Technical Rule no. 25 MPE

(under article 4 of the Integrated Text of the Electricity Market Rules, approved by the Decree of the Minister of Productive Activities of 19 December 2003, as subsequently amended and supplemented)

Title	**PUN Index GME**

Reference Legislation	Article 42, para. 42.1, Integrated Text of the Electricity Market Rules

Published on...

1. Foreword

Article 42, para. 42.1 of the Integrated Text of the Electricity Market Rules (hereafter "ME Rules") provides that GME shall calculate the reference price of electricity traded in the MGP, for each minimum market time interval, as the average of zonal prices, weighted for the quantities purchased in respect of zonal withdrawal portfolios in each geographical market zone. For weighting, account shall be taken of the quantities covered by demand bids that have been accepted in all the market time intervals and of those covered by blocks including the minimum market time interval in respect of which the reference price is calculated, as indicated in the Technical Rules.

2. Weighting for the calculation of the PUN Index GME and related impacts on the compensatory component and on the non-arbitrage fee

The weighting for the calculation of the "PUN Index GME®" will consider all simple and block demand bids that have been accepted in the MGP and related to market time intervals including the minimum market time interval in respect of which the reference price is calculated.
In particular, GME will calculate the PUN Index GME® with respect to the minimum market time interval available in the MGP, as indicated in Technical Rule no. 11 ME.

As the PUN Index GME and the compensatory component are determined on the basis of the prices referred to in article 41 of the ME Rules, they may have a number of decimals higher than 2.

The following are examples of the calculation of the PUN Index GME®.
Case 1: Calculation of the PUN Index GME® for products related to a market time interval of 1 hour (h) and block products[1]:

Case 1		Zone A				Zone B			
ISP		08.00 08.15	08:15 08:30	08:30 08:45	08:45 09:00	08:00 08:15	08:15 08:30	08:30 08:45	08:45 09:00
hour h		08:00 09:00				08:00 09:00			
Q acc bid/off MTU h	MW	70				50			
	MWh	17,5	17,5	17,5	17,5	12,5	12,5	12,5	12,5
Q acc block bid/off*	MW	90				80			
	MWh	22,5	22,5	22,5	22,5	20	20	20	20
Q for weighting	**MW**	**160**				**130**			

		Zone A				Zone B				Pun Index GME
ISP		08:00 08:15	08:15 08:30	08:30 08:45	08:45 09:00	08:00 08:15	08:15 08:30	08:30 08:45	08:45 09:00	08:00 09:00
Valuing price MTU h	€/MWh	50				60				**54,5**
Compensatory component (Price - PUN Index)		-4,48				5,52				

[1] If the market time interval is only equal to 1 hour (h), blocks may consist of hours only.

Case 2: Calculation of the PUN Index GME® for products related to a market time interval of one quarter-hour (¼ h), one half-hour (½ h), one hour (h), and block products[2]:

Case 1		Zone A				Zone B			
ISP		*08:00 08:15*	*08:15 08:30*	*08:30 08:45*	*08:45 09:00*	*08:00 08:15*	*08:15 08:30*	*08:30 08:45*	*08:45 09:00*
Q acc. bid/off MTU ¼ h	MW	50	70	90	10	30	50	60	80
	MWh	12,5	17,5	22,5	2,5	7,5	12,5	15	20
Q acc bid/off MTU ½ h	MW	75		20		40		80	
	MWh	18,75	18,75	5	5	10	10	20	20
Q acc bid/off MTU h	MW	70				50			
	MWh	17,5	17,5	17,5	17,5	12,5	12,5	12,5	12,5
Q acc block bid/off*	MW	90				80			
	MWh	22,5	22,5	22,5	22,5	20	20	20	20
Q for weighting	**MW**	**285**	**305**	**270**	**190**	**200**	**220**	**270**	**290**
	MWh	**71,25**	**76,25**	**67,5**	**47,5**	**50**	**55**	**67,5**	**72,5**

		Zone A				Zone B				Pun Index GME			
ISP		*08:00 08:15*	*08:15 08:30*	*08:30 08:45*	*08:45 09:00*	*08:00 08:15*	*08:15 08:30*	*08:30 08:45*	*08:45 09:00*	*08:00 08:15*	*08:15 08:30*	*08:30 08:45*	*08:45 09:00*
Price 1/4 h	**€/MWh**	**45**	**48**	**52**	**55**	**60**	**65**	**65**	**66**	**51,2**	**55,1**	**58,5**	**61,6**
Valuing price MTU 1/2 h	€/MWh	46,5		53,5		62,5		65,5					
Valuing price MTU h	€/MWh	50				64							
Compensatory component (Price - PUN Index)	€/MWh	-6,19	-7,12	-6,50	-6,65	8,81	9,88	6,50	4,35				
		-6,65		-6,57		9,35		5,43					
		-6,61				7,39							

The PUN Index GME is also used in determining the non-arbitrage fee/MI, which is applied to each demand bid/supply offer accepted in the MI and pertaining to withdrawal portfolios. The non-arbitrage fee/MI is calculated under article 54, paras. 54.12 and 54.13 of the ME Rules as the product between: i) the quantity accepted in the MI; and ii) the difference between the zonal price in the MGP and the PUN Index GME, which has arisen in the same market time interval. Hence,

- if in the MGP only hourly products are admitted (PUN Index GME and zonal prices defined on an hourly basis), then a single hourly price spread (Pz – PUN Index GME) will be applied to bids/offers accepted in the MI in respect of withdrawal portfolios; this spread will give rise to a non-arbitrage fee/MI for all bids/offers related to each quarter-hour included in a single hour;
- if in the MGP also quarter-hourly products[3] are admitted (PUN Index GME and zonal prices defined on a quarter-hourly basis), then a quarter-hourly price spread (Pz – PUN Index GME) will be applied to bids/offers accepted in the MI in respect of withdrawal portfolios; this spread will give rise to a non-arbitrage fee/MI for each quarter-hour.

The following are examples of calculation of the non-arbitrage fee/MI.

[2] If market time intervals are equal to quarter-hours (1/4 h), half-hours (1/2 h), and hours (h), the blocks may consist of quarter-hours (¼ h), or half-hours (½ h), or hours (h).
[3] The quarter-hourly market time interval will be introduced into the MGP at a subsequent stage after 1 January 2025, Thus, the second case, described here only for the sake of completeness, will not occur for the time being. .

Case 1: Hourly market time interval in the MGP and quarter-hourly bids/offers in the MI in respect of withdrawal portfolios

Case 1						
Zone A						
MGP	Hourly market time interval	h	8:00 - 9:00			
	Zonal price MGP	€/MWh	103			
	PUN Index GME	€/MWh	100			
Zone A						
MI	Quarter-hourly market time interval	1/4 h	8:00 -8:15	8:15 - 8:30	8:30 - 8:45	8:45 - 9:00
	Q acc bid/offer 1/4 h market time interval	MW	2	3	0	0
		MWh	0,5	0,75	0	0
	Non-arbitrage fee/MI	€	1,5	2,25	0	0

The non-arbitrage fee/MI applied to the bid/offer in respect of the quarter-hour from 8:00 to 8:15 will be equal to: (103-100) €/MWh *0.5 MWh = €1.5.
The non-arbitrage fee/MI applied to the bid/offer in respect to the quarter-hour from 8:15 to 8:30 will be equal to: (103-100) €/MWh *0.75 MWh = €2.25.
The price spread that is applied to determine the non-arbitrage fee is a single one (€ 3/MWh) for both bids/offers, since both the zonal price and the PUN Index GME are hourly.

Case 2: Quarter-hourly market time interval in the MGP and quarter-hourly bids/offers in the MI in respect of withdrawal portfolios

Case 2						
Zone A						
MGP	Quarter-hourly market time interval	h	8:00 -8:15	8:15 - 8:30	8:30 - 8:45	8:45 - 9:00
	Zonal price MGP	€/MWh	103	105	102	100
	PUN Index GME	€/MWh	100	101	98	97
Zone A						
MI	Quarter-hourly market time interval	1/4 h	8:00 -8:15	8:15 - 8:30	8:30 - 8:45	8:45 - 9:00
	Q acc bid/offer 1/4 h market time interval	MW	2	3	0	0
		MWh	0,5	0,75	0	0
	Non-arbitrage fee/MI	€	1,5	3	0	0

The non-arbitrage fee/MI that is applied to the bid/offer in respect of the quarter-hour from 8:00 to 8:15 will be equal to: (103-100) €/MWh *0.5 MWh = €1.5.
The non-arbitrage fee/MI that is applied to the bid/offer in respect of the quarter-hour from 8:15 to 8:30 will be equal to: (105-101) €/MWh *0.75 MWh = €3.

The price spread that is applied to determine the non-arbitrage fee will be different for bids/offers submitted for different quarter-hours, since both the zonal price and the PUN Index GME are quarter-hourly.

Case 3: Quarter-hourly market time interval in the MGP and hourly bid/offer in the MI in respect of a withdrawal portfolio

Case 3						
			Zone A			
MGP	Quarter-hourly market time interval	1/4h	8:00 -8:15	8:15 - 8:30	8:30 - 8:45	8:45 - 9:00
	Zonal price MGP	€/MWh	103	105	102	100
	PUN Index GME	€/MWh	100	101	98	97
			Zone A			
MI	Quarter-hourly market time interval	1/4 h	8:00 -8:15	8:15 - 8:30	8:30 - 8:45	8:45 - 9:00
	Q acc bid/offer 1/4 h market time interval	MW	0	0	0	0
		MWh	0	0	0	0
	Q acc bid/offer h market time interval	MW	1			
		MWh	0,25	0,25	0,25	0,25
	Non-arbitrage fee/MI	€	0,75	1	1	0,75
			3,5			

The non-arbitrage fee that is applied to the bid/offer in respect of the hour from 8:00 to 9:00 will be equal to: [(103-100) €/MWh *0.25 MWh] + [(105-101) €/MWh *0.25 MWh] + [(102-98) €/MWh *0.25 MWh] + [(100-97) €/MWh *0.25MWh] = €3.5.

The non-arbitrage fee that is applied to the bid/offer in respect of the hour from 8:00 to 9:00 will be obtained by summing the non-arbitrage fees of each quarter-hour included in the hour from 8:00 to 9:00, since both the zonal price and the PUN Index GME are quarter-hourly.