
	Methodology for Calculating Imbalance and Compensation Prices	DT-MO-010
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<i>Departamenti: Operimi i Tregut</i>		

**Transmission, System and Market Operator
(KOSTT)**


**Methodology for Calculating Imbalance and
Compensation Prices**

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1. Objectives and scope


- 1.1. Given the lack of resources for balancing the system in Kosovo, as well as improving the system performance in Kosovo in terms of balancing the system, it is necessary to develop a methodology for calculating imbalance prices for trading parties in Kosovo.
- 1.2. The methodology refers to articles 1.8 of the Market Rules regarding the inadequacy of the development of competition with reasonable market prices and the possibility of applying regulated prices for imbalance.

2. Application Time of the Methodology

- 2.1. This methodology determines the method of calculating the energy imbalance price of the parties in the electricity market in Kosovo in the absence of a competitive market.
- 2.2. This procedure will not be applied in competitive market conditions.
- 2.3. To terminate the application of this methodology parties shall be notified by ERO two months earlier.

3. Responsibilities of the parties

- 3.1. Market Operator is responsible to:
 - 3.1.1. Apply this methodology, improve and update it, depending on changes in primary and secondary legislation in Kosovo.
 - 3.1.2. Publish and make the methodology available to all parties.
 - 3.1.3. Calculate imbalance of parties for any period of settlement, as well as obligations that the parties have for the caused imbalances.
 - 3.1.4. Issue invoices to parties on a monthly basis for their obligations for caused imbalances, in accordance with Articles 18 of the Market Rules (MR).
- 3.2. Transmission System Operator is responsible to:
 - 3.2.1. Make available all the measuring merit data for calculating imbalance price.
 - 3.2.2. Make available all intraday data of the exchange program.

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- 3.2.3. Give instructions to Balancing Service Providers to buy or sell energy for the purpose of balancing the system.
- 3.2.4. Make available to the Market Operator all relevant information referred to paragraph **Error! Reference source not found.** and 6.1.2
- 3.3. Distribution System Operator is responsible to:
 - 3.3.1. Make available all metering data in the boundary with DSO, with customer connected in distribution network for purpose of calculating energy imbalance.
- 3.4. Producers are responsible to:
 - 3.4.1. Nominate one day before their free capacities that can be used to balance the system.
 - 3.4.2. Apply instructions of the System Operator for decreasing or increasing the load (Bid and/or Offer Acceptances) with Bid Price and/or Offer Price.
 - 3.4.3. Make available for TSO or DSO all relevant metering data for calculating energy imbalance and imbalance price.
 - 3.4.4. Pay on monthly basis their obligation for their imbalances, in accordance with Article 18 of the MR.
- 3.5. Suppliers are responsible to:
 - 3.5.1. Pay on monthly basis their obligation for imbalances caused, in accordance with Article 18 of the MR.
- 3.6. Public Supplier is responsible to:
 - 3.6.1. Pay on monthly basis their obligation for imbalances caused, in accordance with Article 18 of the MR.
 - 3.6.2. As a significant party Buy/Sell electricity to KOSTT to fulfill obligations from the Compensation Program with the price calculated in Article 7 of this methodology.
 - 3.6.3. Implement instructions of the System Operator to disconnect consumption as a last resort balancing product to balance the system.

4. Definitions



4.1. Terms defined in this methodology shall have the meanings as described in the following table:

Defined Terms	Interpretation
Balancing Mechanism	Is the process in which Trading Parties submit Bids and Offers to buy energy from or to the TSO in order for the TSO to balance the system.
Bid	is a bid to buy energy in the Balancing Mechanism from TSO at a Bid price (in €/MWh) that is submitted by a Trading Party.
Offer	is an offer to sell energy in the Balancing Mechanism to the TSO at an Offer price (in €/MWh) that is submitted by a Trading Party.
Imbalance price	Price calculated according to paragraph 6.4 of this document.
Spot Price	Day Ahead market price published at the Power-exchange HUPEX in Budapest for any settlement period on certain days.
Coefficient when system is long	Coefficient that is multiplied with the marginal price of the market when system imbalance is negative ('system pushes into other systems')
Coefficient when system is short	Coefficient that multiplied with the marginal price of the market when system imbalance is positive ('system takes from other systems')
Last resort balancing product	Balancing product used from TSO to instruct Public Supplier to disconnect load in cases when system imbalance is very high in self-discretion to balance the system and maintain system stability.
Significant Party	is a Trading Party for whom certain restrictions apply, whose status as Significant Party is notified to the MO by ERO
Balancing Energy provider	Is the trading party who submits bids and offers to balancing mechanism



5. Variables

Variables	Description
P_{HUPXtj}	The day ahead market price, published from the Hungarian Power exchange (HUPX) in Budapest for the settlement period j
IP_j	Is the Imbalance Price for Settlement Period j
P_{compj}	Electricity Price of the Compensation Program for Settlement Period j
BP_j	The bid price for purchase for settlement period j
OP_j	The offer price for sale for settlement period j
QO_j	Energy delivered as a result of activation of the offer for sale for settlement period j
QB_j	Energy delivered as a result of activation of the offer for purchase for settlement period j
TFL	Applied coefficient when system imbalance is negative
TFS	Applied coefficient when system imbalance is positive



6. The methodology of calculating imbalance price

6.1. Inputs of the methodology.

6.1.1. Volume of Activated Bids under Balancing Mechanism.

6.1.2. Volume of Activated Offers under Balancing Mechanism.

6.1.3. The prices of Activated Bids.

6.1.4. The prices of Activated Offers.

6.1.5. The coefficient that multiplies with the marginal price of the system for calculating imbalance price

- Coefficient when system is long
- Coefficient when system is short

6.1.6. System imbalance.

6.1.7. Day Ahead Price published by Hungarian Power Exchange (HUPX).

6.2. Outputs of the methodology.

6.2.1. Imbalance prices for every settlement period.

6.2.2. Price of the compensation program for every settlement period.

6.3. When system imbalance is positive (system takes energy) the imbalance price is calculated in a way that:

6.3.1. When there are no instructions from TSO:

$$IP_j = P_{HUPEXj} \times TFS$$

6.3.2. When there are instructions from TSO then imbalance price will be calculated according to formula:

$$IP_j = \frac{\sum(QO_j \times OP_j)}{\sum QO_j}$$



6.3.3. Instructions for Load reduction from KOSTT under this methodology will be considered as an Offer Acceptances and price for Load Disconnection will be considered as an Offer Price.

6.4. When system imbalance is negative (system pushes energy) than the imbalance price is determined in a way that:

6.4.1. When there are no instructions from KOSTT:

$$IP_j = P_{HUPEXj} \times TFL$$

6.4.2. When there are instructions (Bid Acceptances) from KOSTT then imbalance price will be calculated according to formula:

$$IP_j = \frac{\sum(QB_j \times BP_j)}{\sum QB_j}$$

6.5. When system is balanced, imbalance price is simple average price of the last 720 hours of imbalance price.

7. Energy price of the compensation program

7.1. Price of the compensation program is the price by which KOSTT sells energy to PS or buys energy from PS for the purpose of fulfilling obligation of the compensation program.

7.2. Price of the compensation program for the settlement period is equal to the marginal price of the system for the settlement period:

$$P_{compj} = P_{HUPEXj}$$



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8. Data approved by Energy Regulatory Office

8.1. Data approved by Energy Regulatory Office are:

8.1.1. Bid Price.

8.1.2. Offer Price.

8.1.3. Energy price for Disconnection.

8.1.4. Coefficient when system is long.

8.1.5. Coefficient when system is short.

8.2. Data as described under paragraph 8.1 are given in Appendix 1 which will be considered as integral part of this methodology.

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