

Overview of the requirements for reserves

| Remedial action | Frequency containment reserves | | | Frequency restoration reserves | |
|---|--|--|---|--|---|
| FFR | FCR-D upward | FCR-D downward | FCR-N | aFRR | mFRR |
| Fast Frequency Reserve (Snabb frekvensreserv) | Upward Frequency Containment Reserve - Disturbance (Frekvenshållningsreserv -Störning uppreglering) | Downward Frequency Containment Reserve - Disturbance (Frekvenshållningsreserv -Störning nedreglering) | Frequency Containment Reserve - Normal (Frekvenshållningsreserv -Normaldrift) | Automatic Frequency Restoration Reserve (Automatisk Frekvens-återställningsreserv) | Manual Frequency Restoration Reserve (Manuell Frekvens-återställningsreserv) |
| Upward regulation | Upward regulation | Downward regulation | Symmetrical upward and downward regulation | Upward and/or downward regulation | Upward and/or downward regulation |
| Minimum bid size 0,5 MW | Minimum bid size 0,1 MW | Minimum bid size 0,1 MW | Minimum bid size 0,1 MW | Minimum bid size 1 MW | Minimum bid size Capacity market: 1MW* Energy activation market: 5MW |
| Activation Automatic activation for changes in frequency when there are low levels of rotational energy in the system | Activation Automatic linear activation within the frequency interval 49,90 - 49,50 Hz | Activation Automatic linear activation within the frequency interval 50,10 - 50,50 Hz | Activation Automatic linear activation within the frequency interval 49,90 - 50,10 Hz | Activation Automatic activation for frequency deviations from 50,00 Hz | Activation Manual activation when requested by Svenska kraftnät |
| Activation time Three alternatives for 100%: - 0,7 seconds (at 49,50 Hz) - 1,0 seconds (at 49,60 Hz) - 1,3 seconds (at 49,70 Hz) | Activation time Activation time for FCR-D up is presented in the document with technical requirements for frequency containment reserves (FCR) See requirement 2 on page 18 | Activation time Activation time for FCR-D down is presented in the document with technical requirements for frequency containment reserves (FCR) See requirement 2 on page 18 | Activation time Activation time for FCR-N is presented in the document with technical requirements for frequency containment reserves (FCR) See requirement 1 on page 14 as well as requirement 9 on page 28 | Activation time 100 % within 5 minutes | Activation time 100% within 15 minutes |
| Volume requirements for Sweden Up to 105 MW | Volume requirements for Sweden Up to 542 MW | Volume requirements for Sweden Up to 524 MW | Volume requirements for Sweden 224 MW | Volume requirements for Sweden Up to 111 MW | Volume requirements for Sweden Capacity market: Up to 890 MW Energy activation market: No volume requirement |
| Endurance - Endurance: 30 seconds alternatively 5 seconds - Repeatability: Ready for activation within 15 minutes | Endurance Endurance: At least 20 minutes | Endurance Endurance: At least 20 minutes | Endurance Endurance: 1 hour | Endurance Endurance: 1 hour | Endurance Endurance: 1 hour |

* A cleared bid on the capacity market implies a commitment to submit a bid on the energy market.

More detailed information on the requirements is available in Swedish in the BSP agreement and associated regulatory documents. They are available for download on Svenska kraftnät's webpage:

www.svk.se/aktorsportalen/leverantor-av-balanstjanster-bsp/bsp-avtalet/