Appendix 2 to the Yearly Market Agreement and Hourly Market Agreement of Frequency Containment Reserves

Unofficial translation

Fingrid Oyj

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

15.6.2018

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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).

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) contained in this document are applied when 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:

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.

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

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

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.

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

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

Reserve Electricity 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, in other words the balance error.

Balancing Service Provider (BSP) refers to a party that has a valid agreement on the delivery of balancing services.

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

Frequency Restoration Reserve (FRR) refers to a reserve that is available to 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.

Frequency Containment Reserve (FCR) refers to a reserve that is available to the containment of frequency in imbalance situations of electricity production and consumption.

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

Hourly Market refers to a 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 after the Day-Ahead Market.

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

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

Yearly Market refers to a market maintained by Fingrid, from which market Fingrid procures some of the need for Frequency Containment Reserves and where 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 Balancing Service Provider on the provision of Frequency Containment Reserves (FCR).

3 Procurement of reserves

The obligations concerning the maintaining of Frequency Containment Reserves are specified between the Nordic transmission system operators. The objective in the procurement of Frequency Containment Reserves is a structure that ensures the sufficiency of the reserves at all times, and at the same time enables efficient competition within procurement conditions which are equitable to all. In order to fulfil the obligation concerning the maintaining of the reserve, transmission system operators can also trade between countries. Fingrid has a right to sell reserves, which have been sold to Fingrid by Balancing Service Providers, further to other transmission system operators.

Fingrid procures some of its obligation from the Yearly Market on the basis of competitive bidding. In addition, Fingrid procures reserves from the direct current interconnectors from Russia and Estonia as well as through daily procurement from the Hourly Market in Finland and the other Nordic countries. There is a separate Yearly Market and Hourly Market for the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

4 Requirements imposed on Balancing Service Provider

Balancing Service Provider shall have a valid Yearly Market Agreement and/or Hourly Market Agreement. Competitive bidding for the Yearly Market is arranged in the autumn for the next calendar year. It is not possible to start contributing to the maintaining of reserves in the Yearly Market in the middle of the Yearly Agreement period. Balancing Service Provider can participate in the Hourly Market also in the middle of the calendar year after having concluded an Hourly Market Agreement with Fingrid. Participation in the Hourly Market does not require participation in the Yearly Market.

A party that has access to Reserve Unit(s) that fulfil(s) these terms and conditions can become a Balancing Service Provider. Balancing Service Provider does not need to be the owner nor an open provider or balance responsible party of the Reserve Resource. Balancing Service Provider shall have the consent of the owner of the Reserve Resource of the reserve use in accordance with the Yearly Market Agreement and/or Hourly Market Agreement. At Fingrid's separate request, Balancing Service Provider shall deliver the consent of the owner of the Reserve Resource to Fingrid.

An individual Reserve Resource can only be provided by a single Balancing Service Provider to the market of Frequency Containment Reserves.

5 Requirements imposed on Reserve Unit

Balancing Service Provider shall use prequalification tests carried out in accordance with the document published by Fingrid[1] by virtue of article 155 of the Guideline on System Operation, Commission Regulation (EU) 2017/1485 (hereinafter SOGL) to show that the Reserve Unit declared as a reserve fulfils the required control properties.

The Reserve Unit shall be located within Fingrid's system responsibility area[2].

[1] The document will be published on Fingrid's website no later than 14 September 2018.
[2] Finland excluding the autonomous region of Åland.

The volume of reserve produced by the Reserve Unit and lost as a result of a single fault in each 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 in each hour. The procurement quota is deemed 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 where the domestic supply of Frequency Containment Reserves and their procurement from other countries together are not sufficient to cover Fingrid's reserve obligations in all hours, Balancing Service Provider shall, at Fingrid's request, keep the load-frequency control of all Reserve Units, which are available, in operation. Fingrid pays 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 in the hour in question in the Hourly Market, the compensation price is the Yearly Market price. If, in addition to this, Fingrid requests Balancing Service Provider to maintain more reserves, and as a result of this Balancing Service Provider has to change the power of the Reserve Units, a transaction corresponding to this shall be carried out at the price of balancing energy.

6 Aggregation of Reserve Resources

In the Yearly Market and Hourly Market, 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 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 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 Yearly Market

7.1 Bidding rules

The maximum capacity of one 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 one 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. 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 on 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

On the basis of the price level and permanence of the bids received and on the basis of the price level and availability of other procurement alternatives, Fingrid decides the volumes of reserves procured in the Yearly Market so that the total procurement covers Fingrid's obligations in the normal operation and disturbances of the electricity system.

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.

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

Balancing Service Provider, which has signed a Yearly Market Agreement, shall supply Fingrid with the 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 Reserve for Normal Operation shall be itemised by specific balance responsible parties and balances (production/consumption). A separate reserve plan shall be submitted of 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 can be at the most equal to 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.

8 Rules of Hourly Market

If Balancing Service Provider has signed a Yearly Market Agreement on the delivery of reserves, Balancing Service Provider can participate in the Hourly Market concerning 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 Balancing Service Provider so wishes, it can allocate only certain Reserve Units of its to the Yearly Market, in which case Balancing Service Provider can only use such Reserve Units in the Yearly Market. In this case, Balancing Service Provider can participate in the Hourly Market using its other Reserve Units even though the volume specified in the Yearly Market Agreement would not have been delivered in full for the hour in question.

8.1 Bidding rules

The maximum capacity of one 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 one 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. 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 balance responsible party information and balance information)
    - Frequency Containment Reserve for Disturbances: control method (relay-connected linearly or piecewise linearly activating reserve or relay-connected reserve activating in a single step) and type (production, consumption or aggregated)
- capacity (MW)
- price on 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 to 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*. Fingrid publishes the valid guideline on its website.

8.2 Processing of bids

Fingrid places the bids in the price order, with the principle of giving priority to the cheapest bid for each delivery period. A necessary number of the bids are used in the price order, separately 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 is always used of a bid 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 Market by notifying Balancing Service Providers of this at least two weeks in advance.

The rules laid down under items 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).

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

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

8.4 Updating of information on accepted Hourly Market bid

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 information concerning the balance responsible party and balance (RO information), and a bid for Frequency Containment Reserve for Disturbances in terms of type information up to two hours before the beginning of the delivery period. An accepted bid cannot be updated in other respects.

9 Reporting and follow-up of maintaining of reserves

Balancing Service Provider and Fingrid shall supply each other with information electronically.

9.1 Real-time data

Fingrid monitors the maintaining and activation of the reserves on the basis of the real-time data. Balancing Service Provider shall deliver, at its own expense, the following Reserve Unit specific real-time data to a point of delivery indicated by 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. 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 equation:

$$C_{\mathrm{FCR-N}} = \max\left[\min\left(P_{\max} - P_{\mathrm{set\ value}}, P_{\mathrm{set\ value}} - P_{\min},\ C_{\mathrm{prequalified}}\right),\ 0\right] \quad (1)$$

$P_{\max}$ is the current maximum power of the Reserve Unit
$P_{\min}$ is the current minimum power of the Reserve Unit
$P_{\mathrm{set\ value}}$ is the current set value of power of the Reserve Unit, in other words the power of the Reserve Unit excluding potential activated reserve power
$C_{\mathrm{prequalified}}$ is the volume of reserves verified by means of prequalification tests.

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

$$C_{\mathrm{FCR-D,}} = \max\left[\min\left(\mathrm{abs}(P_{\mathrm{max/min}} - P_{\mathrm{set\ value}}) - C_{\mathrm{FCR-N}},\ C_{\mathrm{prequalified}}\right),\ 0\right] \quad (2)$$

$P_{\mathrm{max/min}}$ 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.

Balancing Service Provider shall deliver to Fingrid a description of the implementation of the calculation. If Balancing Service Provider has a more precise calculation method, it can also 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 in terms of the Frequency Containment Reserve for Normal Operation and Frequency Containment Reserve for Disturbances. The calculation method used shall be delivered to Fingrid. A Reserve Unit that has a limited activation capability refers to a Reserve Unit whose energy reservoir may become completely empty in the event that the reserve capacity has to be activated in full for the entire duration of the delivery period.

The sending cycle of real-time data may not be more than three minutes, and the new requirements in accordance with SOGL will be adopted within a schedule set by SOGL.

9.2 History data

At Fingrid's request, 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 the EET time, or alternatively the history data shall contain frequency measurement data, which is synchronised to the active power measurement data. Balancing Service Provider shall store the history data for at least four days. History data shall be delivered within 14 days in accordance with Fingrid's guideline *Fingrid's reserve trading and information exchange*.

9.3 Invoicing data

Balancing Service Provider shall deliver the following actual data on Reserve Units contributing to the maintaining of the reserves. This data shall be delivered at Balancing Service Provider's own expense as 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

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 the extent that this data can be used for modelling the functioning of the load-frequency control of the Reserve Units. In so far as the delivery of the data would entail excessive costs for Balancing Service Provider, the parties shall negotiate on what type of data is considered sufficient for delivery.

9.5 Fingrid's reporting to Balancing Service Provider

Fingrid shall report the following hourly data to Balancing Service Provider in accordance with Fingrid's 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 Reserve Electricity upon request.

9.6 Balancing Service Provider's reporting to balance responsible party

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

Moreover, 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 to imbalance settlement. Balancing Service Provider shall agree on these separately with the balance responsible party of the Reserve Resource.

10 Processing of energy

Reserve Electricity 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, in other words the balance error, which is calculated using Equation 3.

$$\textit{Reserve Electricity} = \frac{\sum R \times \Delta t \times 50\ Hz}{3600\ s} \times k \qquad (3)$$

∑R denotes the actual total combined volume of the Frequency Containment Reserve for Normal Operation of all Reserve Providers included in a balance responsible party's balance multiplied by 10 (frequency response). The volume of 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.

Reserve Electricity is calculated on an hourly basis. Reserve Electricity 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 to the balance responsible party of the Reserve Resource. Reserve Electricity 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 depending on the direction of the activated energy hourly either in the consumption balance or production balance as follows:

- In an under-frequency situation Reserve Electricity 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 Reserve Electricity is negative, in other words the energy storage facility has been recharged; in this case the energy is taken into account in the consumption balance.

A power transaction is made of Reserve Electricity between Fingrid and the balance responsible party of the Reserve Resource in connection with the nation-wide imbalance settlement. Reserve Electricity 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 the balance responsible party an Energy Fee for the Reserve Electricity purchased by Fingrid from the balance responsible party. This Energy Fee is calculated by multiplying the calculatory energy caused by the Frequency Containment Reserve for Normal Operation by the upward balancing price of the hour in question.[3]

- In an over-frequency situation Fingrid charges from the balance responsible party an Energy Fee for the Reserve Electricity sold by Fingrid to the balance responsible party. This Energy Fee is calculated by multiplying the calculatory energy caused by the Frequency Containment Reserve for Normal Operation by the downward balancing price of the hour in question.[4]

The Energy Fee is taken into account in the imbalance settlement of the balance responsible party of the Reserve Resource in conjunction with balancing energy

[3] Upward balancing price is the price of the most expensive mFRR upward balancing bid ordered; however, at least the price for bidding area Finland in the Day-Ahead Market in the hour in question.
[4] Downward balancing price is the price of the cheapest mFRR downward balancing bid ordered; however, at the most the price for bidding area Finland in the Day-Ahead Market in the hour in question.

invoicing. Fingrid shall report the amount of the Energy Fee to the balance responsible party.

11 Fees

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

11.1 Capacity Fee in the Yearly Market

The compensation to be paid to 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 Reserve for Normal Operation and Frequency Containment Reserve for Disturbances.

Fingrid shall pay Balancing Service Provider the fee on the basis of the volumes verified by means of measurements; however, at the most for the volume accepted for the Yearly Market.

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

11.2 Capacity Fee in the Hourly Market

The fee to be paid to 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 Balancing Service Provider a fee on the basis of the volumes verified by means of measurements; however, at the most 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 Balancing Service Provider a fee on the basis of the capacity verified by means of measurements. For capacity not delivered, 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 Balancing Service Provider a fee 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 fee 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 Balancing Service Provider has allocated some of its Reserve Units to the Yearly Market and some to the Hourly Market, Fingrid shall pay Balancing Service Provider a fee 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 would not have been delivered in full for the hour in question.

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 Balancing Service Provider a fee on the basis of the verified capacity. For capacity not delivered, 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 fee to be paid to 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 in the D-2 Hourly Market alone

Fingrid shall pay Balancing Service Provider a fee on 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 Balancing Service Provider a fee on the basis of the capacity verified by means of measurements. For capacity not delivered, 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 Balancing Service Provider a fee on the basis of the volumes verified by means of measurements; however, at the most for the 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 fee 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 Balancing Service Provider a fee on the basis of the verified capacity. For capacity not delivered, 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, Balancing Service Provider shall pay Fingrid 100 per cent of the Yearly Market price for this.

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

Fingrid shall pay Balancing Service Provider a fee on the basis of the volumes verified by means of measurements; however, at the most for 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 fee 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 must 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, the trading conducted in the D-2 Hourly Market and the trading conducted in the Hourly Market, Fingrid shall only pay Balancing Service Provider a fee on the basis of the verified capacity. For capacity not delivered, 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, 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, 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 Balancing Service Provider a fee on the basis of the volumes verified by means of measurements; however, at the most for 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 Balancing Service Provider a fee on the basis of the verified capacity. For capacity not delivered, 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, Balancing Service Provider shall pay Fingrid 100 per cent of the D-2 Hourly Market price of the hour in question for this.

12 Violation of rules

12.1 Reserve capacity not delivered

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

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

Fingrid has a right to verify the control properties of the Reserve Unit. If follow-up carried out by Fingrid indicates that Balancing Service Provider has not maintained the agreed control properties, 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 at Fingrid's demand and if the measurements indicate that the Reserve Unit fulfils the valid requirements, Fingrid shall be responsible for the costs of the measurements. Otherwise, Balancing Service Provider shall be responsible for the costs.

If Balancing Service Provider fails to provide the account requested by Fingrid by the deadline, 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 follow-up by Fingrid indicates that the reserve maintained by 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, Balancing Service Provider shall reimburse the fees paid by Fingrid in so far as they have been based on a reserve volume which is higher than in reality.

12.3 Temporary exclusion of Balancing Service Provider from the reserve market

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

- fails to deliver reserves without giving an acceptable reason despite Fingrid's written remark,
- has knowingly changed the control settings so that the control properties are changed significantly,
- has failed to give the account specified under item 12.2,
- does not deliver the history data specified under item 9.2 and requested by Fingrid,
- or has otherwise violated the terms and conditions of this document despite Fingrid's written remark.

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 essential, Fingrid has a right to cancel the Yearly Market Agreement or Hourly Market Agreement in accordance with the terms and conditions of said agreements.

13 Entry into force

The application of these terms and conditions shall commence within two months from the date on which the Finnish Energy Authority confirmed this document; however, not before 1 January 2019.