



April 2024

Annual Gas Balancing Planning for the Year 2025

1. Introduction

The present plan is developed in terms of Paragraph 2,γ of Article 68 of the Law 4001/2011 according to which the Operator of National Natural Gas System (DESFA S.A.) (hereinafter 'Operator') is responsible for balancing of the National Natural Gas System (NNGS) as defined in the NNGS Network Code (hereinafter 'Code') and the provisions of Article 46 regarding the Annual Gas Balancing Planning

In terms of paragraph 1 of Article 46 of the Code, the Operator submits to the Regulatory Authority for Energy (RAE) the Annual Gas Balancing Planning for the next Year, which, as well as each modification thereof shall be approved by RAE and published at the Operator's responsibility.

Within the framework of its above-mentioned competence and in accordance with the provisions of Chapter 8 of the Code, the Operator shall undertake Balancing Actions through (a) the purchase and sale of Balancing Gas in the form of Short Term Standardized Products (hereinafter STSPs) carried out on the Operator's Trading Platform, either through continuous negotiations or through auctions; and/or (b) use of Balancing Services through Balancing Services Agreements that may be concluded by the Operator, either following a relevant tender, either in accordance with the provision of paragraph 1 of Article 91 of the Law 4001/2011, with Users or third parties concerning the supply and delivery of Balancing Gas Quantities to the NNGS, following the approval of the Annual Gas Balancing Planning by RAE.

According to paragraph 2 of Article 46 of the Code, the Annual Gas Balancing Planning includes in particular: (a) The Operator's forecast for the evolution of the demand in Natural Gas per category of Customers in relation to the existing Transmission Capacity of the Transmission System, (b) a forecast regarding the necessary Quantities of Balancing Gas, such as the total annual Quantity of Balancing Gas for purchase and/or sale, its estimated allocation during the Year, as well as an estimation for the part of said Quantity that is expected to be covered through the use of Balancing Services, (c) a determination of the necessary characteristics of the agreement or combination of agreements that the Operator must conclude, at its discretion, to procure Balancing Services and (d) an estimate regarding the part of the NNGS Capacity which may be used by the Operator for Gas Balancing.

In accordance with paragraph 3 of Article 46 of the Code, for the development of the Annual Gas Balancing Planning the Operator takes into consideration particularly the NNGS Development Plan, the total demand for Natural Gas served via the National Natural Gas Transmission System (NNGTS), the geographical distribution of consumption, the elimination of technical limitations affecting the operation of the System and, especially, each event that has led to, or may lead to, in its estimation, congestion or Emergency Level Crises, the maintenance requirements of the NNGS

sections, the existing Gasification Capacity and Transmission Capacity at Entry and Exit Points, relevant historical data, as well as the criteria of the provision of paragraph 2 of Article 8 of Regulation (EU) No 312/2014.

2. Gas Balancing

Balancing Gas is considered to be the Natural Gas required for the gas balancing of the NNGTS. The Balancing Gas Quantity is injected to / received from the NNGTS over a specific period of time in order to balance the Natural Gas Deliveries with Receptions (during the same period of time) in order to ensure in each case the reliable, safe and efficient operation of the NNGS.

The Operator undertakes Balancing Actions to achieve the NNGTS Linepack within the range of [22,3 – 24,3] million Nm³ at the end of a Day, in order to ensure the cost-effective and efficient operation of the NNGTS during the Day.

When performing Balancing Actions, the Operator considers at least the following:

1. its estimations about the Natural Gas demand;
2. the most recent data on Confirmed Natural Gas Delivery and Reception Quantities of the Transmission Users at the NNGTS Entry and Exit Points, respectively;
3. the most recent measurement data;
4. the prevailing NNGTS pressure at any given time; and
5. the possibility of storing Natural Gas in the NNGTS.

3. Estimation of Natural Gas demand for the Year 2025

According to the updated Demand Forecast Study, the Natural Gas consumption will reach the level of **8,695 mil. Nm³** in the Year 2025. The estimated Natural Gas demand per consumer category is presented in more detail in Table 1 on the next page.

2025	Power Production (Nm ³)	Other Consumers (Nm ³)	Exports (Nm ³)	Total Consumption (Nm ³)
January	274,063,625	315,789,281	270,676,712	860,529,619
February	130,588,190	251,389,125	244,482,192	626,459,506
March	110,360,457	198,574,793	270,676,712	579,611,962
April	200,349,830	121,855,085	261,945,205	584,150,120
May	284,156,754	99,797,635	270,676,712	654,631,101
June	301,297,229	96,263,421	261,945,205	659,505,855
July	423,864,306	95,039,830	270,676,712	789,580,849
August	411,230,136	82,442,303	270,676,712	764,349,151
September	405,606,540	89,089,057	261,945,205	756,640,803
October	339,188,043	98,192,367	270,676,712	708,057,123
November	410,774,025	149,413,573	261,945,205	822,132,803
December	389,002,945	229,341,329	270,676,712	889,020,987
Total	3,680,482,079	1,827,187,800	3,187,000,000	8,694,669,879

Table 1: Forecast of Natural Gas demand per consumer category for the Year 2025

4. Balancing Gas Quantities

In accordance of paragraph 2, article 44A of the NNGS Code, the Operator executes Balancing Actions through (a) the purchase and sale of Balancing Gas in the form of STSPs and/or (b) the use of Balancing Services.

Considering the above, and in order for the Operator to extract as reliably as possible an estimation of the necessary Balancing Gas Quantities for purchase ($BG_{M,2025}^P$) and sale ($BG_{M,2025}^S$) required for each Month of the Year 2025, the Operator used the historical data of the period 01/2023 – 03/2024 and applied the following methodology:

$$BG_{M,2025}^P = \bar{X}_{M,2025}^P * ER_{M,2025}, \text{ and}$$

$$BG_{M,2025}^S = \bar{X}_{M,2025}^S * ER_{M,2025},$$

where:

- $\bar{X}_{M,2025}^P$: The average participation rates of the Balancing Gas Quantities for purchase during the Month M of the period 01/2023 – 03/2024 to the Natural Gas Receptions of the same Month (see Appendix 2);
- $\bar{X}_{M,2025}^S$: The average participation rates of the Balancing Gas Quantities for sale during the

Month M of the period 01/2023 – 03/2024 to the Natural Gas Receptions of the same Month (see Appendix 2);

- $ER_{M,2025}$: Estimated monthly NNGTS Natural Gas Receptions for the Year 2025 (see Table 1 above); and
- M : Month of a Year

For the calculation of the above value $\bar{X}^P$ for every Month of the Year 2025, the Operator took into account:

- i. the Balancing Gas Quantities injected to the NNGTS through the Entry Point 'Agia Triada' during the same Months within the period 01/2023 – 03/2024; and
- ii. the historical data of the purchased Balancing Gas Quantities through STSPs in the Trading Platform, for the same Months within the period 01/2023 – 03/2024,

Furthermore, for the calculation of the above value $\bar{X}^S$ for every Month of the Year 2025, the Operator considered the historical data of Balancing Gas Quantities sales through STSPs in the Trading Platform, for the same Months within the period 01/2023 – 03/2024.

In Diagram 1 below the following are presented:

- The Monthly Balancing Gas Quantities for purchase during the period 01/2023 – 03/2024, through STSPs or via Balancing Services; and
- The Monthly Balancing Gas Quantities for sale during the period 01/2023 – 03/2024, through STSPs,

as a percentage of the respective Monthly Natural Gas Receptions.

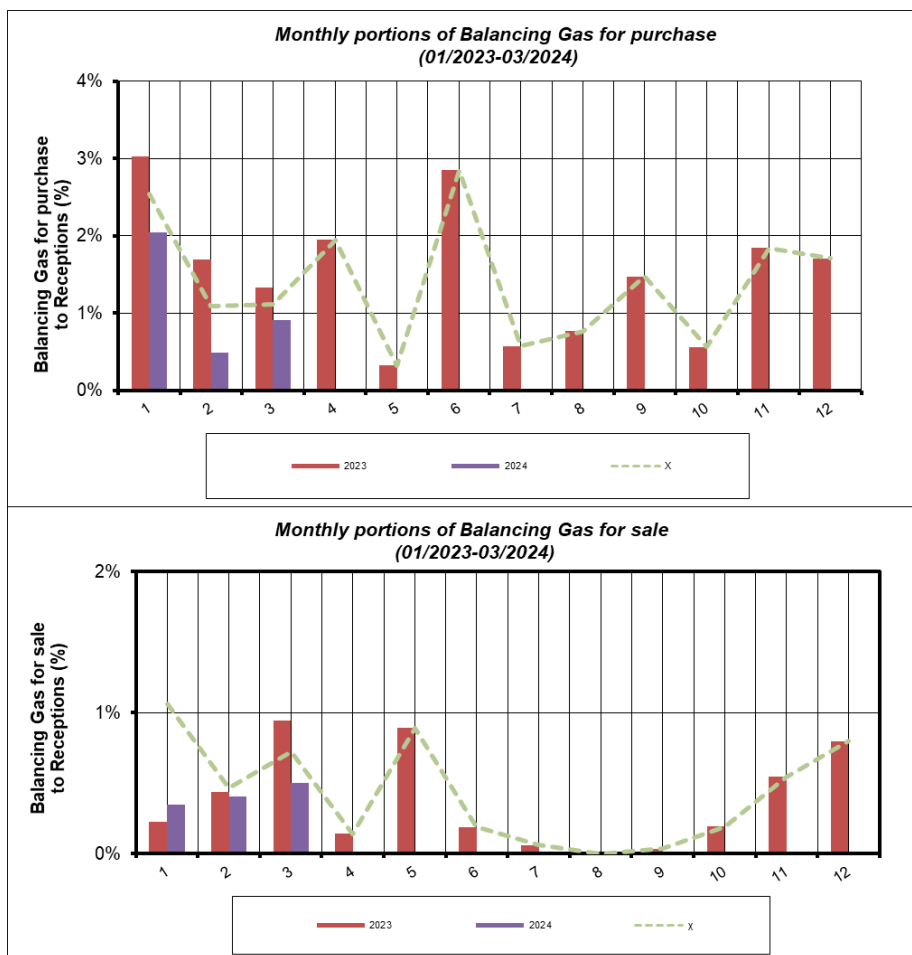


Diagram 1: Monthly portions of Balancing Gas Quantities to Natural Gas Receptions for the period 01/2023 – 03/2024

The results of the calculations in case of Balancing Gas purchase and sale are presented separately in Table 2 below.

Month of the Year 2025	Balancing Gas Purchase ($\bar{X}^P$) %	Balancing Gas Sale ($\bar{X}^S$) %
January	2.54	0.29
February	1.09	0.42
March	1.12	0.72
April	1.95	0.14
May	0.32	0.89
June	2.85	0.19
July	0.57	0.06
August	0.77	0.00
September	1.47	0.04
October	0.56	0.19
November	1.84	0.55
December	1.70	0.80

Table 2

Taking into consideration the above methodology, the Operator's estimations for the Monthly distribution of Balancing Gas purchase and sale for the Year 2025 are presented in Table 3¹ below

¹For the conversion of the volume units (Nm³) to energy units (kWh), the weighted (flow) average of the Gross Calorific Value of the Exit Points of the NNGTS for Year 2023 was used, i.e. 11.616 kWh / Nm³.

– an overall Table with the Operator's estimation of the Monthly Natural Gas demand per consumption category and the estimation of the Balancing Gas purchase and sale for the Year 2025 is presented in Annex 1.

Month of the Year 2025	Balancing Gas Purchase (kWh)	Balancing Gas Sale (kWh)
January	253.496.918	28.846.983
February	79.357.332	30.834.423
March	75.115.958	48.790.514
April	132.012.548	9.562.447
May	24.252.446	67.732.232
June	218.204.254	14.529.502
July	52.679.360	5.744.745
August	68.154.125	0
September	129.431.654	3.287.973
October	45.824.142	15.885.703
November	175.868.885	52.144.132
December	176.060.148	82.368.963
Total	1.430.457.772	359.727.618

Table 3: Estimation of the Monthly distribution of Balancing Gas purchase and sale for the Year 2025

In accordance with the provisions of Article 44A of the Network Code, the Operator undertakes Balancing Actions through:

1. The purchase and sale of Balancing Gas in the form of Short-term Standardized Products (STPSs) carried out on the Operator's Trading Platform, either through continuous negotiations or through auctions; and/or
2. The use of Balancing Services when the following reasons are met:
 - it was not possible to purchase/sell the required Balancing Gas Quantity through Short-term Standardized Products; and/or
 - in its estimation, it is unlikely to purchase/sell the required Balancing Gas Quantity through Short-term Standardized Products; and/or
 - in its estimation, the use of these products is not, or is not likely to provide, the necessary response to maintain the Transmission System within its operational limits; and/or
 - due to the urgent need for safe, cost-efficient and effective operation of the NNGS, an auction cannot be conducted.

Based on the above and taking into account the period of the last 15 Months, i.e. 01/2023 - 03/2024, where there is a maturity in the usage of STPSs in the Trading Platform by the Users, the Operator calculated the percentage $Z\%$ of the estimated Balancing Gas Quantities expected to be covered through the use of Balancing Services, for the Year 2025, on the basis of the following methodology:

$$Z\% = \frac{\sum_{i=1}^n BG^{service}}{\sum_{j=1}^k BG^P} * 100$$

where:

- $\sum_{i=1}^n BG^{service}$: The sum of Balancing Gas Quantities injected into the NNGTS through the Entry Point 'Agia Triada', via usage of Balancing Services for each Day (i) for the period 01/2023 - 03/2024;
- $\sum_{j=1}^k BG^P$: The sum of Balancing Gas Quantities purchased through STSPs in the Trading Platform and/or via usage of Balancing Services for each Day (j) for the period 01/2023 - 03/2024;
- n : The amount of Days of the period 01/2023 - 03/2024 during which Balancing Gas Quantities were injected into the NNGTS via usage of Balancing Services; and
- k : The amount of Days of the period 01/2023 - 03/2024 during which the Operator purchased Balancing Gas Quantities through STSPs in the Trading Platform and/or via usage of Balancing Services.

Based on the above, it appears that during the period 01/2023 - 03/2024, 7% of the Balancing Gas Quantities for purchase was covered through the use of Balancing Services, which is also adopted as an estimate of the percentage of the Balancing Gas Quantities for purchase that will be covered through the use of Balancing Services by the Operator for the Year 2025, in relation to the total estimated Balancing Gas Quantities for purchase for the same Year.

5. Balancing Services Agreement

Taking into consideration the provision of Article 47 of the Code, aiming firstly at the proper, cost-efficient and effective operation of the NNGS during the Year 2025, the Operator will enter into Balancing Services framework agreement with Natural Gas suppliers, which will be chosen after an international bid, according to paragraph 2,c of Article 68 of the Law 4001/2011, for the supply of Balancing Gas during the period 01.01.2025 07:00 – 01.01.2026 07:00.

The supply of Balancing Gas will take place in the context of fulfillment of requests for supply of Balancing Gas issued by the Operator to the selected Suppliers. The choice of the supplier will be

based on criteria that will be specified in the framework agreement and relate, among others, with the lower supply price offered and the fulfillment of the Operator's request in terms of the Balancing Gas quantity and the delivery date.

Furthermore, taking into consideration:

- i. The NNGTS topology and construction features;
- ii. The NNGTS Technical, Booked and Available Capacity at the Entry Points;
- iii. The NNGTS geographical Natural Gas Receptions allocations; and
- iv. The current framework regulating the Greek Natural Gas market;

the supplied Balancing Gas Quantities will relate solely to Liquefied Natural Gas (LNG) delivered to the Operator at Revithoussa LNG Facility.

Also, taking into consideration:

- the Revithoussa LNG Facility Storage;
- the requirements of the Code and particularly Chapter 11 regarding the terms of access to the Revithoussa LNG Facility (Temporary LNG Storage Period, Minimum Re-gasification Capacity); and
- the size of LNG vessels that are available in the Liquefied Natural Gas market;

the Balancing Services framework agreement will provide the authority to the Operator to specify, in each request to suppliers, the LNG quantity and the delivery date, so that the smooth operation of the greek Natural Gas market is not upset, in accordance with the requirements of the Code.

Given the impossibility to confirm the Operator's estimations regarding the required Natural Gas Quantities for balancing purposes for the Year 2025, the abovementioned framework agreement will not contain imposing restrictions such as minimum supply quantity or payment clauses, irrespective of LNG deliveries.

6. Part of the NNGS Capacity for Gas Balancing for the Year 2025

The Operator, taking into account the significant variation of the required Daily Balancing Gas Quantity during a Year, proposes the methodology of determining the part of the NNGS capacity - which according to Section 5 above refers to part of the LNG Facility Re-Gasification Capacity and the Transmission Capacity for Delivery at the NNGTS Entry Point 'Agia Triada' - which can be used for Balancing Actions through the use of Balancing Services by the Operator during the Year 2025, aiming to the effective and cost-efficient operation of the NNGS and to improving the level of Transmission and LNG Facility services to Users.

The Operator, taking into account the historical data from the period 01/2023-03/2024 (see Annex 3) and correlating the maximum Daily Balancing Gas Quantity that was injected in the NNGTS per Month with the corresponding sum of the Users' Booked Transmission Capacity for Reception, proposes the application of the following methodology for the calculation of the Monthly NNGS Capacity estimated to be required for Balancing Services by the Operator during the Year 2025:

$$\Delta E_{M,2025} = OA_{M,2025} * E\Delta M_{M,2025},$$

where:

- $OA_{M,2025} = \frac{\frac{AQ_{EE(max)M,2024}}{\Delta M_{M,2024}} + \frac{AQ_{EE(max)M,2023}}{\Delta M_{M,2023}}}{2},^2$
- $AQ_{EE(max)M,Y}$: the maximum Daily Balancing Gas Quantity (kWh/Day) of the Month M of the Year Y, that was purchased through Balancing Services;
- $\Delta M_{M,Y}$: the sum of the Booked Transmission Capacity for Reception (kWh/Day) that was booked by all Users, during the Day of the injection to the NNGTS of the maximum Daily Balancing Gas Quantity of the Month M of the Year Y; and
- $E\Delta M_{M,2025} = \frac{(\Delta M_{M,2024} + \Delta M_{M,2023})}{2}$

Based on the above methodology, the Operator's Monthly estimation of the NNGS Capacity that will be required for Gas Balancing is shown in Table 4 on the next page.

² For the calculation of the Monthly Capacity of the NNGS, for the Year 2023 only historical data for the first quarter of Year 2024 were used

Month of the Year 2025	NNGS Capacity for gas balancing (kWh/Day)
January	8,440,839
February	0
March	0
April	0
May	0
June	6,147,802
July	2,922,923
August	0
September	3,642,722
October	0
November	6,653,902
December	8,001,745

Table 4

ANNEX 1

Monthly Estimation of Natural Gas Demand per Consumption Category and Estimation of Balancing Gas Quantities

2025	Power Production	Other Consumers	Exports	Total consumption		Balancing Gas (kWh)	
	Nm ³	Nm ³	Nm ³	Nm ³	kWh	Purchase	Sale
January	274.063.625	315.789.281	270.676.712	860.529.619	9.995.912.054	253.496.918	28.846.983
February	130.588.190	251.389.125	244.482.192	626.459.506	7.276.953.622	79.357.332	30.834.423
March	110.360.457	198.574.793	270.676.712	579.611.962	6.732.772.551	75.115.958	48.790.514
April	200.349.830	121.855.085	261.945.205	584.150.120	6.785.487.794	132.012.548	9.562.447
May	284.156.754	99.797.635	270.676.712	654.631.101	7.604.194.869	24.252.446	67.732.232
June	301.297.229	96.263.421	261.945.205	659.505.855	7.660.820.012	218.204.254	14.529.502
July	423.864.306	95.039.830	270.676.712	789.580.849	9.171.771.142	52.679.360	5.744.745
August	411.230.136	82.442.303	270.676.712	764.349.151	8.878.679.738	68.154.125	0
September	405.606.540	89.089.057	261.945.205	756.640.803	8.789.139.568	129.431.654	3.287.973
October	339.188.043	98.192.367	270.676.712	708.057.123	8.224.791.541	45.824.142	15.885.703
November	410.774.025	149.413.573	261.945.205	822.132.803	9.549.894.640	175.868.885	52.144.132
December	389.002.945	229.341.329	270.676.712	889.020.987	10.326.867.785	176.060.148	82.368.963
Total	3.680.482.079	1.827.187.800	3.187.000.000	8.694.669.879	100.997.285.314	1.430.457.772	359.727.618

ANNEX 2

Historical data of Balancing Gas Quantities for the period 01/2023 – 03/2024

Year	Month	Injected Balancing Gas Quantity (kWh)	Balancing Gas Quantity for purchase via STPSs (kWh)	Balancing Gas Quantity for sale via STPSs (kWh)	Total Natural Gas Reception (kWh)
2023	January	24,240,115	129,004,000	11,500,000	5,068,530,577
2023	February	0	80,500,000	21,000,000	4,764,167,875
2023	March	0	57,500,000	41,000,000	4,343,064,259
2023	April	0	78,000,000	5,650,000	4,009,225,300
2023	May	0	12,500,000	34,910,000	3,919,292,681
2023	June	10,404,013	118,000,000	8,550,000	4,508,069,903
2023	July	4,444,426	26,000,000	3,320,000	5,300,544,753
2023	August	0	35,496,000	0	4,624,189,898
2023	September	6,306,828	59,000,000	1,659,000	4,434,702,078
2023	October	0	24,000,000	8,320,000	4,307,663,753
2023	November	6,653,902	61,000,000	20,059,000	3,673,689,270
2023	December	8,001,745	75,000,000	38,832,000	4,868,495,534
2024	January	8,685,399	115,000,000	21,149,000	6,037,648,319
2024	February	0	24,000,000	19,863,000	4,884,380,562
2024	March	0	48,000,000	26,730,000	5,289,822,342

ANNEX 3

Historical data of Maximum Balancing Gas Quantity and Booked Transmission Capacity for Reception by Users

Month	Year	Maximum Balancing Gas Quantity (kWh/Day)	Sum of all Users' Booked Transmission Capacity for Reception on the Day of the Maximum Balancing Gas Quantity (kWh/Day)
January	2024	8,685,399	256,819,770
	2023	8,059,061	205,670,066
February	2024		
	2023		
March	2024		
	2023		
April	2023		
May	2023		
June	2023	6,147,802	181,754,115
July	2023	2,922,923	183,118,812
August	2023		
September	2023	3,642,722	217,491,183
October	2023		
November	2023	6,653,902	227,104,104
December	2023	8,001,745	231,630,539