Imbalance Pricing System

How are the (directions of) payment determined?

Version	Date	Brief description of amendment
1.00	30/11/2000	First draft
1.1	07/12/2000	Changes to incentive component table
2.0	21/12/2000	DTe decision 00127, dated 19/12/2000
2.1	01/02/2001	Explanation 5.2.3 improved
3.1	01/08/2005	Total Review Document, DTe decision 102055, dated 26/10/2005, Redefinition 2-sided regulation
3.2	01/12/2006	Modification 3.3 in connection with changed FVR functionality
3.3	01/05/2009	Modification 5 in connection with changed decision tree
3.4	01/06/2010	Incentive component moved to 'Implementation Guide'
3.5	09/06/2015	Mid-price in the event of ‘reverse pricing’
3.6	01/10/2016	Modification pricing in the event of incident reserve for downward regulation
4.0	13/02/2019	Complete update of the document
5.0	31/07/2020	Abolishment of incentive component
5.1	14-10-2020	Update footnote 15 about balance delta
6.0	30-03-2022	Removal product mFRRsa, correction of some flaws in relation to price determination in case of usage of mFRRda, and incorporating faster publication of balance delta.

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1. Introduction

In the 1998 Electricity Act (article 16), TenneT TSO B.V. was assigned the statutory role of maintaining the balance between the injection of electricity to and withdrawal of electricity from the electricity grid. As part of the Dutch regulations, it is stated that market parties with an imbalance will be settled against the so-called imbalance price.[1]

This document describes the system that is used to determine the imbalance price. TenneT TSO B.V. aims to use this document to provide market parties and other stakeholders insight into the definitions, process and (directions of) payment that are associated with the imbalance settlement.

In order to outline the context for the imbalance pricing system, this document will also briefly reflect on the basic principles of the balancing system in the Netherlands.

2. Definitions and terminology

This section describes important terms in the context of the imbalance pricing system. In practice, both Dutch and English terms are used, therefore both terms are included in Table 1 below.

Table 1. Explanation of Dutch and English definitions and abbreviations in the context of the imbalance pricing system.

Dutch term	English term	Description
Aanbieder van balancerings-diensten	Balancing Service Provider (BSP)	A market participant with reserve providing units or reserve providing groups that can offer balancing services to TSOs. (EB GL[2])
Afregelbieding	Downward bid	Downward bidding from the BSP to the TSO. Per ISP, this contains such things as the BSP requested energy price (in €/MWh) and the quantity of power (in MW).
Afregelen	Downward regulation	The reduction of injection or increase of withdrawal of electrical energy on/from the electricity grid at the request of the TSO with respect to balancing.

[1] See article 10.28 of the *Netcode Elektriciteit* (Electricity Grid Code).
[2] From *COMMISSION REGULATION (EU) 2017/2195 establishing a guideline on electricity balancing*; abbreviated in this table by EB GL.

Automatische Frequentie-herstelreserves	automatic Frequency Restoration Reserve (aFRR)	aFRR is a service that the TSO obtains from the market with respect to balancing. aFRR is the international name for this type of service in EU regulations. 'Regelvermogen' is the former Dutch term, translated as 'regulating power'. Detailed product information is available on https://www.tennet.eu.
Balanceringsverant-woordelijke (BRP)	Balance Responsible Party (BRP)	A market party, or a representative selected by a market party, responsible for its imbalances (EB GL). In the past, BRP was also known as Programme Responsible Party (PR party).
BRP-overschot	BRP surplus	The electrical energy that a BRP injects in excess or withdraws to a lower extent from the electricity grid than indicated in its latest approved Commercial trade schedule.
BRP-tekort	BRP shortage	The electrical energy that a BRP injects to a lesser extent or withdraws in excess from the electricity grid than indicated in its latest approved Commercial trade schedule.
Energieprogramma (E-programma)	Commercial trade schedule	A programme formulated by a BRP and submitted to the TSO that for each imbalance settlement period per day (24-hour period) contains: (i) the position; (ii) the internal commercial trade programme; (iii) the external commercial trade programme. (Definition Code Electricity)
Onbalansnetting	Imbalance Netting	The process agreed between TSOs with which the simultaneous activation of FRR in opposite direction can be avoided, taking into account the respective FRCEs[3] and the activated FRR.
Inzetprijs	Balancing energy price	The price against which, at the TSO's request, the energy supplied or taken off by a BSP is reimbursed. See pagagraph 4.2.
Landelijke netbeheerder (TSO)	Transmission System Operator (TSO)	Transmission System Operator of the national electricity or gas grid. TenneT TSO B.V. is the designated TSO for electricity in the Netherlands.
Manueel Frequentie-herstelreserves *direct activated*	manual Frequency Restoration Reserve direct activated (mFRRda)	mFRRda is a service that the TSO obtains from the market with respect to balancing. mFRRda is the international name for this type of service in EU regulation. 'Noodvermogen' is the former Dutch term, translated as 'incident reserve'. Detailed product information is available on www.tennet.eu.
Middenprijs	Mid-price	The mid-price is the average of the lowest price of the upward bids and the highest price of the downward bids on a merit order for an ISP. In specific cases, this price determines the imbalance price.
Onbalans	Imbalance	An energy volume calculated for a BRP and that represents the difference between the volume

[3] Frequency Restoration Control Error.

		assigned to the BRP and the final BRP position, including any imbalance modifications that are applied to that BRP, within a certain imbalance settlement period (EB GL). Explanation: When a BRP has a difference between the latest approved commercial trade schedule and the measurements of the actual injection of electric energy or withdrawal of electric energy at the connections in its portfolio, it causes imbalance.[4]
Onbalansprijs	Imbalance price	The price (positive, zero or negative) in every imbalance settlement period for an imbalance in every direction (EB GL).
Onbalans-verrekeningsperiode (ISP)	Imbalance settlement period (ISP)	The time unit over which the imbalance of BRPs is calculated (EB GL). Explanation: In the past, ISP was also known as Programme Time Unit (PTU). The ISP is fixed at 15 minutes.
Opregelbieding	Upward bid	Upward bidding from the BSP to the TSO. Per ISP, this contains such things as the BSP requested energy price (in €/MWh) and the quantity of power (in MW).
Opregelen	Upward regulation	The increase of injection or decrease of withdrawal of electrical energy on/from the electricity grid at the request of the TSO with respect to balancing.
Regeltoestand	Regulation state	The regulation state describes the various activation situations of balancing energy and is used to determine the imbalance price of an ISP.

[4] If FRR is called up by a BSP, the used volume is corrected on the BRP commercial trade schedule associated with the connections on which the FRR is supplied.

3. Starting points of the balancing system in the Netherlands

3.1 Tasks and roles regarding balancing

In the Netherlands and Europe, there are three distinct roles in the balancing system: the Transmission System Operator (TSO), the Balance Responsible Party (BRP) and the Balancing Service Provider (BSP) for FCR and FRR. These three roles are explained briefly below.

1. **Transmission System Operator – TSO**
   The role of TSO in the Netherlands is fulfilled by the high-voltage grid operator, TenneT TSO B.V. The TSOs in the synchronous frequency area of Europe are jointly responsible for a stable frequency of 50 Hz. To fulfil this task, each TSO is responsible for monitoring, maintaining and restoring the balance between supply and demand of electrical power in its area. This is known as 'balancing'.

   TenneT is responsible for maintaining the power balance in the Netherlands. Power imbalance is the instantaneous undesirable power exchange of a TSO with the synchronous linked high-voltage grid. This power imbalance of the (Dutch) system as a whole is mainly the total of all instantaneous deviations of BRPs from their commercial trade schedule. These instantaneous deviations do not result in an immediate imbalance for BRPs as the commercial trade schedule represents an energy value per ISP (15 minutes).

   TenneT restores a power imbalance by taking measures. TenneT can obtain various services from the market for this[5]:
   - automatic Frequency Restoration Reserve (**aFRR**);
     former Dutch term: Regelvermogen (Regulating power)
   - manual Frequency Restoration Reserve direct activated (**mFRRda**).
     former Dutch term: Noodvermogen (Incident reserve)

2. **Balance Responsible Party – BRP**
   All connections to the electricity grid must be allocated to a by TenneT accredited BRP. Each BRP is obliged by law to send a commercial trade schedule to TenneT for each day. The BRP is financially responsible for its imbalance, that is the deviation from its commercial trade schedule, and pays or receives the imbalance price for this of the relevant ISP. TenneT TSO B.V. later sends an imbalance invoice to the BRPs.

[5] Detailed product information is available on www.tennet.eu.

3. **Balancing Service Provider (BSP)**
   The BSP is the market party from which TenneT activates power for its balancing task. For the aFRR product, bids can be submitted to TenneT. It is also possible for BSPs to sign a contract with TenneT, obliging them to send aFRR bids of a certain volume during the course of the contract. For mFRRda, no bids are submitted; only the availability of power is contracted.

3.2 Overview of balancing process

Generally, the balancing process runs as follows (presented in Figure 1 as a process diagram[6]):

Preparation day ahead: On the day prior to the delivery day (D-1), each BRP submits a commercial trade schedule for the delivery day. The TSO checks whether these commercial transactions add up to zero, so that the supply and demand of electricity is balanced for every ISP of the delivery day.

Delivery day: The delivery day (D) is the day on which injections of electricity on and withdrawal of electricity from the electricity grid occur. BRPs should act in accordance with their submitted commercial trade schedules.[7] If a power imbalance occurs at any point, TenneT will take measures to restore this within 15 minutes.
NB. BRPs can adjust their commercial trade schedule up to four ISPs prior to delivery; for domestic trade this can be up to D+1 at 10.00 a.m. at the latest. BSPs can adjust their bids up to two ISPs prior to delivery.

Settlement: After the delivery day (D+1), the process of financial settlement starts at 10.00 a.m. In this phase, the settlement prices are determined and published and the imbalance per BRP is then determined and invoiced.

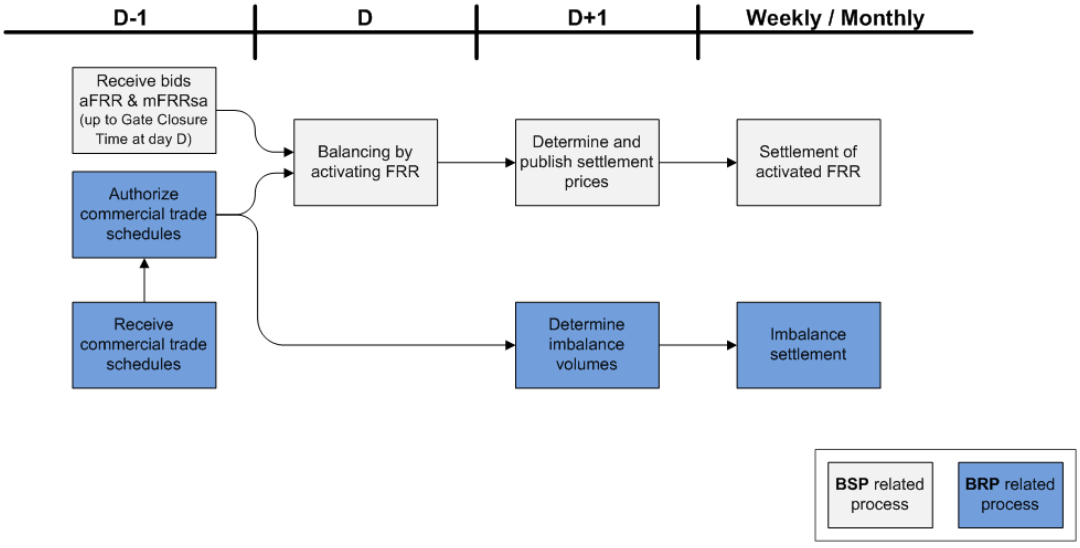

Figure 1. Process diagram: balancing process

[6] This process diagram is a simplified presentation. The option to change commercial trade schedules to D+1 is not included in this.
[7] See Article 1, paragraph o. and Article 31 of the Dutch Electricity Act 1998.

3.3 Incentives

The liberalisation of the energy market has been an important starting point in the design of the balancing system in the Netherlands. The balancing system is characterised by the fact that there is maximum space for freedom of trade and dispatch for market parties within the frameworks of the described tasks, roles and responsibilities. Various incentives (price signals) ensure that market parties do not only supply balancing energy to the TSO, but that they are, above all, able and are stimulated to restore the energy balance of the system at their own initiative in the role of BRP.

The incentives are based on the following general principles:

1. It is uneconomical for market parties to increase the power imbalance.
2. It can be advantageous to reduce the power imbalance.

Both incentives ensure that the market does not rely on the TSO to maintain the power balance, but manages this actively itself.

One price incentive is that a uniform price per ISP is used for the settlement of balancing energy (the balancing energy price). This means that the price of the highest[8] or lowest[9] activated bid or the price for mFRRda if higher/lower determines the price for all balancing energy volumes from aFRR and mFRRda in an ISP[10] (see also paragraph 4.2). This price for balancing energy then is the basis for the imbalance price.

This link between the bid price for FRR, the balancing energy price for FRR and the imbalance price limits the possibility of abuse of the imbalance pricing system, such as offering flexibility for extreme, speculative bid prices. Such a bid price can actually - if the bid is activated - result in a high imbalance price; the potential profit for the market party is also its potential loss if it has imbalance and its imbalance volume is higher than the activated balancing energy volume.

As previously stated, market parties can also submit bids for balancing energy without a contract. The objective of this is to attract multiple suppliers and in doing so promote competition with regard to price setting. The link between the balancing energy price and the imbalance price ensures that imbalance acts as a competitive product on the balancing market. In order to enable the entire market to make a positive contribution to the power balance, market parties need up-to-date information about the status of the system balance. That is why TenneT publishes information each minute (with 2-minute delays) about the activated amount of balancing energy and the associated price information of the activated bids. TenneT also sends notifications to the market when, in the event of a large power imbalance, mFRRda is activated.

This information enables all market parties, and thus not only the activated BSPs, to make an estimation at that point of the total system balance and of their opportunities to make a positive contribution to this and obtain a financial profit. This can enable BRPs to compete with BSPs, which stimulates market competition.

[8] In the event of upward bids.
[9] In the event of downward bids.
[10] The ISP is 15 minutes; a day thus contains 96 ISPs.

4. The merit order: how are balancing energy prices determined?

As previously described TenneT uses the aFRR and mFRRda products to manage the power balance. For the aFRR product, the BSPs submit bids, in which a distinction is made between upward bids and downward bids.[11] TenneT places the bids on two merit orders, one for upward bids and one for downward bids. Separately, for mFRRda contracts are used and no bids are submitted for this.

TenneT activates bids in accordance with national legislation *('Netcode Elektriciteit' - Electricity Grid Code*) and European regulations (*SO GL*[12] and *EB GL*[13]*).* The activation leads to financial transactions between TenneT and the BSP and to an adjustment on the imbalance of the BRPs of the connections activated by the BSP.

4.1 Sign convention of the imbalance pricing system

The imbalance pricing system has the following sign convention, assuming a power change *as viewed from* the electricity grid (see also Figure 2):

- Upward bids ensure the injection of electricity to the grid and have thus a positive sign, while downward bids withdraw electricity from the grid and thus have a negative sign.
- BRP surplus means that the BRP injects more or withdraws less electricity from the electricity grid than indicated in its latest approved commercial trade schedule and has a positive sign in this document. Vice versa for a BRP shortage: this means that the BRP injects less electric energy, or withdraws more electric energy from the electricity grid than indicated in its latest approved commercial trade schedule and has a negative sign in this document.

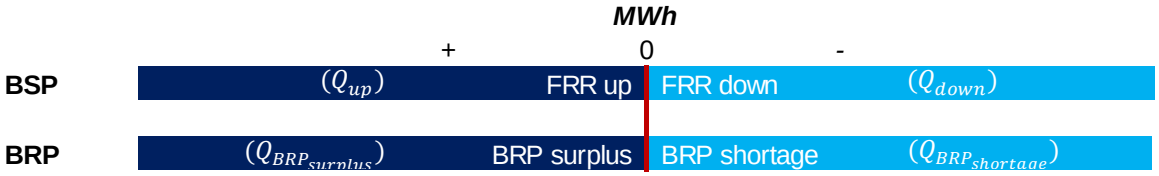

Figure 2. Sign convention of volumes (Q) in imbalance pricing system

- Positive prices for upward regulation result in a financial flow to the BSP (TenneT pays), negative prices result in a financial flow to TenneT (the BSP pays). Vice versa for downward regulation: positive prices for downward regulation result in a financial flow to TenneT (the BSP pays), negative prices result in a financial flow to the BSP (TenneT pays).

[11] For more information, see the *Bidding for Regulating and Reserve Power Manual* on www.tennet.eu.
[12] *COMMISSION REGULATION (EU) 2017/1485 establishing a guideline on electricity transmission system operation.*
[13] *COMMISSION REGULATION (EU) 2017/2195 establishing a guideline on electricity balancing.*

4.2 Price mechanism for balancing energy

To determine the balancing energy price, a uniform price, or ‘marginal pricing’ is used. This means that the balancing energy price per MWh per ISP per direction is the same for all delivered balancing energy and is equal to the highest or lowest relevant bid price, or price for mFRRda. Specifically:

- The price for upward regulation is equal to the price of the highest price activated aFRR bid in upward direction in that ISP, or, if it is higher, the price for upward incident reserve in the ISP.
- The price for downward regulation is equal to the price of the lowest price activated aFRR bid in downward direction in that ISP, or, if it is lower, the price for downward incident reserve in the ISP. This price can be negative.
- If no price for upward or downward regulation is available, the volume to be allocated to suppliers for maintaining balance per ISP per direction is settled at the upward or downward regulation price of the previous ISP

Per ISP, the BSP receives from or pays to TenneT, the activated upward or downward regulation volume (energy), multiplied by the applicable balancing energy price for upward or downward regulation, respectively. This means that BSPs for activated aFRR and mFRRda are given the same price per energy volume per ISP.

The application of marginal price setting based on the merit order for upward and downward regulation is illustrated in Figure 3. The upward regulation bids are sorted from low to high on the right-hand side. The downward regulation bids are sorted from high to low on the left-hand side. Sorted, these bids form the so-called merit order(s) for upward and downward regulation.

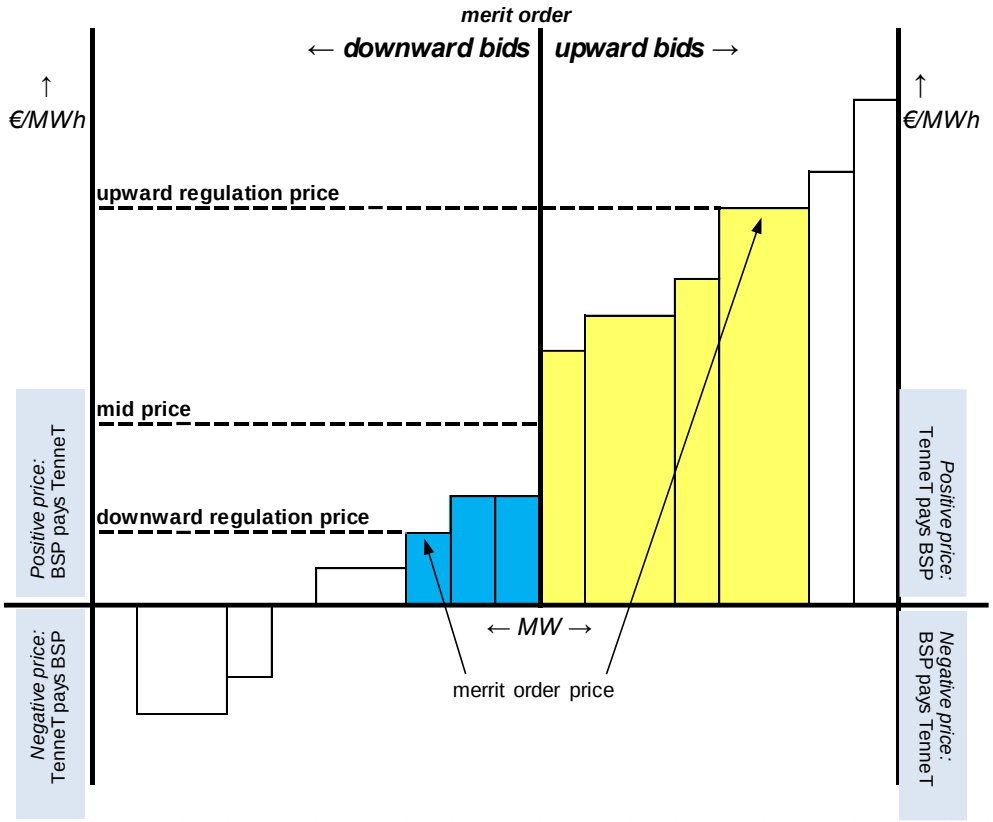

Figure 3. Marginal price setting based on the merit order for upward and downward regulation.

In addition to the balancing energy price for upward and downward regulation, the mid-price is also determined. The mid-price is the average of the lowest price of upward bids and the highest price of downward bids on the merit order. The mid-price is used for two specific cases regarding imbalance price setting:

- In the event that TenneT has not activated any balancing energy, i.e. regulation state 0, and thus no balancing energy price exists.[14] This can be the case when BRPs deviate from their commercial trade schedule, but this does not lead to a power imbalance (for example, through 'imbalance netting' with other TSOs). Also when the Load Frequency Control is not active (for instance, because of a malfunction or blackout), the regulation state is 0 and the mid-price is used.
- During regulation state 2, when the balancing energy price for upward regulation is lower than the mid-price, or the balancing energy price for downward regulation is higher than the mid-price. This situation is also known as 'reverse pricing'.

[14] See section 4.3 for an explanation of the various regulation states.

4.3 Regulation states

The regulation state is a parameter that is used to determine the imbalance price of an ISP. The four regulation states 0, +1, -1 and 2 describe various activation situations of FRR by TenneT per ISP:

- Regulation state 0 applies to a situation in which TenneT does not regulate upward or downward during an ISP.
- Regulation state +1 applies to a situation in which TenneT only regulates upward during an ISP.
- Regulation state -1 applies to a situation in which TenneT only regulates downward during an ISP.
- In a situation in which both upward and downward regulation take place within an ISP, the development of the series of balance deltas[15] within the ISP determine the regulation state:
    - If the series of balance deltas within the ISP continuously increases or is constant, then regulation state +1 applies;
    - If the series of balance deltas within the ISP continuously decreases or is constant, then regulation state -1 applies;
    - If the series of balance deltas within the ISP both increases and decreases, then regulation state 2 applies.

[15] The balance delta is the power of the activated upward bids, minus the power of the activated downward bids. The balance delta table (www.tennet.eu) shows the quantities of regulating and reserve capacity TenneT has requested for its operations. It shows these quantities, approximately halfway each minute, together with the prices of the pricesetting bids.

5. Imbalance price: how is the imbalance price determined?

The imbalance price per ISP is determined by the balancing energy price for FRR in the relevant ISP. These prices are linked to each other in order to give the right incentives to the market (see section 3.3).

In the Netherlands, we have two imbalance prices: an imbalance price for BRP surplus and one for BRP shortage. The regulation state of a system determines whether the imbalance price for BRP surplus and BRP shortage is the same for an ISP, or has two different values. Roughly it can be stated that when a regulation state of 0, 1 or -1 applies during an ISP, the imbalance price for a BRP surplus is equal to that of a BRP shortage. When regulation state 2 applies within an ISP, these imbalance prices differ from each other.

The definition of the regulation state is explained in the previous section. Table 2 below states the imbalance price to be settled per ISP, i.e. for each regulation state and imbalance position (BRP shortage or BRP surplus). A positive imbalance price is indicated by (+); a negative imbalance price by (-). The final column presents the associated direction of payment.
Note that during regulation state 2, the mid-price applies if reverse pricing takes place.

Table 2. Imbalance price and direction of payment (per ISP) per regulation state and imbalance position. The direction of payment (whether the TSO pays the BRP or the TSO receives payment from the BRP) depends on the imbalance position of the BRP (shortage or surplus) and the sign of the imbalance price (positive or negative).
The table uses abbreviations for the various prices: balancing energy price for upward regulation (P_{up}); balancing energy price for downward regulation (P_{down}) and mid-price (P_{mid}).

During ISP with	Imbalance position BRP	Imbalance price	Direction of payment
Regulation state 0	BRP shortage	P_{mid} (+)	BRP → TSO
		P_{mid} (-)	TSO → BRP
	BRP surplus	P_{mid} (+)	TSO → BRP
		P_{mid} (-)	BRP → TSO

During ISP with	Imbalance position BRP	Imbalance price	Direction of payment
Regulation state +1	BRP shortage	P_{up} (+)	BRP → TSO
		P_{up} (-)	TSO → BRP
	BRP surplus	P_{up} (+)	TSO → BRP
		P_{up} (-)	BRP → TSO

During ISP with	Imbalance position BRP	Imbalance price	Direction of payment
Regulation state -1	BRP shortage	P_{down} (+)	BRP → TSO
		P_{down} (-)	TSO → BRP
	BRP surplus	P_{down} (+)	TSO → BRP
		P_{down} (-)	BRP → TSO

During ISP with	Imbalance position BRP	Imbalance price		Direction of payment
Regulation state 2	BRP shortage	$P_{up} \geq P_{mid}$	P_{up} (+)	BRP → TSO
			P_{up} (-)	TSO → BRP
		$P_{up} < P_{mid}$	P_{mid} (+)	BRP → TSO
			P_{mid} (-)	TSO → BRP
	BRP surplus	$P_{down} \leq P_{mid}$	P_{down} (+)	TSO → BRP
			P_{down} (-)	BRP → TSO
		$P_{down} > P_{mid}$	P_{mid} (+)	TSO → BRP
			P_{mid} (-)	BRP → TSO

6. Financial residue at TenneT

TenneT's settlement with various (market) parties has financial consequences for TenneT's operating expenses, referred to as 'financial residue'. The domestic financial residue is the result of TenneT's settlement of energy (balancing energy and imbalance) per ISP. The settlement of TenneT's energy with other TSOs, based on both intended and unintended exchanges of energy with other TSOs, also contributes to the financial residue. The final financial residue is determined by combining the domestic residue with the residues of energy settlements with other TSOs.

The costs of contracting balancing capacity to meet the dimensioning requirements, as agreed with the other TSOs, do not contribute to the financial residue but are included in the regulated tariffs.

The payments that contribute to the financial residue are presented in Figure 4.

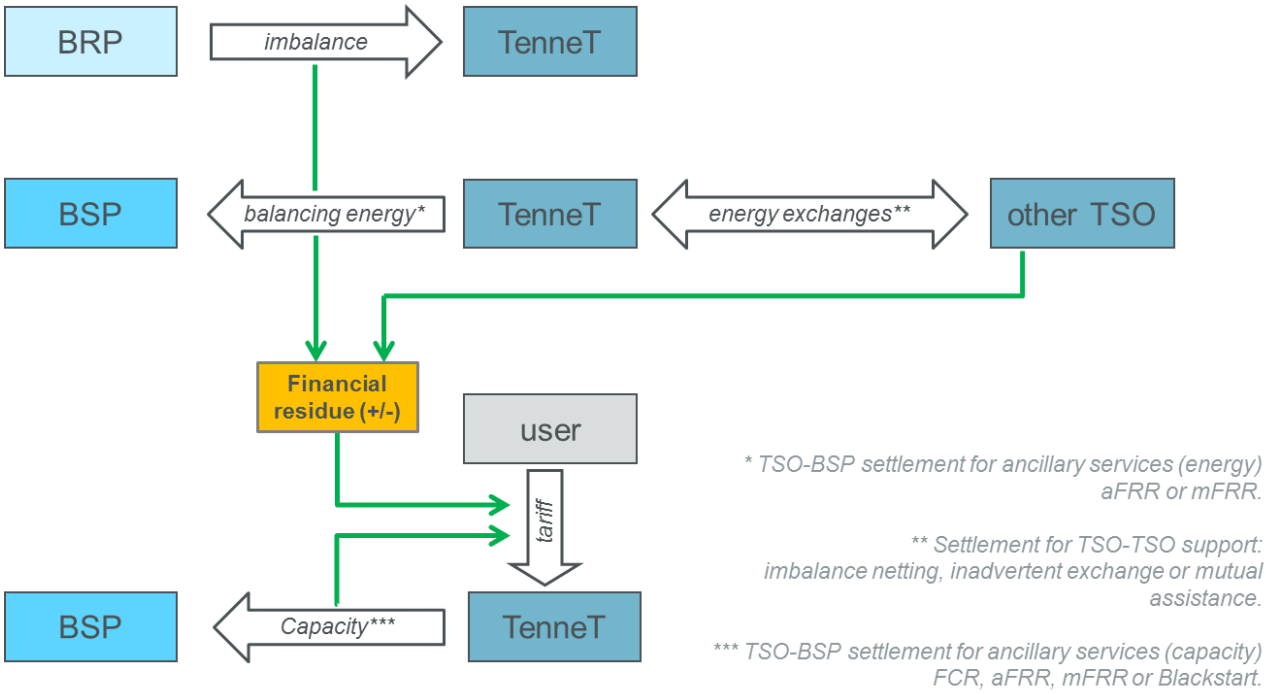

Figure 4. Components that contribute to the financial residue at TenneT

6.1 Volumes and costs

The domestic balance is determined individually per ISP and is obtained as follows:

$$\sum_{BSP}(Q_{down} \cdot P_{down}) + \sum_{BRP}\left(Q_{BRP_{shortage}} \cdot IP_{short}\right) - \left\{\sum_{BSP}(Q_{up} \cdot P_{up}) + \sum_{BRP}\left(Q_{BRP_{surplus}} \cdot IP_{long}\right)\right\}.$$

In this formula, Q represents the volumes for upward regulation and downward regulation (Q_{up} and Q_{down}, respectively) and for a surplus or a shortage at the BRP ($Q_{BRP_{surplus}}$ and $Q_{BRP_{shortage}}$, respectively). Furthermore, P is the balancing energy price for upward and downward regulation (P_{up} and P_{down}, respectively) and IP the imbalance price that is settled with the BRP per volume when it has a surplus or a shortage (IP_{long} and IP_{short}, respectively).

The financial residue is caused by a difference in volume of balancing energy compared with imbalance energy and/or by a difference between balancing energy price and imbalance price. The financial residue mainly originates from the following situations:

Related to price:

- During regulation state 2, the imbalance price can be the same as the mid-price. The difference between the balancing energy price and the imbalance price results in a balance unequal to €0;
- By using *Imbalance Netting* (TenneT forms part of the Imbalance Netting cooperation IGCC[16]), aFRR activations for upward or downward regulation are avoided. These avoided aFRR volumes are settled between the TSOs at a price that is per definition more favourable or equal to the balancing energy price for the relevant direction and ISP. The imbalance of BRPs in the relevant ISPs is, however, settled at the imbalance price. This can create a difference between the IGCC price and the imbalance price, which creates a balance.

Related to volumes:

- During regulation state -1, the activated volume for upward regulation is ≠ 0, or during regulation state +1 the activated volume for downward regulation is ≠ 0 because of the deactivation of previously activated bids.
- There is a delay between the occurrence of a power balance interruption and the start of the power restoration action (no more than 30 seconds).
- There is a time interval between the start of the power balance restoration action by the TSO and the actual power balance restoration (not longer than 15 minutes).
- If the market parties do not supply the correct FRR energy volumes as activated by the TSO.

[16] In accordance with EB GL.

6.2 Relationship with the regulated tariffs

The financial residue from the settlement of TenneT transactions, as described in the previous section, is annually accounted for in the next year's tariffs.[17,18] This means that TenneT has no stake in the financial residue of the balancing process, since a positive (and negative) financial residue is returned to all tariff payers.

A separate system service tariff does no longer exist since 1 January 2015. The Dutch Consumer & Market Authority (ACM) has since combined the permitted tariff incomes for system tasks and the permitted tariff incomes for transport tasks. The tariff incomes – and thus also the financial residue from settlement of the balancing process – are included in a combined tariff for system and transport tasks.

In determining TenneT's permitted tariff incomes for system tasks, ACM has determined three types of costs: *"beheerkosten"*, *"inkoopkosten"* and *"uitvoeringskosten"*.[19] The settlement of TenneT for balancing falls under the *"inkoopkosten"* entry, which ACM defines as: *'the costs that TenneT incurs for the power and services made available by third parties'.* Additionally, ACM states that the "inkoopkosten" are equal to '*the balance of the realised costs and returns'.* This means that ACM corrects the budget for the purchase of energy and power for the system services with the previous year's financial residue.[20]

The annual estimate of the purchasing costs takes place on the basis of a rolling forward system, i.e. based on the actual costs from two years previously (t-2), corrected for inflation and a parameter for dynamic efficiency that is determined by ACM.[21] The *"beheerkosten"*, *"inkoopkosten"* (including a correction for the financial residue), *"uitvoeringskosten"* and any retroactive settlement, together form the permitted tariff incomes for TSO's system tasks.[22]

[17] See article 10.29.3 from the *Netcode Elektriciteit* and point 120 in the *"Methodebesluit Systeemtaken TenneT 2017-2021"* (only available in Dutch).
[18] TenneT includes the imbalance balance until 1 September from year t-1 in the tariff proposal for the year t.
[19] See Chapter 8 of the *"Methodebesluit Systeemtaken TenneT 2017-2021"* (only available in Dutch).
[20] See formula (9) in *Appendix 1* of the *"Methodebesluit Systeemtaken TenneT 2017-2021"* (only available in Dutch).
[21] See formula (8) in *Appendix 1* of the *"Methodebesluit Systeemtaken TenneT 2017-2021"* (only available in Dutch).
[22] See formula (13) in *Appendix 1* of the *"Methodebesluit Systeemtaken TenneT 2017-2021"* (only available in Dutch).