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SUBJECT Product information on mFRRsa		

Foreword and guide

As a Transmission System Operator (TSO), TenneT's statutory duty is to monitor the stability of the Netherlands'¹ electricity system. To do this, TenneT purchases supporting ancillary services provided by market parties in their role as Balancing Service Provider (BSP). One service that is used to maintain the power balance in the Netherlands is 'manual Frequency Restoration Reserve scheduled activated' (mFRRsa). This power is primarily used in case of large-scale and/or long-lasting imbalance situations, for example caused by the failure of a large production unit.

This document describes processes and requirements relating to the mFRRsa product.

Version management

The document is split up into different chapters that describe the specific elements of the mFRRsa process. The version management table describes changes at the chapter level, making items that have been modified easier to find.

Version	Date	Description of amendments
V 1.0	17/06/2019	New document
Vx.x	xx/xx/xxxx	

1. Definitions and abbreviations

Definition/abbreviations	Description
aFRR	automatic Frequency Restoration Reserve (former term: "regulating power")
BRP	Balance Responsible Party: a market party or a representative selected by a market party responsible for its imbalances.

¹ TenneT is also the transmission system operator for part of the German grid. This document only relates to the mFRRsa product and only as it is applied in the Netherlands.

BSP	Balancing Service Provider: a market participant with reserve-providing units or reserve-providing groups that can provide balancing services to TSOs
CPS	Central Post box System (belonging to TenneT)
FCR	Frequency Containment Reserve
FRR	Frequency Restoration Reserve
ISP ²	Imbalance Settlement Period: the time unit over which the imbalance of BRPs is calculated.
mFRRda	manual Frequency Restoration Reserve direct activated
mFRRsa	manual Frequency Restoration Reserve scheduled activated
RTU	Remote Terminal Unit
TSO	Transmission System Operator

2. Brief explanation of maintaining balance in the Netherlands with regard to mFRRsa

Maintaining the power balance means that the total power fed in (produced) at any moment must be equal to the power taken out (consumed). TenneT is responsible for this task within the Dutch control area – i.e. the electricity grid of the Netherlands. To determine the current imbalance, the electricity exchange at the interconnections (linked to the electricity grids of adjoining TSOs) is measured and compared with the *planned* power exchange as stated in the *Energy programmes* (E programmes) of the Balance Responsible Parties (BRPs). The difference determines the imbalance of the Netherlands.

TenneT can use various products to restore the imbalance. The most common method is to activate automatic Frequency Restoration Reserve (aFRR). TenneT's Load Frequency Control (LFC) can activate the aFRR supply automatically. However, when a major imbalance occurs, for example because a significant large production installation fails, only activating aFRR is not always enough. The LFC regulates the imbalance automatically by activating aFRR as much as possible. However, if the available aFRR falls below a threshold value and/or it is expected that the fault will persist for longer than several imbalance settlement periods (ISPs), then additional measures are necessary. TenneT can use a manual procedure to activate manual Frequency Restoration Reserve scheduled activated (mFRRsa) or manual Frequency Restoration Reserve direct activated (mFRRda) until enough aFRR is/becomes available again or the balance is adequately restored.

Example: after loss of 500 MW production, the imbalance will immediately increase by 500 MW. By activating the available aFRR of 350 MW, this imbalance is reduced to 150 MW in a maximum of 15 minutes. If mFRRsa is also activated, for example 300 MW, for the next ISP(s), this mFRRsa then effectively replaces the aFRR capacity. Only 200 MW more needs to be taken up with aFRR and 150 MW aFRR remains available to take up the 'normal' fluctuations in the imbalance.

² One ISP has a duration of 15 minutes, meaning there are 96 ISPs per normal calendar day.

NB. The limited effect of the domestic activation of Frequency Containment Reserves (FCR) is not considered in this example.

3. Specifications of mFRRsa product

The mFRRsa product has the following characteristics and/or conditions:

Generic

- mFRRsa works in two directions: supply to the grid (upward regulation) and withdrawing (consuming) from the grid (downward regulation). Note that upward regulation can be achieved by producing more electricity, or consuming less. The reverse applies for downward regulation, which can be achieved by producing less electricity or withdrawing/consuming more electricity from the grid.
- There are no contracts (for bidding obligations or availability requirements) for the mFRRsa product.
- Market parties can offer their available capacity to be used as mFRRsa on a voluntary basis, if and insofar as they have suitable capacity at their disposal. Activation of mFRRsa is done based on the bid prices of mFRRsa bids offered. The call-up can occur 1 or 2 ISPs before the ISP for which the mFRRsa bid is submitted. The activation applies for at least one (or more) supply period(s) of a whole ISP.
- TenneT can, after a documented warning, refuse mFRRsa bids from a BSP for an indefinite period.

Bids

- BSPs are responsible for sending in their own mFRRsa bids to TenneT (see section 4.1 for explanation).
- Individual mFRRsa bids are for a minimum of 1 MW and a maximum of 999 MW. A maximum of three bids (aFRR and mFRRsa combined) for less than 4 MW can be offered by one BSP per ISP.

Operational product requirements

- The BSP must be able to receive an mFRRsa activation via the call-up screen (see section 4.2 for explanation).
- A power measurement of the BSP must be made available to enable TenneT to monitor the mFRRsa supply.

4. Operational exchange of mFRRsa data

4.1 Submitting bids

As mentioned above, a BSP must submit bids for mFRRsa to TenneT. The most important information about regulations relating to submitting bids can be found in the *Implementation Rules*. The details and actual structure of the bid message are described in the *Manual bidding of aFRR and mFRRsa*. Both documents are available on the TenneT website ([link](#)).

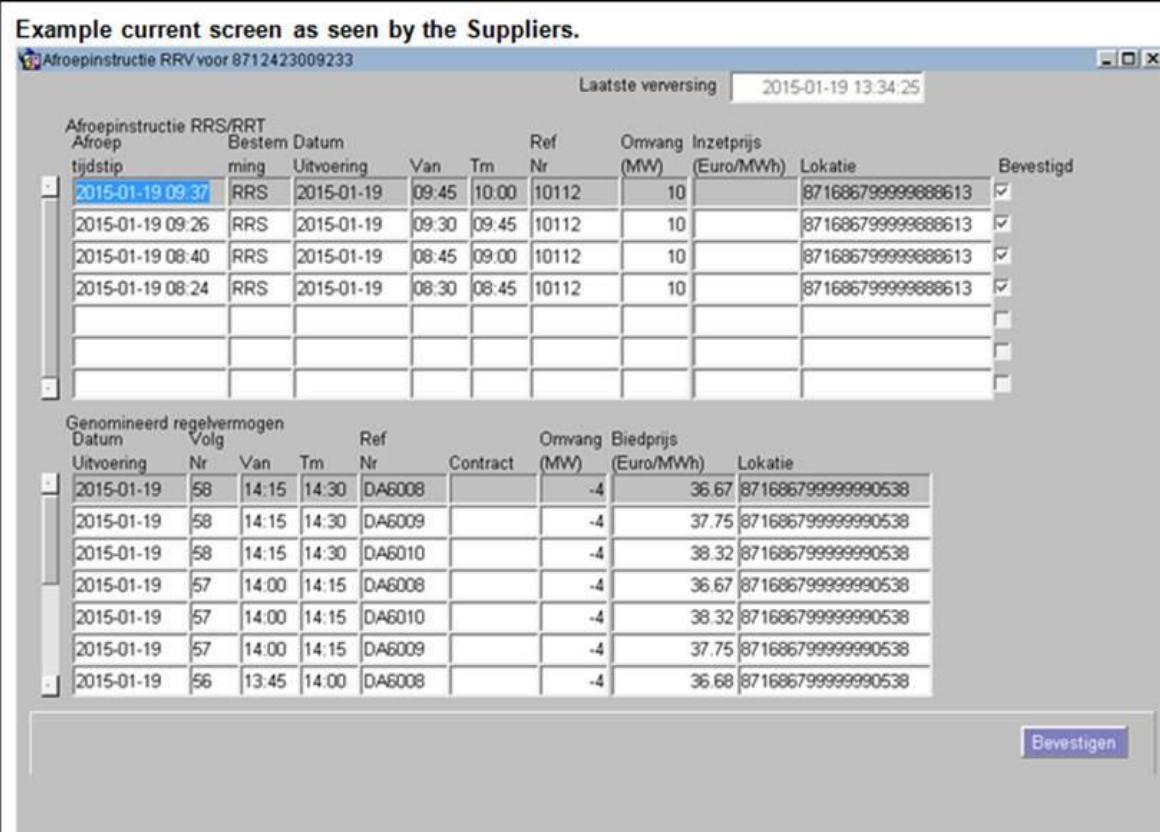
To actually offer the bids to TenneT, a BSP must be certified for electronic data traffic (EDINE) with TenneT and have a connection to the Central Post box System (CPS). Information about topics related to EDINE such as the UTILTS messages (for the bid messages) can be requested via EDSN. Information about a CPS

connection can be requested by sending an email to TenneTCCC@tennet.eu.

4.2 Activation and measurement data

Suppliers have the option on Libra of logging in within a separate database section. The screen that is then displayed shows the BSP the call-up instructions and its own LFC nominations. LFC nominations are aFRR bids that are actively available for the LFC to be used by set-point control.

Example current screen as seen by the Suppliers.



Laatste verversing: 2015-01-19 13:34:25

Afroepinstructie RRS/RRT	Afroep	Bestem	Datum	Van	Tm	Ref	Omvang	Inzetprijs	Lokatie	Bevestigd
tijdstip	ming	Uitvoering				Nr	(MW)	(Euro/MWh)		
2015-01-19 09:37	RRS	2015-01-19	09:45	10:00	10112		10		871686799999888613	<input checked="" type="checkbox"/>
2015-01-19 09:26	RRS	2015-01-19	09:30	09:45	10112		10		871686799999888613	<input checked="" type="checkbox"/>
2015-01-19 08:40	RRS	2015-01-19	08:45	09:00	10112		10		871686799999888613	<input checked="" type="checkbox"/>
2015-01-19 08:24	RRS	2015-01-19	08:30	08:45	10112		10		871686799999888613	<input checked="" type="checkbox"/>

Genomineerd regelvermogen	Datum	Volg	Ref	Omvang	Biedprijs	Lokatie		
Uitvoering	Nr	Van	Tm	Nr	Contract	(MW)	(Euro/MWh)	
2015-01-19	58	14:15	14:30	DA6008		-4	36.67	871686799999990538
2015-01-19	58	14:15	14:30	DA6009		-4	37.75	871686799999990538
2015-01-19	58	14:15	14:30	DA6010		-4	38.32	871686799999990538
2015-01-19	57	14:00	14:15	DA6008		-4	36.67	871686799999990538
2015-01-19	57	14:00	14:15	DA6010		-4	38.32	871686799999990538
2015-01-19	57	14:00	14:15	DA6009		-4	37.75	871686799999990538
2015-01-19	56	13:45	14:00	DA6008		-4	36.68	871686799999990538

Bevestigen

The activation of an mFRRsa bid is a manual process and is done when TenneT sends an activation email to the BSP via the CPS. The BSP then confirms by placing a checkmark on the call-up screen. If there is no connection with the call-up screen for any reason, the TenneT operator will call the supplier by telephone.

4.3 Settlement

The mFRRsa volume that is compensated to the BSP is calculated based on the magnitude of the activated volume. The price that is paid – or received – for this volume is equal to the applicable marginal FRR balancing energy price for the ISP in which the volume is activated. The marginal price per ISP is determined for each direction on the basis of the bid activated in that ISP with the highest bid price (on the upward regulation side) or the lowest bid price (on the downward regulation side). More information regarding the

imbalance price setting is given in the imbalance pricing system³.

Every day, TenneT's BSP receives a supplier overview stating the activated volumes and prices per direction per ISP.⁴ The BSP must then draw up an invoice and send it to TenneT on the basis of these data.

4.4 Imbalance correction

The activated mFRRsa volume is corrected per ISP per direction by the BRP stated in the bid message⁵. In this way, the BRP does not incur any (extra) imbalance by activating mFRRsa.

5. Prequalification procedure for mFRRsa

The prequalification procedure must be completed before a BSP is entitled to submit mFRRsa bids and supply this product to TenneT. The exact description of the prequalification process is given in the document *Prequalification process for FCR, aFRR, mFRRsa and mFRRda*, which is available on the TenneT website (in Dutch) ([link](#)). At this time, the prequalification process does not include a test protocol for mFRRsa. However, a lawfully signed declaration does need to be provided with which the BSP demonstrates that it meets the requirements set in the/these product specifications, the *Manual bidding of aFRR and mFRRsa* and the *Implementation Rules*.

³ Available on the TenneT website: [Supporting services/general documents](#).

⁴ If applicable, this also states the volumes activated for aFRR.

⁵ A solution for an aggregator – with multiple BRPs – is provided and will be implemented by the end of 2019. The BSP must then provide information about its portfolio and the activated connections. The BRP is then corrected for the connections that are relevant to it.