

1 IGCC TSO-TSO SETTLEMENT METHODOLOGY

The IGCC settlement prices are determined by the Settlement Calculation Task Operator based upon the IGCC values of avoided upward and downward aFRR activations for IGCC imports and IGCC exports of all IGCC Participating Members.

The objective of the IGCC settlement is to determine per IGCC settlement period the IGCC settlement prices per IGCC Participating Member per MWh for the IGCC netting volumes netted within IGCC. The IGCC settlement prices are calculated as follows:

- The IGCC values of avoided upward and downward aFRR activations of each IGCC Participating Member is calculated ex-post for import and export separately. IGCC Participating Members may opt to delegate the calculation of the IGCC values of avoided upward and downward aFRR activations to a third party (e.g. the TSO hosting the aFRR cooperation or to the Settlement Calculation Task Operator). In case of delegation, any responsibilities with regard to the IGCC settlement shall be part of bilateral contracts between the delegating IGCC Participating Member and the third party. The IGCC values of avoided upward and downward aFRR activations reflect the prices of the balancing energy from aFRR which would have been activated by each participating TSO without the Imbalance Netting Process. The prices for balancing energy from aFRR are considered as reliable proxy for the values of avoided upward and downward aFRR activations. **Chyba! Nenašiel sa žiaden zdroj odkazov.**
- IGCC values of avoided upward and downward aFRR activations are used to determine the IGCC settlement price defined as the weighted average of the IGCC values of avoided upward and downward aFRR activations of all IGCC Participating Members with the exchanged IGCC netting volumes as a weighting factor.
- The IGCC settlement price is used to determine a settlement amount of each IGCC Participating Member defined as the IGCC settlement price multiplied by the difference between amounts of imported and exported energy of the respective IGCC Participating Member.
- The settlement amount of each IGCC Participating Member is used to determine a financial rent of each IGCC Participating Member defined as a difference between the IGCC values of avoided upward and downward aFRR activations for import multiplied by imported energy minus the IGCC values of avoided upward and downward aFRR activations for export multiplied by exported energy of the respective IGCC Participating Member, and the settlement amount of each IGCC Participating Member.
- In case of a negative initial financial rent for one or more IGCC Participating Members and positive IGCC overall financial rent in the same settlement period, the settlement amounts are subject to an adjustment. Negative initial rents are shifted to zero and positive initial rents are reduced proportionally while preserving the IGCC overall rent. In case of TSOs with equal import and export of energy from/to IGCC these TSOs are excluded from the adjustment.

- In case of a positive initial financial rent for one or more IGCC Participating Members and negative IGCC overall financial rent in the same settlement period, the settlement amounts are subject to an adjustment. Positive initial rents are shifted to zero and negative initial rents are reduced proportionally while preserving the IGCC overall rent. In case of TSOs with equal import and export of energy from/to IGCC, these TSOs are excluded from the adjustment¹.
- In case of an IGCC zero overall financial rent it will be applied an equivalent procedure to the one described above, shifting to zero all individual positive financial rent and thus reducing in a pro-rata basis the individual negative financial rent of affected IGCC Participating Members.
- The adjustment results in adjusted final settlement prices for IGCC Participating Members in the affected settlement periods. In case there is no adjustment applied, the IGCC final settlement prices of each IGCC Participating Member are the same as initial ones which have been determined in the second step above.

1.1 BASIC PRINCIPLES

The present section describes the basic principles of the determination of the IGCC values of avoided upward and downward aFRR activations and the IGCC settlement prices.

1.1.1 FINANCIAL RENT OF IMBALANCE NETTING

The financial rent of Imbalance Netting for each TSO is computed as follows (see chapter 1.5 for further details):

*Financial rent = avoided aFRR upward activation * (value of aFRR avoided upward activation – IGCC settlement price) + avoided aFRR downward activation *(IGCC settlement price - value of aFRR avoided downward activation)*

1.2 CALCULATION OF IGCC VALUES OF AVOIDED UPWARD AND DOWNWARD AFRR ACTIVATIONS

The IGCC Values of aFRR Avoided Activation of each IGCC Participating Member:

- shall reflect the values of netted imbalances, i.e. avoided aFRR upward/downward energy costs due to the avoidance of aFRR activation;
- are usually based on aFRR energy prices;
- are used for the calculation of the IGCC settlement prices.

The methodology for the IGCC Values of aFRR Avoided Activation calculation shall fulfil the following requirements:

- there will be one IGCC Value of aFRR Avoided Activation for IGCC import and one IGCC Value

of aFRR Avoided Activation for IGCC export for each IGCC settlement period for each IGCC Participating Member. IGCC Participating Members of the same LFC Block can have the same IGCC Value of avoided aFRR for IGCC import and IGCC export within the same IGCC settlement period due to national imbalance settlement regimes;

- the IGCC values of avoided upward and downward aFRR activations shall be calculated with the arithmetic precision of three decimal places.

Each IGCC Participating Member shall cooperate with other IGCC Participating Members to define the agreed upon methodology for the calculation of the IGCC value of avoided upward and downward aFRR activations of each IGCC Participating Member using the Template B of this Annex. The definition of the methodology for each IGCC Participating Member shall at least include the following information:

- short description of the aFRR energy pricing methodology;
- mathematical expression for the calculation of the IGCC value of avoided upward and downward aFRR activations (or another suitable description for understanding the methodology); and
- example(s) for the calculation of the IGCC Values of avoided aFRR.

For an IGCC Participating Member applying central dispatching model the description of the methodology for calculation of IGCC Values of avoided upward and downward aFRR activations in accordance to the Template B of this Annex may refer to the prices used in the settlement of the integrated scheduling process without describing the methodology for calculating the prices resulting from the settlement of the integrated scheduling process.

In case of a change that substantially affects the IGCC Values of aFRR Avoided Activation calculation of an IGCC Participating Member (e.g. change in national market design or the calculations of aFRR energy prices) all IGCC Participating Members shall discuss the consequences of this change with each other and adapt any necessary documents accordingly.

Next, some qualitative examples are described for computing Value of aFRR Avoided Activation:

Value of aFRR Avoided Activation for a IGCC Participating Member that uses pay as bid

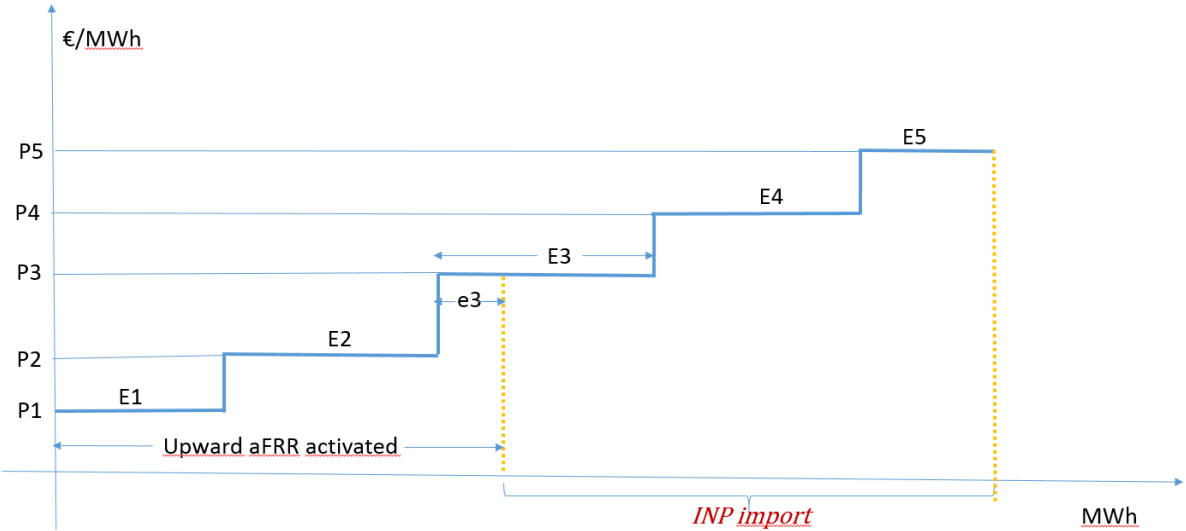
The value of avoided upward/downward aFRR activation reflects the costs (upward activation) or revenues (downward activation) of the aFRR, associated to aFRR additionally activated by each participating TSO without the Imbalance Netting Process. The Value of aFRR Avoided Activation prices should be determined separately for positive and negative secondary control energy per each quarter of an hour.

For the calculation of the settlement price, the average price of secondary control energy exchanged in each balancing direction during a 15-minute interval is used. Prices for activated aFRR volumes are considered as reliable proxy for the values of avoided upward and downward aFRR activations.

In case positive secondary balancing is needed by this IGCC Participating Member, the Value of aFRR Avoided Activation price corresponds with the quotient of the positive secondary control energy costs per 15 minutes and the positive secondary control energy volume per 15 minutes.

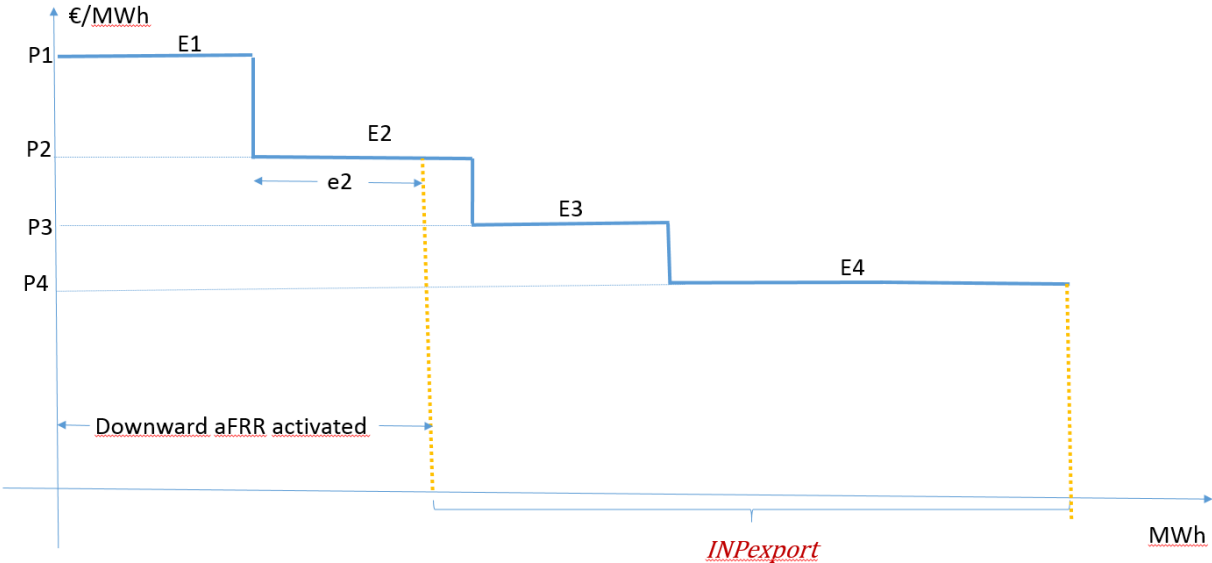
In case negative secondary control energy is needed by this IGCC Participating Member, the Value of aFRR Avoided Activation price corresponds with the quotient of the negative secondary control energy costs or proceeds per 15 minutes and the negative secondary control energy volume per 15 minutes.

If there was no demand in a certain direction, the lowest energy price of the merit order for that direction will be used as the Value of aFRR Avoided Activation.



Upward Value of Avoided aFRR Activation = $(E1P1+E2P2+e3*P3) / \text{Upward aFRR activated}$

EXAMPLE OF PAY-AS-BID PRICING: UPWARD VALUE OF AFRR AVOIDED ACTIVATION

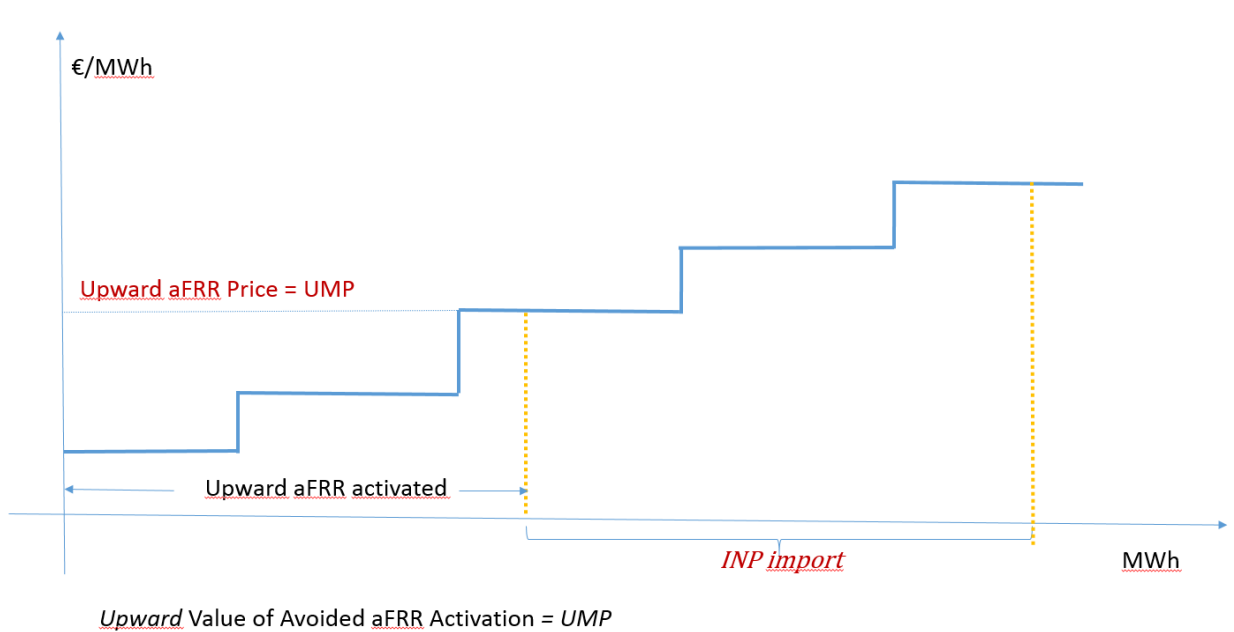


Downward Value of Avoided aFRR Activation = $(E1 P1+ e2 P2) / \text{Downward aFRR activated}$

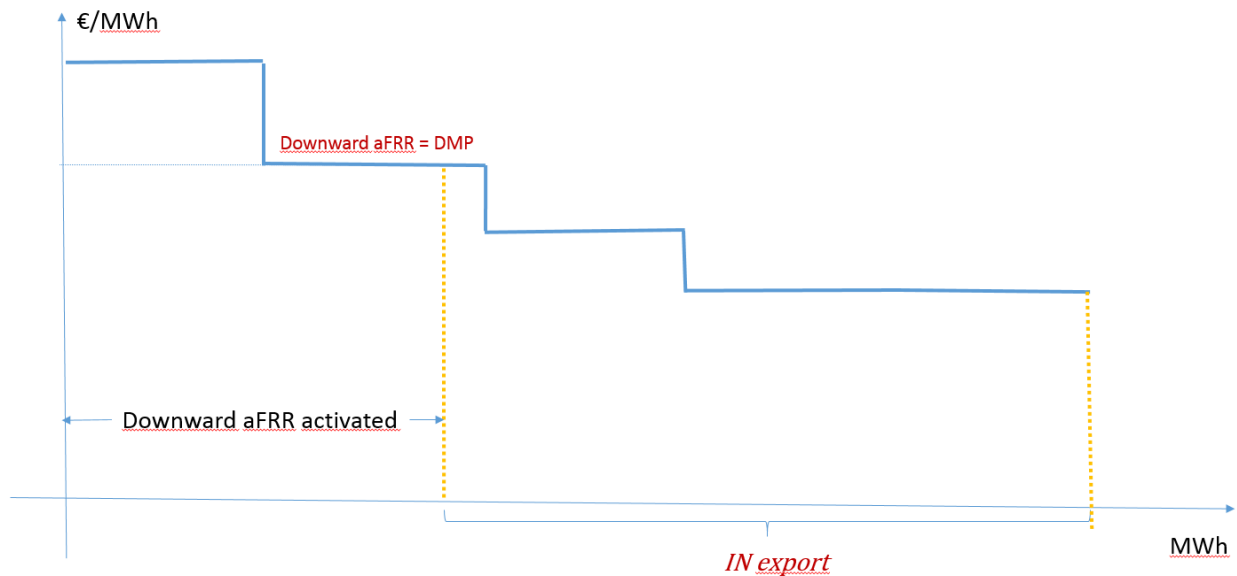
EXAMPLE OF PAY-AS-BID PRICING: DOWNWARD VALUE OF AFRR AVOIDED ACTIVATION

Value of aFRR Avoided Activation for a IGCC Participating Member that uses marginal pricing aFRR scheme

In general, should both upward and downward aFRR energy directions be activated within the same 15 minutes, an upward and a downward aFRR prices will be determined, published and invoiced for both directions. These 2 marginal upward/downward prices determine the Value of aFRR Avoided Activation for an IGCC Participating Member that uses marginal pricing aFRR scheme.



EXAMPLE OF MARGINAL PRICING: UPWARD VALUE OF AFRR AVOIDED ACTIVATION



Downward Value of Avoided aFRR Activation = DMP

EXAMPLE OF MARGINAL PRICING: DOWNWARD VALUE OF AFRR AVOIDED ACTIVATION

Value of aFRR Avoided Activation price for a TSO participating in an aFRR cooperation

For the calculation of the TSO-TSO settlement of the imbalance netting process performed between aFRR-Platform and IN-Platform, the values of avoided upward and downward aFRR activations for TSOs participating in the aFRR-Platform shall correspond to the prices of the standard products for frequency restoration reserves with automatic activation (“standard aFRR balancing energy product”) calculated by the activation optimisation function of the aFRR-Platform.

The reason for this scenario is that, as long as there are TSOs performing Imbalance Netting Process but still not participating at aFRR platform, both processes (aFRR and Imbalance Netting Process) will coexist. Examples of this situation are: a) TSOs that potentially derogate joining aFRR platform until EIF+6years (instead of EIF+4 years of go-live aFRR platform), b) TSOs that join Imbalance Netting Process Function but not aFRR platform (because for example it is not mandatory, or it is not allowed to join for such TSOs).

Value of aFRR Avoided Activation in case of administrative and day ahead price

In case a TSO uses administrative price or day ahead price to settle aFRR balancing energy, these economic signals will be used as values of avoided upward and downward aFRR activations.