

Unofficial translation

Fingrid Oyj

Terms and conditions for providers
of Frequency Containment
Reserves (FCR)

Valid from 1 January 2020

18 June 2019

Table of contents

| | | |
|-----------|---|-----------|
| 1 | Introduction | 3 |
| 2 | Definitions | 3 |
| 3 | Procurement of reserves | 4 |
| 4 | Requirements for a Balancing Service Provider | 5 |
| 5 | Requirements imposed on the Reserve Unit | 5 |
| 6 | Aggregation of Reserve Resources | 6 |
| 7 | Rules of the Yearly Market | 6 |
| 7.1 | Bidding rules | 7 |
| 7.2 | Processing of bids | 7 |
| 7.3 | Reserve plans | 7 |
| 8 | Rules of the Hourly Market | 8 |
| 8.1 | Bidding rules | 8 |
| 8.2 | Processing of bids | 9 |
| 8.3 | D-2 Hourly Market | 9 |
| 8.4 | Updating the information in an accepted Hourly Market bid | 10 |
| 9 | Reporting and monitoring of reserve maintenance | 10 |
| 9.1 | Real-time data | 10 |
| 9.2 | History data | 11 |
| 9.3 | Invoicing data | 12 |
| 9.4 | Technical descriptions | 12 |
| 9.5 | Fingrid's reporting to the Balancing Service Provider | 12 |
| 9.6 | Balancing Service Provider's reporting to balance responsible party | 12 |
| 10 | Processing of energy | 13 |
| 11 | Fees | 14 |
| 11.1 | Capacity Fee in the Yearly Market | 14 |
| 11.2 | Capacity Fee in the Hourly Market | 15 |
| 11.2.1 | Participation in the Hourly Market alone | 15 |
| 11.2.2 | Participation in both the Yearly Market and Hourly Market | 15 |
| 11.3 | Capacity Fee in the D-2 Hourly Market | 16 |
| 11.3.1 | Participation solely in the D-2 Hourly Market | 16 |
| 11.3.2 | Participation in both the D-2 Hourly Market and Yearly Market | 16 |
| 11.3.3 | Participation in the D-2 Hourly Market, Yearly Market and Hourly Market | 17 |
| 11.3.4 | Participation in the D-2 Hourly Market and Hourly Market | 17 |
| 12 | Breach of terms | 18 |
| 12.1 | Undelivered reserve capacity | 18 |
| 12.2 | Verification of control properties of reserves, and the Balancing Service Provider's reimbursement obligation | 18 |
| 12.3 | Temporary exclusion of a Balancing Service Provider from the reserve market | 18 |
| 12.4 | Cancelling the Agreement | 19 |

18 June 2019

1 Introduction

This document defines the terms and conditions of Fingrid Oyj (hereinafter Fingrid) for the providers of reserve services needed to balance the electricity system (hereinafter Balancing Service Provider) in accordance with the Guideline on Electricity Balancing, Commission Regulation (EU) 2017/2195 (hereinafter EGBL).

Frequency Containment Reserves (FCR) are reserves used for the containment of frequency. The Frequency Containment Reserves are divided into two reserve products, Frequency Containment Reserve for Normal Operation (FCR-N) and Frequency Containment Reserve for Disturbances (FCR-D).

The terms and conditions related to the procurement and maintaining of Frequency Containment Reserves (FCR) laid down in this document are applied when a Balancing Service Provider participates in the Yearly Market and Hourly Market of Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

2 Definitions

The following definitions are used in this document:

Balancing Service Provider (BSP) refers to a market participant whose reserve-providing units or groups are able to provide balance services to transmission system operators.

Capacity Fee refers to the compensation paid by Fingrid to a Balancing Service Provider for maintaining the reserve.

D-2 Hourly Market refers to the reserve market maintained by Fingrid, used by Fingrid for the procurement of the Frequency Containment Reserves for the next day in the CET time zone and timed before the Day-Ahead Market.

Day-Ahead Market refers to an electricity market place that trades in electricity sold and purchased for the next day.

Energy Fee refers to the compensation paid for the activation of the reserve.

Frequency Containment Reserve (FCR) refers to a reserve that is available for the containment of frequency during an imbalance between electricity production and consumption.

Frequency Containment Reserve for Disturbances (FCR-D) is a frequency containment reserve that aims to contain the frequency to at least 49.5 Hz if the frequency falls below the normal frequency range of 49.9 - 50.1 Hz.

Frequency Containment Reserve for Normal Operation (FCR-N) is a frequency containment reserve that aims to keep the frequency within the normal frequency range of 49.9 - 50.1 Hz.

18 June 2019

Frequency Restoration Reserve (FRR) refers to a reserve that is available for the restoration of the frequency of the electricity system to the nominal frequency and to restore the power balance of the load-frequency control area to the design value.

Hourly Market refers to a reserve market maintained and used by Fingrid for the procurement of the Frequency Containment Reserves for the next day in the CET time zone and timed after the Day-Ahead Market.

Hourly Market Agreement refers to an agreement between Fingrid and a Balancing Service Provider on the provision of Frequency Containment Reserves (FCR) to the Hourly Market.

Imbalance Power refers to the electrical energy provided by the Balancing Service Provider that is used by transmission system operators for balancing the network. This document uses the term *Balancing Energy* for imbalance power.

Manual Frequency Restoration Reserve (mFRR) is a manually activating frequency restoration reserve, the purpose of which is to restore the frequency of the electricity system to the nominal frequency and to restore the power balance of the load-frequency control area to the design value.

Regulating Object (RO) refers to an identifier used in imbalance settlement, indicating the balance information related to a bid on reserves.

Reserve Unit refers to a unit that fulfils the requirements concerning the provision of the reserve. A Reserve Unit can consist of one or more Reserve Resources.

Reserve Unit that has a limited activation capability refers to a Reserve Unit whose energy reservoir might become completely empty in the event that the reserve capacity has to be activated in full for the entire duration of the delivery period.

Reserve Resource refers to an individual resource capable of control; a power plant, consumption facility or energy storage facility.

Yearly Market refers to a market maintained by Fingrid, from which Fingrid procures some Frequency Containment Reserves and in which the procurement volume and procurement price are determined for the next calendar year.

Yearly Market Agreement refers to a one-year agreement between Fingrid and a Balancing Service Provider on the provision of Frequency Containment Reserves (FCR).

3 Procurement of reserves

The reserves are procured in accordance with Article 153 of the Guideline on System Operation, COMMISSION REGULATION (EU) 2017/1485 (hereinafter SOGL). The obligations concerning the maintaining of Frequency Containment Reserves are specified between the Nordic transmission system operators pursuant to SOGL Article 153.

The procurement of Frequency Containment Reserves is structured in a way that ensures the sufficiency of the reserves at all times, and at the same time enables

18 June 2019

efficient competition within impartial procurement conditions. Trade between countries is also possible in order to meet the reserve obligation.

Fingrid procures a part of its obligation under section 7 from the Yearly Market on the basis of an annual competitive tendering process. Fingrid decides the volumes of reserves procured from the Yearly Market on the basis of the price level and permanence of the bids received and on the basis of the forecasted price level and availability of other procurement alternatives.

In addition, Fingrid procures reserves daily from the Hourly Market described in section 8 so that the total volume of procurements meets Fingrid's obligations in normal situations and disturbances of the electricity system. There are separate markets for the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

4 Requirements for a Balancing Service Provider

A party that has access to Reserve Unit(s) that fulfil(s) the requirements laid down in section 5 can become a Balancing Service Provider.

The Balancing Service Provider must make a contract with Fingrid before participating in the maintenance of the reserves. Separate agreements shall be made on the participation in the Yearly and Hourly Market. A Balancing Service Provider may participate in both markets or only one of them.

A Balancing Service Provider does not need to be the owner or an open provider or a balance responsible party of a Reserve Resource. A Balancing Service Provider must have the consent of the owner of the Reserve Resource for the use of the reserve pursuant to the Yearly Market Agreement and/or Hourly Market Agreement. Upon Fingrid's separate request, the Balancing Service Provider shall deliver the consent of the owner of the Reserve Resource to Fingrid.

An individual Reserve Resource may only be offered by a single Balancing Service Provider to the Frequency Containment Reserve market.

Fingrid has the right to sell the reserves sold to Fingrid by Balancing Service Providers further to other transmission system operators.

5 Requirements imposed on the Reserve Unit

Pursuant to SOGL Article 155, the Balancing Service Provider must demonstrate that the Reserve Unit reported as reserve is in compliance with the required control capacity by means of prequalification tests laid down in the document, *The technical requirements and the prequalification process of Frequency Containment Reserves (FCR)* published by Fingrid.

18 June 2019

The Reserve Unit shall be located within Fingrid's system responsibility area¹.

The volume of reserve produced by the Reserve Unit and lost as a result of a single fault in each delivery period shall not exceed 70 MW.

Fingrid restricts the total volume of relay-connected reserves contributing to the maintaining of the Frequency Containment Reserve for Disturbances (FCR-D) and activating in a single step to a maximum of 100 MW per hour. The procurement quota is considered to be fulfilled primarily by the relay-connected reserves activating in a single step, procured from the Yearly Market.

In an island situation of the electricity system, when Finland is disconnected from the rest of the Nordic electricity system, and in situations in which the domestic supply of Frequency Containment Reserves and combined with their procurement from other countries are not sufficient to cover Fingrid's reserve obligations in all hours, the Balancing Service Provider shall, at Fingrid's request, keep the load-frequency control operating in all available Reserve Units. Fingrid pays the Balancing Service Provider a compensation of the capacity maintained on the basis of its request, in accordance with the price of the Hourly Market. If there has been no trading during the hour in question in the Hourly Market, the compensation price shall be the Yearly Market price. If, in addition to this, Fingrid requests the Balancing Service Provider to maintain additional reserves, and as a result of this the Balancing Service Provider has to change the power of the Reserve Units, a corresponding transaction shall be carried out at the price of Balancing Energy.

6 Aggregation of Reserve Resources

In the Yearly Market and Hourly Market, the Balancing Service Provider can combine Reserve Resources from the production balance and consumption balance and contribute to the maintaining of the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances by also using Reserve Resources included in the balances of different balance responsible parties. In the Frequency Containment Reserve for Normal Operation, the volume of the reserve shall be symmetrical per balance (production and consumption balance of the balance responsible party). In the Frequency Containment Reserve for Disturbances, the relay-connected reserve activating in a single step cannot be aggregated with a reserve activating linearly or piecewise linearly.

7 Rules of the Yearly Market

Participation in the Yearly Market requires compliance with the requirements for Balancing Service Providers laid down in section 4.

¹ Finland excluding the autonomous region of Åland.

18 June 2019

Competitive bidding for the Yearly Market is arranged in September-October for the next calendar year. A notification on competitive bidding will be posted on Fingrid's website. It is not possible to start contributing to the maintaining of reserves in the Yearly Market in the middle of the Yearly Market Agreement period.

7.1 Bidding rules

The maximum capacity of a single bid for the Frequency Containment Reserve for Normal Operation is 5 MW and for the Frequency Containment Reserve for Disturbances 10 MW.

The minimum capacity of a single bid for the Frequency Containment Reserve for Normal Operation is 0.1 MW and for the Frequency Containment Reserve for Disturbances 1 MW.

The bids shall be submitted at an accuracy of 0.1 MW. A Balancing Service Provider can submit several bids. The bids must not be linked to each other, and each bid is processed separately.

A bid must contain the following information:

- product (Frequency Containment Reserve for Normal Operation or Frequency Containment Reserve for Disturbances)
- capacity (MW)
- price of availability throughout the agreement period (€/MW,h)
- name or list of the Reserve Units that are used for contributing to the maintaining of the reserves
- with regard to the Frequency Containment Reserve for Disturbances the following information: production, consumption or aggregated.

7.2 Processing of bids

The bids are accepted in the price order, separately for the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances. If there are bids with the same price from several Balancing Service Providers, the bids are accepted, if necessary, in proportion to the volumes of the bids. Bids submitted by the same Balancing Service Provider in the same price step can also be accepted, if necessary, in proportion to the volumes of the bids.

The Balancing Service Provider and Fingrid conclude a Yearly Market Agreement on the delivery of reserves as a result of a procurement decision made by Fingrid.

7.3 Reserve plans

A Balancing Service Provider that has signed a Yearly Market Agreement shall submit to Fingrid an hourly reserve plan concerning the reserve volumes in the hours of the next day in the CET time zone. The reserve plan for the Frequency Containment

18 June 2019

Reserve for Normal Operation shall be itemised by specific balance responsible parties and balances (production/consumption). A separate reserve plan shall be submitted for relay-connected Frequency Containment Reserve for Disturbances that activates in a single step; in other words, it cannot be combined into a reserve plan of a reserve that activates linearly or piecewise linearly.

The volume of the reserve plan may not exceed the reserve volume agreed in the Yearly Market Agreement. The reserve plan shall be submitted at an accuracy of 0.1 MW. The plans shall be submitted in accordance with Fingrid's guideline, *Fingrid's reserve trading and information exchange*. The reserve plan must reach Fingrid no later than 18:00 (EET). Plans arriving after the deadline are not accepted. Reserve plans can be submitted for a maximum of 31 days calculated from the time of entry.

The reserve volume obtained by the Yearly Market Agreements forms the basis of the procurement.

8 Rules of the Hourly Market

Participation in the Hourly Market requires compliance with the requirements for Balancing Service Providers laid down in section 4.

A Balancing Service Provider can participate in the Hourly Market after having concluded an Hourly Market Agreement with Fingrid. Participation in the Hourly Market does not require participation in the Yearly Market, and the conclusion of the contract is also possible during the calendar year.

If a Balancing Service Provider has signed a Yearly Market Agreement on the delivery of reserves, the Balancing Service Provider can participate in the Hourly Market for the next day only if the volume specified in the Yearly Market Agreement has been delivered in full for the hour in question.

Alternatively, if a Balancing Service Provider so wishes, it can allocate only some of its Reserve Units to the Yearly Market, in which case the Balancing Service Provider can only use such Reserve Units in the Yearly Market. In this case, the Balancing Service Provider can participate in the Hourly Market using its other Reserve Units even if the volume specified in the Yearly Market Agreement had not been delivered in full for the hour in question.

If the reserve obligation cannot be fulfilled with the Yearly Market reserve plans, Fingrid orders reserve from the Hourly Market by means of procurements from Russia, Estonia and other Nordic countries.

8.1 Bidding rules

The maximum capacity of a single bid for the Frequency Containment Reserve for Normal Operation is 5 MW and for the Frequency Containment Reserve for Disturbances 10 MW.

18 June 2019

The minimum capacity of a single bid for the Frequency Containment Reserve for Normal Operation is 0.1 MW and for the Frequency Containment Reserve for Disturbances 1 MW.

The bids shall be submitted at an accuracy of 0.1 MW. A Balancing Service Provider can submit several bids. The bids must not be linked to each other, and each bid is processed separately.

A bid must contain the following information:

- product (Frequency Containment Reserve for Normal Operation or Frequency Containment Reserve for Disturbances)
 - Frequency Containment Reserve for Normal Operation: Regulating Object (RO) (except for the shares of a shared power plant, general RO identifiers are used; these only contain information on the balance responsible party and balance)
 - Frequency Containment Reserve for Disturbances: control method (a relay-connected reserve that is linear, piecewise linear or activates in a single step) and type (production, consumption or aggregated).
- capacity (MW)
- price of availability (€/MW,h)
- hour (EET time zone).

Moreover, the bids for aggregated Frequency Containment Reserve for Normal Operation shall include an aggregation combination number (1-10) with which the aggregated partial bids are combined with each other.

The hourly bids shall be submitted for the hours of a day in the CET time zone. Bids can be submitted for the hours of the next day until 18:30 (EET). The hourly bids shall be submitted in Fingrid's electronic reserve trading system (Vaksi web) in accordance with Fingrid's separate guideline, *Fingrid's reserve trading and information exchange*. The currently valid guideline is available on the Fingrid website.

8.2 Processing of bids

Fingrid arranges the bids by price and gives priority to the cheapest bid for each delivery period. A necessary number of bids are used in the price order for the Frequency Containment Reserve for Normal Operation and for the Frequency Containment Reserve for Disturbances. Bids with the same price are used in the order of receiving the bids. If necessary, a part of a bid can also be used. At least 1 MW of a bid is always used for the Frequency Containment Reserve for Disturbances. Fingrid confirms the transactions for the next day by 22:00 (EET).

8.3 D-2 Hourly Market

Fingrid has the right to introduce a D-2 Hourly Market timed before the Day-Ahead

18 June 2019

Market by posting a notification of this on the Fingrid website at least two weeks in advance .

To participate in the D-2 Hourly Market, a Balancing Service Provider must have a valid Hourly Market Agreement.

The rules laid down under sections 8.1 and 8.2 above shall be followed in other respects in the D-2 Hourly Market, but the bids shall be submitted for the next day of the CET time zone no later than 9:30 (EET). Fingrid confirms the transactions for the next day by 10:20 (EET).

A Balancing Service Provider can participate in the D-2 Hourly Market also with the capacity that it has sold to the Yearly Market.

If a bid is not accepted in the D-2 Hourly Market, the Balancing Service Provider can offer the capacity to the Yearly Market and Hourly Market in accordance with its valid agreements.

8.4 Updating the information in an accepted Hourly Market bid

A Balancing Service Provider has an opportunity to update a bid for Frequency Containment Reserve for Normal Operation accepted in the Hourly Market and D-2 Hourly Market in terms of the information concerning the balance responsible party and balance (RO information), and a bid for Frequency Containment Reserve for Disturbances in terms of the information on type up to two hours before the beginning of the delivery period. An accepted bid cannot be updated in other respects.

9 Reporting and monitoring of reserve maintenance

The Balancing Service Provider and Fingrid provide information for each other in accordance with the *Fingrid Guidelines on Reserve Trading and Information Exchange*.

9.1 Real-time data

Fingrid uses real-time data to monitor the maintenance and activation of the reserves. A Balancing Service Provider shall deliver, at its own expense, the following Reserve Unit specific real-time data to Fingrid:

- volume of Frequency Containment Reserve for Normal Operation (MW) maintained.
- volume of Frequency Containment Reserve for Disturbances (MW) maintained.

The above data shall describe the current actual volume of the reserve maintained. A potential activation of a reserve must not reduce the volume of the reserve maintained.

The volume of the Frequency Containment Reserve for Normal Operation maintained can be calculated using the equation:

18 June 2019

$$C_{\text{FCR-N}} = \max[\min(P_{\text{max}} - P_{\text{asetusarvo}}, P_{\text{asetusarvo}} - P_{\text{min}}, C_{\text{säättökoemäärä}}), 0] \quad (1)$$

P_{max} is the current maximum power of the Reserve Unit

P_{min} is the current minimum power of the Reserve Unit

$P_{\text{asetusarvo}}$ is the current power setting of the Reserve Unit, i.e. the power of the Reserve Unit excluding any activated reserve power

$C_{\text{säättökoemäärä}}$ is the reserve volume verified by prequalification tests

The volume of the Frequency Containment Reserve for Disturbances maintained can be calculated using the equation:

$$C_{\text{FCR-D}} = \max[\min(\text{abs}(P_{\text{max/min}} - P_{\text{asetusarvo}}) - C_{\text{FCR-N}}, C_{\text{säättökoemäärä}}), 0] \quad (2)$$

$P_{\text{max/min}}$ is either the maximum or minimum power of the Reserve Unit (maximum power is used with production and energy storage facilities, and minimum power is used with consumption facilities).

The volume of the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances maintained is zero, if load-frequency control is not on.

The Balancing Service Provider shall provide Fingrid a description of the implementation of the calculation of the maintained Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances. If a Balancing Service Provider has a more precise calculation method, it may be used upon Fingrid's approval.

Moreover, if a Reserve Unit has a limited activation capability, information on its current capability to activate the reserve in full (minutes) shall also be reported separately both for the Frequency Containment Reserve for Normal Operation and the Frequency Containment Reserve for Disturbances. Fingrid must be informed of the method used in the calculation.

The real-time exchange of information is subject to Fingrid's application guideline *Real-time exchange of information*.

The update interval for real-time data exchange must not exceed 60 seconds.

9.2 History data

At Fingrid's request, a Balancing Service Provider shall deliver the active power data on Reserve Units contributing to the control, itemised by specific units in a numerical format at an accuracy of one second so that the activation of the Reserve Unit in accordance with the Agreement can be verified, for example, in disturbance situations. The active power data shall be either time-stamped and synchronised to EET time, or alternatively the history data shall contain frequency measurement data, which is synchronised to the active power measurement data. The Balancing Service Provider shall store the history data for at least four days. The history data shall be delivered within 14 days in accordance with Fingrid's guideline, *Fingrid's reserve trading and information exchange*.

18 June 2019

9.3 Invoicing data

For the Reserve Units that participated in the maintenance of reserves, the Balancing Service Provider shall, at their own cost, submit the following actuals data as an hourly time series:

- Reserve Unit specific hourly average power
- Reserve Unit specific hourly maximum power
- volume of maintained Frequency Containment Reserve for Normal Operation, in accordance with the Yearly Market Agreement and Hourly Market Agreement
- volume of maintained Frequency Containment Reserve for Disturbances, in accordance with the Yearly Market Agreement and Hourly Market Agreement.

This data shall be delivered within 10 days from the delivery date in accordance with Fingrid's guideline, *Fingrid's reserve trading and information exchange*.

9.4 Technical descriptions

A Balancing Service Provider shall deliver, upon Fingrid's request, descriptions of the technical properties of the Reserve Units and of the implementation of load-frequency control to an extent that enables this data to be used for modelling the operation of the load-frequency control of the Reserve Units. In so far as the delivery of the data would entail excessive costs for the Balancing Service Provider, the parties shall negotiate on what type of data is considered sufficient for delivery.

9.5 Fingrid's reporting to the Balancing Service Provider

Fingrid shall report the following hourly data to the Balancing Service Provider in accordance with the Fingrid guideline, *Fingrid's reserve trading and information exchange*:

- actual transactions and prices for the next day in accordance with the CET time zone in the Hourly Market and D-2 Hourly Market
- Volume and price of Balancing Energy upon request.

9.6 Balancing Service Provider's reporting to balance responsible party

If a Balancing Service Provider is not the balance responsible party of the Reserve Resource, the Balancing Service Provider shall inform the balance responsible party of the Reserve Resource of the control use of the Reserve Resource no later than directly after a Yearly Market Agreement or Hourly Market Agreement has been concluded.

18 June 2019

Moreover, the Balancing Service Provider shall deliver to the balance responsible party of the Reserve Resource data related to the maintaining of the Frequency Containment Reserves and imbalance settlement. The Balancing Service Provider shall agree on these separately with the balance responsible party of the Reserve Resource.

10 Processing of energy

Balancing energy refers to the Balancing Energy caused by the activation of the Frequency Containment Reserve for Normal Operation in the production balance or in the consumption balance, which is calculated using Equation 3.

$$\text{Balancing energy} = \frac{\sum R \times \Delta t \times 50 \text{ Hz}}{3600 \text{ s}} \times k \quad (3)$$

$\sum R$ denotes the actual total combined volume of the Frequency Containment Reserve for Normal Operation of all Balancing Service Providers included in a balance responsible party's balance multiplied by 10 (balancing power). The volume of the Balancing Service Provider's Frequency Containment Reserve for Normal Operation is verified by means of measurements, and it is at the most equal to the total combined volume agreed in the Yearly Market Agreement and in the Hourly Market Agreement.

Δt denotes the change in the time deviation in seconds during the hour in question. The correction coefficient ($k=0.7$) takes into account the effect of the dead band on the activated energy.

The Balancing Energy is calculated hourly. Balancing Energy is the energy cumulated in an hour, in other words upward balancing and downward balancing are netted. The balance error caused by the activation of a reserve is corrected for the balance responsible party of the Reserve Resource. Balancing Energy is taken into account in the production balance or consumption balance, depending on the balance of the Reserve Resource.

If an energy storage facility is not handled in the consumption balance alone, the Balancing Energy of energy storage facilities is taken into account hourly, depending on the direction of the activated energy either in the consumption balance or production balance as follows:

- In an under-frequency situation, Balancing Energy is positive. In other words, the energy storage facility has been discharged; in this case the energy is taken into account in the production balance.
- In an over-frequency situation, Balancing Energy is negative. In other words, the energy storage facility has been charged; in this case the energy is taken into account in the consumption balance.

18 June 2019

A power transaction is made by Balancing Energy between Fingrid and the balance responsible party of the Reserve Resource in connection with the nation-wide imbalance settlement. Balancing Energy is compensated to the balance responsible party of the Reserve Resource by means of an Energy Fee as follows:

- In an under-frequency situation, Fingrid pays to the balance responsible party an Energy Fee that corresponds to the purchased Balancing Energy. The Energy Fee is calculated by multiplying the calculated energy caused by the Frequency Containment Reserve for Normal Operation by the up regulation price of the hour in question.²
- In an over-frequency situation, Fingrid charges from the balance responsible party an Energy Fee for the Balancing Energy sold by Fingrid to the balance responsible party. This Energy Fee is calculated by multiplying the calculated energy caused by the Frequency Containment Reserve for Normal Operation by the downward balancing price of the hour in question.³

The Energy Fee is taken into account in the imbalance settlement of the balance responsible party of the Reserve Resource in conjunction with imbalance power invoicing. Fingrid reports the amount of the Energy Fee to the balance responsible party in the Fingrid extranet service after the usage hour, however not later than in 13 days.

11 Fees

Fingrid shall pay a Capacity Fee to the Balancing Service Provider for the Balancing Service Provider's contribution to maintaining the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

The Balancing Service Provider shall send the invoice for the maintenance of the previous month's reserves to Fingrid on the 10th of each month or the first working day following that date. The due date of the invoice is 14 days from the invoice date, which is the date the invoice was sent.

11.1 Capacity Fee in the Yearly Market

The compensation to be paid to a Balancing Service Provider is determined in the Yearly Market on the basis of the most expensive accepted bid (margin price principle) so that there are separate Yearly Market prices for the Frequency Containment

² The up-regulation price is the price of the most expensive mFRR up-regulation bid ordered; however, at least the price for the bidding area of Finland in the Day-Ahead Market during the hour in question.

³ The down-regulation price is the price of the cheapest mFRR downregulation bid ordered; however, no more than the price for the bidding area of Finland in the Day-Ahead Market during the hour in question.

18 June 2019

Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

Fingrid shall pay the Balancing Service Provider a compensation on the basis of the volumes verified by means of measurements; however, no more than the volume accepted for the Yearly Market.

Fingrid shall pay the Capacity Fee to the Balancing Service Provider in full if the reserve capacity verified by means of measurements is in accordance with the reserve plan delivered by the Balancing Service Provider by the deadline. If the reserve capacity verified by means of measurements is below the reserve plan, Fingrid shall pay the Balancing Service Provider a compensation on the basis of the verified capacity. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the valid Yearly Market price.

11.2 Capacity Fee in the Hourly Market

The compensation to be paid to the Balancing Service Provider is determined separately for each hour on the basis of the most expensive bid ordered (margin price principle) so that there are separate hourly prices for the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

11.2.1 Participation in the Hourly Market alone

Fingrid shall pay the Balancing Service Provider a compensation on the basis of the volumes verified by means of measurements; however, no more than for a transaction agreed within the Hourly Market.

If the reserve capacity verified by means of measurements is below the transaction carried out in the Hourly Market, Fingrid shall pay the Balancing Service Provider a compensation on the basis of the capacity verified by means of measurements. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the price of the hour in question.

11.2.2 Participation in both the Yearly Market and Hourly Market

Fingrid shall pay the Balancing Service Provider a compensation on the basis of the volumes verified by means of measurements; however, at the most for the total combined volume agreed in the Yearly Market Agreement and in the Hourly Market Agreement.

Fingrid only pays a compensation for participation in the Hourly Market if the volume specified in the Yearly Market Agreement has been delivered in full for the hour in question. If the Balancing Service Provider has allocated some of its Reserve Units to the Yearly Market and some to the Hourly Market, Fingrid shall pay the Balancing Service Provider a compensation on the basis of the verified volumes of the Reserve Units participating in the Hourly Market even if the volume of the Yearly Market Agreement were not delivered in full for the hour in question.

18 June 2019

If the reserve capacity verified by means of measurements is below the total combined volume of the reserve plan and hourly trading, Fingrid shall pay the Balancing Service Provider a compensation on the basis of the verified capacity. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the price of the hour in question.

11.3 Capacity Fee in the D-2 Hourly Market

The compensation to be paid to the Balancing Service Provider is determined separately for each hour on the basis of the most expensive bid ordered (margin price principle) so that there are separate hourly prices for the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

11.3.1 Participation solely in the D-2 Hourly Market

Fingrid shall pay the Balancing Service Provider a compensation the basis of the volumes verified by means of measurements; however, at the most for a transaction agreed within the D-2 Hourly Market.

If the reserve capacity verified by means of measurements is below the transaction carried out in the D-2 Hourly Market, Fingrid shall only pay the Balancing Service Provider a compensation on the basis of the capacity verified by means of measurements. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the price of the hour in question in the D-2 Hourly Market.

11.3.2 Participation in both the D-2 Hourly Market and Yearly Market

Fingrid shall pay the Balancing Service Provider a compensation on the basis of the volumes verified by means of measurements; however, no more than total combined volume of the reserve plan in accordance with the Yearly Market Agreement and the volume agreed in the D-2 Hourly Market.

Fingrid only pays a compensation for participation in the D-2 Hourly Market if the volume specified in the Yearly Market Agreement has been delivered in accordance with the reserve plan for the hour in question. The reserve plan does not have to be for the maximum volume agreed in the Yearly Market Agreement.

If the reserve capacity verified by means of measurements is below the total combined volume of the reserve plan and the trading conducted in the D-2 Hourly Market, Fingrid shall only pay the Balancing Service Provider a compensation on the basis of the verified capacity. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the price of the hour in question in the D-2 Hourly Market.

If the reserve capacity verified by means of measurements is even below the reserve plan in accordance with the Yearly Market Agreement, the Balancing Service Provider shall pay Fingrid 100 per cent of the Yearly Market price for this.

18 June 2019

11.3.3 Participation in the D-2 Hourly Market, Yearly Market and Hourly Market

Fingrid shall pay the Balancing Service Provider a compensation on the basis of the volumes verified by means of measurements; however, no more than the total combined volume of the reserve plan in accordance with the Yearly Market Agreement, the volume agreed in the D-2 Hourly Market and the volume agreed in the Hourly Market.

Fingrid only pays a compensation for participation in the D-2 Hourly Market if the volume of the reserve plan in accordance with the Yearly Market Agreement has been delivered in full for the hour in question. Participation in the Hourly Market requires that the reserve plan correspond to the maximum volume agreed in the Yearly Market Agreement.

If the reserve capacity verified by means of measurements is below the total combined volume of the reserve plan, the trading conducted in the D-2 Hourly Market and the trading conducted in the Hourly Market, Fingrid shall only pay the Balancing Service Provider a compensation on the basis of the verified capacity. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the price of the hour in question in the Hourly Market.

If the reserve capacity verified by means of measurements is below the reserve plan and the trading conducted in the D-2 Hourly Market, the Balancing Service Provider shall pay Fingrid 100 per cent of the D-2 Hourly Market price of the hour in question for this.

If the reserve capacity verified by means of measurements is below the reserve plan, the Balancing Service Provider shall pay Fingrid 100 per cent of the Yearly Market price for this.

11.3.4 Participation in the D-2 Hourly Market and Hourly Market

Fingrid shall pay the Balancing Service Provider a fee on the basis of the volumes verified by means of measurements; however, no more than the total combined volume agreed in the D-2 Hourly Market and in the Hourly Market.

If the reserve capacity verified by means of measurements is below the total combined volume of the trading conducted in the D-2 Hourly Market and the trading conducted in the Hourly Market, Fingrid shall only pay the Balancing Service Provider a compensation on the basis of the verified capacity. For capacity not delivered, the Balancing Service Provider shall pay Fingrid 100 per cent of the price of the hour in question in the Hourly Market.

If the reserve capacity verified by means of measurements is below the hourly trading conducted in the D-2 Hourly Market, the Balancing Service Provider

18 June 2019

shall pay Fingrid 100 per cent of the D-2 Hourly Market price of the hour in question for this.

12 Breach of terms

12.1 Undelivered reserve capacity

For capacity not delivered, the Balancing Service Provider shall pay Fingrid compensation in accordance with chapter 11.

12.2 Verification of control properties of reserves, and the Balancing Service Provider's reimbursement obligation

Fingrid has a right to verify the control properties of a Reserve Unit. If monitoring carried out by Fingrid indicates that a Balancing Service Provider has not maintained the agreed control properties, the Balancing Service Provider shall provide within 30 days an account requested by Fingrid concerning the shortcomings in the maintaining of reserves.

If the account requires a verification of the control capability by means of measurements carried out on Fingrid's demand and the measurements indicate that the Reserve Unit fulfils the valid requirements, Fingrid shall be responsible for the costs of the measurements. Otherwise, the Balancing Service Provider shall be responsible for the costs.

If the Balancing Service Provider fails to provide the account requested by Fingrid by the deadline, the Balancing Service Provider shall reimburse the fees based on these terms and conditions for the period of the account in terms of both the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

If a verification, other test in accordance with this document or monitoring by Fingrid indicates that the reserve maintained by the Balancing Service Provider has been smaller than what has been agreed or if the control capability of the Reserve Unit differs from the terms and conditions of this document, the Balancing Service Provider shall reimburse the fees paid by Fingrid in so far as they have been based on a reserve volume which was higher than in reality.

12.3 Temporary exclusion of a Balancing Service Provider from the reserve market

Fingrid has a right to temporarily exclude a Balancing Service Provider from the reserve market in question if the Balancing Service Provider:

- fails to deliver reserves without giving an acceptable reason despite Fingrid's written notice,
- has knowingly changed the control settings so that the control properties are changed significantly,
- has failed to give the account referred to in section 12.2,

18 June 2019

- does not deliver the history data referred to in section 9.2 and requested by Fingrid,
- or has otherwise violated the terms and conditions of this document despite Fingrid's written notice.

The duration of the temporary exclusion is from one to three months depending on the nature of the violation.

12.4 Cancelling the Agreement

If the violation of the Agreement is a material one, Fingrid has a right to cancel the Yearly Market Agreement or Hourly Market Agreement in accordance with the terms and conditions of said agreements.