC)
Allocation Time Series	
Time Series Identification	*Unique identification of the time series instance*
Reserve Bid Document Identification	Fixed **"NA"** *Note: the element should not be checked*
Reserve Bid Document Version	Fixed **1**
Reserve Bid Identification	Fixed **"NA"** *Note: The Reserve allocation result document contains a calculated sum, hence there is no single bid to reference*
Tendering Party	**10X1001A1001A264** (Fingrid) codingScheme = **A01** (EIC)
Auction Identification	Fixed **"FFR"**
Business Type	**Z85** Fast Frequency Reserve (FFR)
Acquiring Area	**10YFI-1--------U** (Finland) codingScheme = **A01** (EIC)
Connecting Area	**10YFI-1--------U** (Finland) codingScheme = **A01** (EIC)
Contract Type	**A01** Daily
Contract Identification	Fixed **"NA"**
Measure Unit Quantity	**MAW**

Currency	**EUR**
Measure Unit Price	**MAW**
Direction	**A01** Up
Period	
Time Interval	Time Interval is one complete spot-day YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ (ISO 8601 UTC format)
Resolution	**PT60M** or **PT1H**
Interval	
Pos	*The relative position of a period within a Reserve Bid Interval*
Qty	*Sum of all accepted bids*
Price	*Marginal price of the hour*

3.3 Reserve allocation result document per bid

3.3.1 Business rules

- The time series includes accepted and the original volume, and marginal price and the original bid price.
- The result has reference to the bids.
- Combination bids: Only the FFR part of the combination bid is reported. FCR part of the combination bid is reported on a FCR document.
- The reason code indicates whether the bid has been fully or partially accepted or rejected.
- The Reserve Allocation Result Document is only sent to a BSP, if the BSP has submitted bids for that day to Fingrid.

3.3.2 Mapping table

ReserveAllocationResult_MarketDocument	urn:iec62325.351:tc57wg16:451-7:reserveallocationresultdocument:6:4
mRID	Unique identification of the document. Proper UUID is required.
revisionNumber	Constant value of **1**
Type	**A38** - Reserve Allocation Result Document
process.processType	**Z14** Fast Frequency Reserve (FFR) Process
sender_MarketParticipant.mRID	**10X1001A1001A264** (Fingrid) codingScheme **= A01** (EIC)
sender_MarketParticipant.marketRole.type	**A04** – TSO
receiver_MarketParticipant.mRID	**XXXXXXXXXXXX** (BSP or their service provider) codingScheme = **A01** (EIC)
receiver_MarketParticipant.marketRole.type	**A46** – Balancing Service Provider **A39** – Data / Service provider
createdDateTime	Date and time of document creation (in ISO 8601 UTC format) YYYY-MM-DDTHH:MM:SSZ

reserveBid_Period.timeInterval	The period covered by the document (in ISO 8601 UTC format) Start: YYYY-MM-DDTHH:MMZ End: YYYY-MM-DDTHH:MMZ The period length remains unchanged (a spot-day)
domain.mRID	EIC identification of the Control Area Finland: **10YFI-1--------U** **A01** - EIC coding scheme
TimeSeries	
mRID	Unique identification of the timeseries. Proper UUID is required. The ID is generated for each time series UUID
bid_Original_MarketDocument.bid_BidTimeSeries.mRID	**Original bid ID** The identification of the time series that was used in the original bid document - the reference to the bid
bid_Original_MarketDocument.tendering_MarketParticipant.mRID	**XXXXXXXXXXXXX** (BSP) codingScheme = **A01** (EIC)
auction.mRID	**FFR_CAPACITY_MARKET**
businessType	**Z85** Fast Frequency Reserve (FFR)
acquiring_Domain.mRID	The EIC identification of the bidding zone where the resource is contracted for use. Finland: **10YFI-1--------U** codingScheme = **A01** (EIC)
connecting_Domain.mRID	The EIC identification of the bidding zone where the resource is located. Finland: **10YFI-1--------U** codingScheme = **A01** (EIC)
marketAgreement.type	**A01** – daily
quantity_Measure_Unit.name	**MAW** – megawatt
currency_Unit.name	**EUR** – euro
price_Measurement_Unit.name	**MAW** – megawatt
flowDirection.direction	**A01** - Up
Reason (within timeseries level)	
code	**A73** –Bid in question has been accepted (bid fully accepted) **A72** - The original bid quantity has been divided to enable it to be accepted. (The bid is partially accepted) **B09** - Bid not accepted
Series_Period	
timeInterval	The period covered by the bid (in ISO 8601 UTC format) Start: YYYY-MM-DDTHH:MMZ End: YYYY-MM-DDTHH:MMZ

resolution	PT60M
Point	
position	Fixed **1**
quantity	Volume that was accepted from the bid (MW)
price.amount	Hourly marginal price (EUR). The price is included even if the bid in question was not accepted on the market
secondaryQuantity	The original volume of the bid (MW)
bid_Price.amount	The original price of the bid (EUR)

3.4 Communication overview

In the figure below, the overall communication regarding the bidding process to the FFR-markets is clarified.