

Fingrid Oyj

The technical requirements and the
prequalification process of Automatic
Frequency Restoration Reserve
(aFRR)

Valid from 1 January 2019

Unofficial translation
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1 Introduction

This document describes the prequalification process of Reserve Units offered for the maintaining of Automatic Frequency Restoration Reserve (aFRR) and the verification of compliance with the technical requirements concerning Reserve Units in accordance with article 159 of the Guideline on System Operation, Commission Regulation (EU) 2017/1485. The general requirements concerning Balancing Service Providers have been described in Fingrid's document "Terms and conditions for providers of Automatic Frequency Restoration Reserve (aFRR)".

2 Subjecting a Reserve Unit for prequalification

2.1 Prequalification process

The process illustrated in Figure 2.1 is followed in the prequalification of a Reserve Unit. Balancing Service Provider is responsible for carrying out the prequalification tests in accordance with item 5 of this document and for delivering the required information (see item 2.2) within the prescribed deadlines. Fingrid is responsible for the verification of the information and measurement results within the deadline prescribed in the process chart and for informing Balancing Service Provider of the result of the prequalification process.

Fingrid has the right to send its representative to the prequalification tests. Balancing Service Provider is responsible for the costs caused by the carrying out of the tests and Fingrid only for its own personnel costs.

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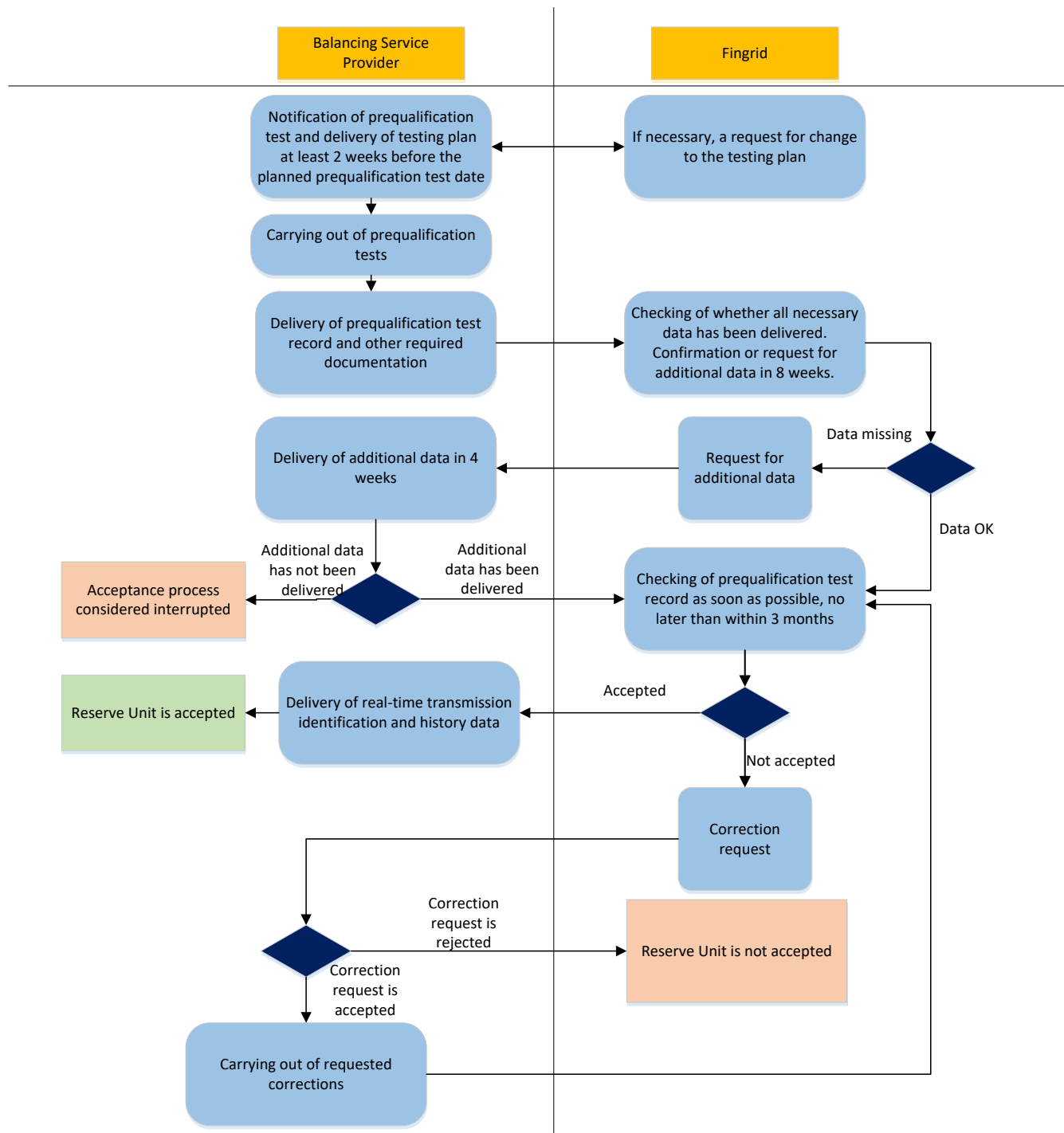


Figure 2.1 Progress of prequalification process

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2.2 Necessary documentation

The results of the prequalification tests shall be documented in a free-format prequalification test record, which shall be delivered to Fingrid electronically after the prequalification tests.

The requirements concerning the reporting and follow-up of the maintaining of the reserves have been described in Fingrid's document "Terms and conditions for providers of Automatic Frequency Restoration Reserve (aFRR)". The identifiers used in the sending of the real-time information shall be delivered in connection with the prequalification process of the Reserve Unit.

Only the prequalification test record and any changed information need to be delivered of a Reserve Unit whose prequalification test is renewed.

2.3 Validity period of prequalification test

The validity period of prequalification tests is 5 years. A prequalification test shall be renewed before the ending of the validity period. A prequalification test shall also be renewed whenever changes influencing reserve operation are carried out on the Reserve Unit.

3 Activation signal

Automatic Frequency Restoration Reserve is a reserve controlled in a centralised manner, and its activation is based on the frequency deviation in the synchronised Nordic area. The frequency deviation is used for calculating the power change needed in the power system to restore the frequency to its nominal value and to release the frequency containment reserves which have been activated earlier.

Integrating calculation is used in the Automatic Frequency Restoration Reserve. For this reason, an activation request sent by Fingrid changes direction only if the target frequency of the power system, typically a nominal frequency of 50 Hz, has been reached. The target frequency may differ from the nominal frequency, if the time deviation of the power system is restored by means of the Automatic Frequency Restoration Reserve.

Fingrid sends the activation signal to the Balancing Service Providers every 10 seconds. ELCOM or ICCP information exchange protocol is used for the exchange of information. The sign (plus or minus) of the signal to be sent is negative, if the activation request is downward balancing, and the sign is positive, if the activation request is upward balancing.

4 Requirements for the activation of the reserve

4.1 Activation speed

A Reserve Unit contributing to the maintaining of the Automatic Frequency Restoration Reserve shall activate the reserve capacity in its entirety within 5 minutes from the sending of the activation signal. The activation shall start no later than 30 seconds from the sending of the activation signal. The minimum activation speed is shown in Figure 4.1.

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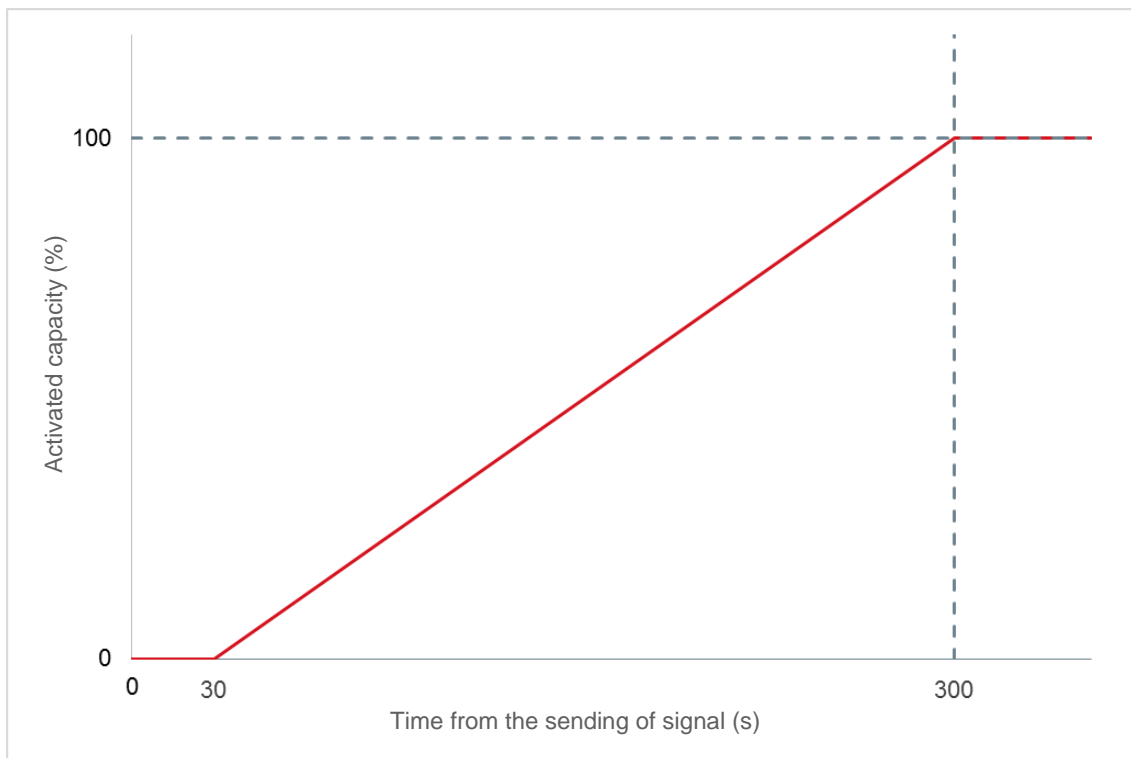


Figure 4.1 Minimum activation speed

4.2 Accuracy of activation

The volume of the activated reserve shall be 90 – 110% of the power request.

5 Execution of prequalification tests

Balancing Service Provider shall make sure that a Reserve Unit that contributes to the maintaining of the Automatic Frequency Restoration Reserve fulfils the requirements laid down in this document. The fulfilment of the requirements shall be verified by means of prequalification tests that shall be carried out in a normal operating situation of the Reserve Unit. The requirements and guidelines given in this document shall be followed in the execution of the prequalification tests.

Fingrid sends a test sequence shown in Figure 5.1 to a Reserve Unit tested. The sequence is used for testing the greatest (ΔP_{max}) and smallest (ΔP_{min}) power change that the Reserve Unit should carry out. If it is not possible to feed the sequence as such, the power change can be carried out manually in accordance with Table 5.1. The Reserve Unit tested during the sequence shall fulfil the requirements described under item 4.

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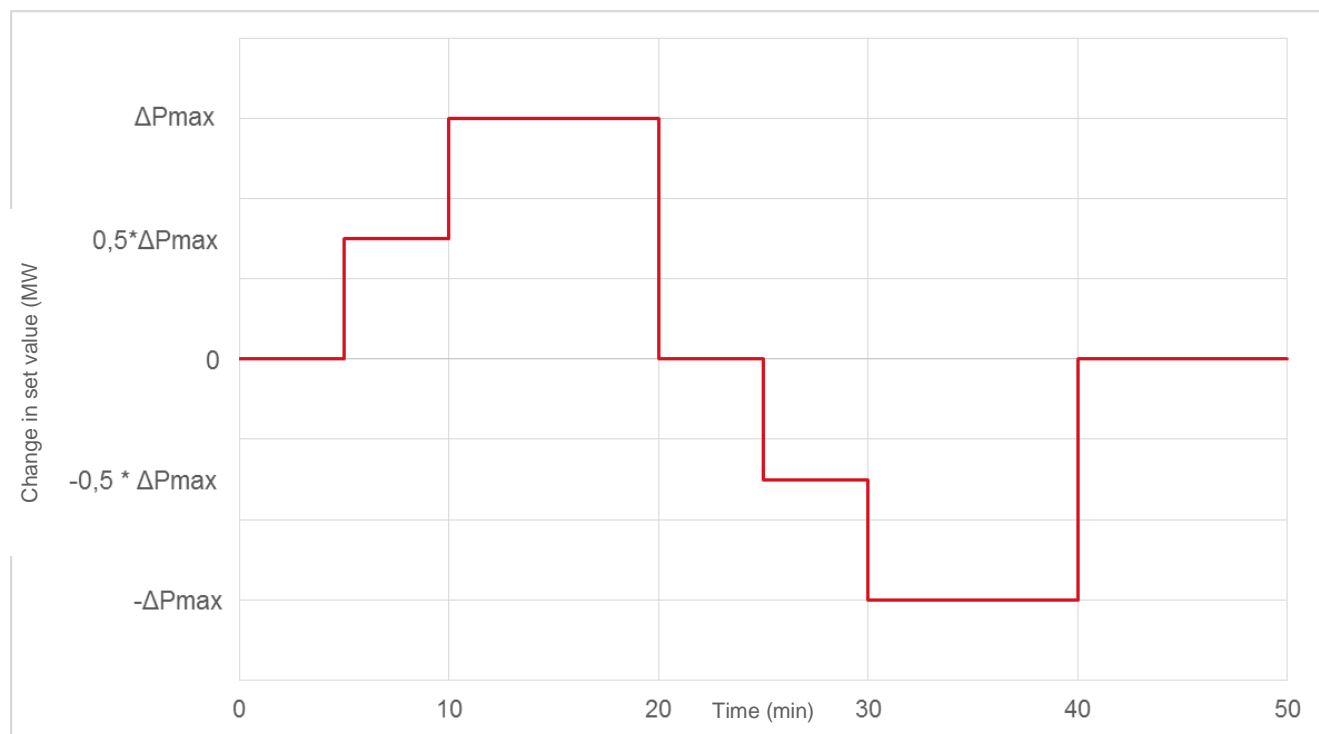


Figure 5.1 Test sequence

Table 5.1 Test sequence in table format

Time [min]	Change in set value [MW]
0	0
5	50% ΔPmax
10	ΔPmax
20	0
25	50% ΔPmin
30	ΔPmin
40	0