ERSE
ENTIDADE REGULADORA
DOS SERVIÇOS ENERGÉTICOS

PUBLIC CONSULTATION 117

CONSULTATION DOCUMENT

Periodic consultation in accordance with Article 26 of the Network Code on harmonised transmission tariff structures for gas

GAS SECTOR

October - 2023

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1 INTRODUCTION

Commission Regulation (EU) 2017/460, of 16 March 2017, establishes a network code on harmonised transmission tariff structures for gas (hereafter Tariff Network Code) setting rules on the application of a reference price methodology and on consultation requirements, among others.

More specifically, Articles 26 to 28 of the Tariff Network Code define consultation requirements for gas transmission tariffs, including the timetable for periodic consultations provided for in Article 26, which must occur at least every five years, and which must remain open for at least two months. Subsequently, within one month after the end of the consultation, a document summarising these comments must be published. The European Union Agency for the Cooperation of Energy Regulators (ACER) will subsequently have an additional month to analyse the consultation and present non-binding comments, integrating into its decision the comments of the various participants in the public consultation. Finally, within five months from the end of the public consultation, the national regulatory authority must publish a motivated decision on all the elements provided for in Article 26(1), of the Tariff Network Code [1].

In addition to the periodic consultation provided for in Article 26, the present public consultation also covers the consultation provided for in Article 28, relating to discounts, multipliers and seasonal factors. It is worth remembering that the previous periodic consultation was open between 17 August 2018 and 17 October 2018 [2], taking effect as of gas year 2019-2020, and that it corresponded to the initial implementation of the Tariff Network Code in Portugal.

This new periodic consultation process presents minor differences compared to the previous motivated decision, and will take effect as of gas year 2024-2025. The proposal maintains the current reference price methodology, although subject to updated parameters, which affect the resulting tariff structure. The application of the reference price methodology is described in chapter 3, and results in the simplified tariff model in Excel format, which is part of this consultation. Chapter 4 complies with the transparency obligations that refer to the allowed revenues to be recovered by tariffs. Chapter 5 addresses the topics of energy-based transmission tariffs and non-transmission tariffs. In turn, chapter 6 presents the indicative

[1] After publication of the motivated decision, the national regulatory authority must send its decision to ACER and the European Commission.

[2] ERSE's public consultation No. 66 on the Implementation of the network code on harmonised transmission tariff structures for gas.

reference prices, which result from the reference price methodology, including the analysis required by the Tariff Network Code, in particular the cost allocation assessment and the comparison with the methodology defined in Article 8 of the Tariff Network Code. The matters to be consulted under Article 28 are presented in chapter 7, while chapter 8 provides a brief overview of other European documents relevant to tariff-setting.

Finally, ERSE is currently developing a study, together with the national regulatory authority in Spain (CNMC, *Comisión Nacional de los Mercados y la Competencia*), regarding the role of tariffs in the integration of the gas markets in Spain and Portugal[3]. As mentioned in the work programme of the Southern Regional Gas Initiative, the study must evaluate a set of options, including the elimination of the tariff at the interconnection point between Portugal and Spain and the application of a common reference price methodology for transmission tariffs in both countries. The next periodic consultation to be carried out by ERSE will benefit from the conclusions of this joint study.

Forms of participation

The public consultation will remain open until 4 December 2023, for participants to send responses to the proposal presented by ERSE.

Responses can be sent by email or post to the following contacts, identifying the consultation to which you respond by entering the consultation number in the subject of the message and in any attached documents (Example: Subject: CP 117 or Public consultation 117):

- E-mail: consultapublica@erse.pt
- Postal address: Rua D. Cristóvão da Gama 1, 3rd floor, 1400-113 Lisboa

ERSE will take all responses into account when preparing its motivated decision. Along with the approval and publication of the motivated decision, ERSE will also provide a report identifying the issues that gave rise to comments, providing a justified reaction to the same and indicating, whenever possible, whether or not they were considered in the motivated decision.

Your response will be made publicly available, unless you explicitly request confidentiality, and you must:

[3] Deliverable foreseen in the work programme of the South Gas Regional Initiative (SGRI) for the two-year period 2021-2022 (section on 'Target 2').

- confirm whether you are sending elements whose disclosure is restricted, in which case you must also make a public version available;
- send your response in a separate document that does not contain any personal data, in order to protect the sender's personal data.

Legal disclaimer

This document is published in Portuguese and English. In case of different interpretations, the Portuguese version prevails.

2 CURRENT TARIFF STRUCTURE

Pursuant to the ERSE Gas Tariff Code (RT) [4], the tariff for the use of the transmission network (transmission tariff) must provide the Transmission System Operator (TSO) with allowed revenues from its gas transmission activity, recovering the costs of operation, development and maintenance of the networks [5].

2.1 DESCRIPTION OF THE NATIONAL TRANSMISSION NETWORK

The national gas transmission network (RNTG), presented in Figure 2-1, consists of two axes: a north-south axis that connects the interconnection with Spain at Valença do Minho with the Liquefied Natural Gas (LNG) terminal in Sines, and an east-west axis that connects the interconnection with Spain at Campo Maior with the coast, passing close to the underground storage in Carriço. In 2013, the connection between two sections that ended in Mangualde and Guarda was completed, resulting in a circular section. Table 2-1 characterises the RNTG.

Table 2-1 - Characterisation of the RNTG, as of 31 December 2022

Length of the gas pipelines, in km	1375
Diameter of the gas pipelines, in mm	150 – 800
Gas Regulating and Measurement Stations (GRMS), in no.	86
Block Valve (BV), in no.	44
Custody Transfer Station (CTS), in no.	2
Branch station (ICJCT), in no.	5
Junction Station (JCT), in no.	66

Source: Data Hub (REN).

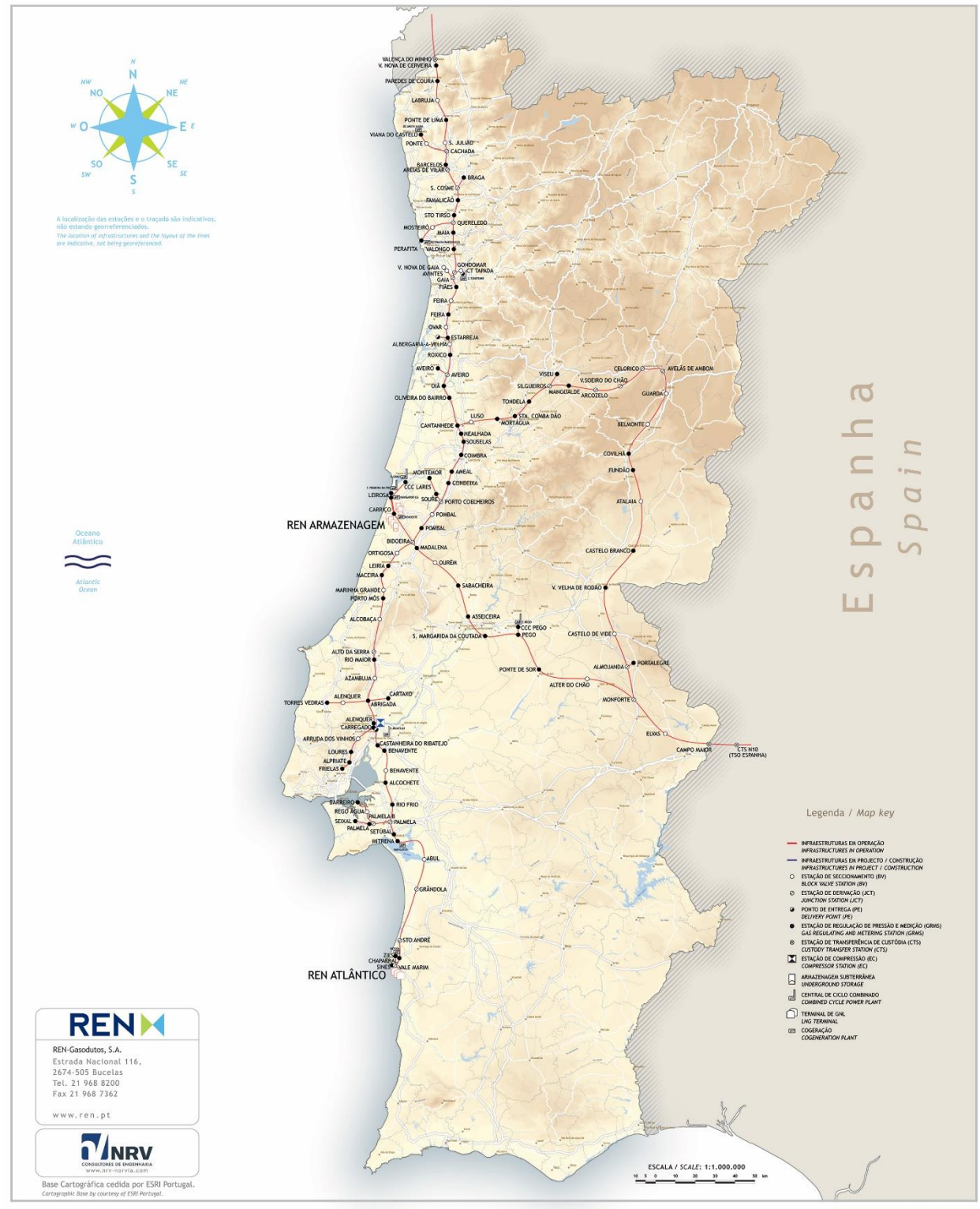
[4] Approved by Regulation no. 825/2023 of 28 July.

[5] The current methodology for determining the annual value of the allowed revenues of the TSO is described in the document "Parameters for the regulatory period 2024-2027" (only in Portuguese). The determination of the allowed revenues for the gas year 2023 2024 is provided in the document "Allowed revenues and adjustments for the gas year 2023-2024 for the regulated companies of the gas sector" (only in Portuguese).

The RNTG, which operates with a pressure level above 20 bar [6], currently has a length of 1 375 km, has gas pipelines with diameters between 150 and 800 mm and includes 86 Gas Regulating and Measurement Stations, among other network assets.

[6] Pursuant to the "Manual of Procedures for the Global Technical Management of the National Gas System" (only in Portuguese), the maximum operational pressure in the RNTG is 84,0 barg.

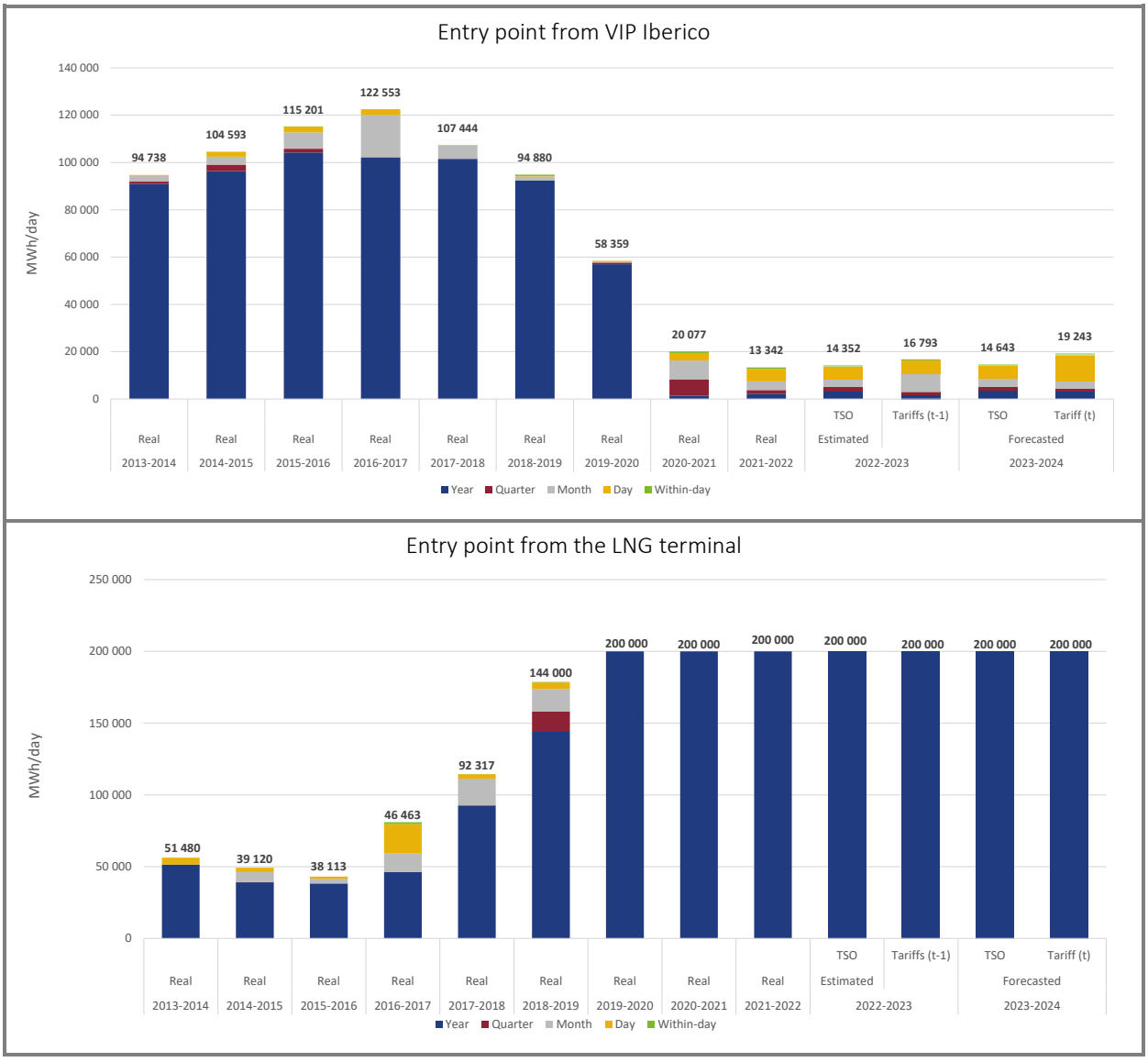
Figure 2-1 - Diagram of the national gas transmission network



Source: Data Hub (REN). Information presenting the situation as of end-2022.

Figure 2-2 shows the booking of firm capacity at the entry points from the Iberian Virtual Interconnection Point (VIP Iberico) and the LNG terminal, highlighting the change in the gas import profile, with the LNG terminal taking on a more important role since gas year 2018-2019.

Figure 2-2 - Booking of firm capacity in the RNTG, by entry point



Source: Characterisation of gas demand for the gas year 2023-2024 (ERSE, only in Portuguese), June 2023. Includes real data until gas year 2021-2022.

At the beginning of September 2023, ERSE issued its opinion [7] on the indicative ten-year development and investment plan for the National Transmission Network, Storage Infrastructures and LNG Terminals for the period 2024-2033 (PDIRG 2023) presented by the operator of the national gas transmission network. ERSE's opinion was preceded by a public consultation and should be considered in the final version of PDIRG 2023, to be approved by the member of the Government responsible for the energy sector, in line with Article 87 of Decree-Law no. 62/2020 of 28 August, in the current wording.

It is not expected that any significant investments will be made within five years (the deadline set by the Tariff Network Code for a new periodic public consultation process) that will have an impact on the analysis carried out in the present document.

[7] https://www.erse.pt/media/eb1k0u0a/parecer-%C3%A0-proposta-de-pdirg-2023-hp.pdf (only in Portuguese).

2.2 TRANSMISSION TARIFF

The transmission tariff is applied by the TSO and distribution system operators (DSOs).

The transmission tariff applied by the TSO has an **entry-exit structure**, that is, users of the transmission network pay one price for the gas that enters the transmission network and pay another price for the gas that exits it [8]. The transmission tariff is applied by the DSOs to customers connected to the Medium Pressure (MP) and Low Pressure (LP) distribution networks. They must pay the transmission tariff since they use the RNTG upstream: the gas that reaches customers in MP and LP passes through the RNTG before entering the national gas distribution network (RNDG).

Table 2-2 summarises the application of the transmission tariff to the various RNTG users.

Table 2-2 - Summary on the application of the transmission tariff

	User of the transmission network	Applied by the TSO	Applied by the DSOs
Entry to the RNTG	VIP Iberico	Paid by market agents	*Not applicable*
	LNG terminal in Sines		
	Underground storage		
	Gas producers	Paid by gas producers	
Exit from the RNTG	VIP Iberico	Paid by market agents	
	LNG terminal in Sines		
	Underground storage		
	Distribution system operators	Value to be reflected in the clients at Medium Pressure and Low Pressure	
	Clients at High Pressure	Paid through the network access tariff	
	AGU (private ownership)		
Exit from the RNDG	Clients at Medium Pressure	*Not applicable*	Paid through the network access tariff
	Clients at Low Pressure		

[8] The entry-exit tariff structure has been applied in Portugal since the 2010-2011 tariff period.

2.2.1 APPLICATION BY THE TSO

The transmission tariff is applied by the TSO to its users at entry and exit points of the RNTG. Table 2-3 indicates for each point the billing variables of the transmission tariff applied by the TSO, as well as additional observations.

Table 2-3 - Transmission tariff applied by the TSO

	User of the transmission network	Billing variable (price unit)	Observation
Entry to the RNTG	VIP Iberico	Contracted capacity (EUR/kWh/day/day) or (EUR/kWh/h/h)	▪ Subject to capacity allocation processes (transmission tariff represents the reserve price) ▪ Price depends on the type of product (firm or interruptible capacity) and the time horizon (multi-year, annual, quarterly, monthly, daily or within-day)
	LNG terminal in Sines		
	Underground storage		
	Gas producers	Used capacity at injection (EUR/kWh/day/day)	▪ Not subject to capacity allocation processes
Exit from the RNTG	VIP Iberico	Contracted capacity (EUR/kWh/day/day) or (EUR/kWh/h/h)	▪ Subject to capacity allocation processes (transmission tariff represents the reserve price) ▪ Price depends on the type of product (firm or interruptible capacity) and the time horizon (multi-year, annual, quarterly, monthly, daily or within-day)
	LNG terminal in Sines		
	Underground storage		
	Distribution system operators	Used capacity (EUR/kWh/day/day)	▪ The DSO passes on the transmission tariff through the network access tariff to customers connected at MP and LP
	Clients at High Pressure		▪ Included in the network access tariff ▪ Available in different tariff options [9]
	AGU (private ownership)		▪ Included in the network access tariff applied to AGU (private ownership) [10]

In the case of the **contracted capacity** variable, the price approved by ERSE for the transmission tariff corresponds to the reserve price in the capacity allocation processes, in the form of capacity auctions. Depending on the demand and supply conditions of these auctions, a final price equal to or higher than the

[9] In the tariff options, the billing variable is a concept similar to capacity used.

[10] Due to restrictions in measuring the used capacity of these customers, the used capacity price is converted to an energy price, in euros per kWh.

reserve price may result. The difference between the final price and the reserve price is called the auction premium. It should also be noted that the value of capacity reserved by the market agent constitutes a right to use capacity with binding payment, regardless of actual use, for the annual, quarterly, monthly, daily and within-day time horizons. Use rights are also called capacity products, and are divided into firm capacity products and interruptible capacity products.

In the case of the variable **used capacity at injection**, the price approved by ERSE for the transmission tariff is applied to the value measured at the gas producer's installation as capacity at injection into the transmission network, applying to the maximum daily injection, measured in kWh/day, recorded in the last twelve months.

In the case of the variable **used capacity**, the price approved by ERSE for the transmission tariff is applied to the value measured at the consumer's installation (or at the RNTG's border points with the RNDG) for the use of the transmission network's exit capacity, applying as a default the maximum daily consumption, measured in kWh/day, recorded in the last twelve months. Exceptions to this application occur in additional tariff options for customers at High Pressure and in the case of Autonomous Gas Units (AGU) under private ownership[11]. The **tariff options** available to customers at High Pressure are characterised in Table 2-4 , with the “long usage” option corresponding to the default option.

[11] For deliveries to facilities supplied by AGU owned by customers, due to the impossibility of having a measurement for the concept of used capacity, ERSE converts the price of used capacity, applicable to customers at High Pressure, to an energy price, in EUR/kWh, according to a modulation factor published by ERSE.

Table 2-4 - Billing variables in the transmission tariff for clients at High Pressure, by tariff option

Tariff option	Billing variable	price unit
Long usage	Used capacity Maximum daily consumption, measured in kWh/day, recorded in the last twelve months, measured at the delivery point of the transmission network.	EUR/(kWh/day) per day
Annual flexible option	Annual base capacity The annual base capacity must be greater than or equal to the maximum daily consumption recorded in the winter months (from October to March) of the last twelve months, including the month to which the invoice refers.	
	Monthly additional capacity The monthly additional capacity for the summer months (April to September) corresponds to the difference between the maximum monthly capacity determined in the billing month and the annual base capacity.	
Monthly flexible option	Monthly capacity Maximum daily consumption, measured in kWh/day, recorded in the month of the invoice. Prices differ between the summer season (April to September) and the winter season (October to March).	
Daily flexible option	Daily capacity Daily consumption, measured in kWh/day, recorded in the month of the invoice. Prices differ between the summer season (April to September) and the winter season (October to March).	

The capacity prices for **flexible tariff options** are obtained by applying multiplicative factors[12] to the capacity price of the long usage tariff.

AUTONOMOUS GAS UNITS OWNED BY CUSTOMERS

Autonomous Gas Units (AGU) are storage systems (cryogenic reservoirs) for storing liquefied natural gas, other gases or gas mixtures, which can supply distribution networks or dedicated customers (customer-

[12] In the case of the annual flexible option, a multiplicative factor of 1,5 is applied to the monthly additional capacity. In the case of the monthly flexible option, multiplicative factors of 3,0 and 1,5 apply to the monthly capacity billed in the periods [October to March] and [April to September], respectively. In the case of the daily flexible option, multiplicative factors of 10,0 and 6,0 apply to the daily capacity billed in the periods [October to March] and [April to September], respectively.

owned AGU) in areas of the country where there is no gas network. The AGU are supplied by road using tanker trucks that fill up at the Sines LNG terminal.

The costs of tanker transport to supply customer-owned AGU are transferred by the AGU owner to the transmission network operator and are included in the calculation of the transmission network tariff. This results in a transmission tariff that is the same for all consumers, whether they are supplied via a network interconnected with the transmission network or via a customer-owned AGU.

Customer-owned AGU are considered a delivery point for the transmission network, and access is billed using a simplified billing rule that consists of applying a price in EUR/kWh to the quantity of energy delivered to the AGU, determined on the basis of the quantities of gas discharged. The quantity of energy delivered can be calculated on the basis of the weight or volume of the quantities discharged, without the need to install cryogenic measuring equipment.

The price in EUR/kWh of the network access tariff to be applied to installations supplied by customer-owned AGU results from the sum of the price of the use of the transmission network tariff and the price of the global use of the system tariff. The average price of the Transmission Network Use tariff results from the conversion of the respective capacities into energy, conditioned by a modulation factor published by ERSE.

2.2.2 APPLICATION BY THE DSOS

The payment to the DSOs of the transmission tariff by customers at MP and LP is neutral for the DSOs, as they transfer the entire value to the TSO through the payment of the transmission tariff applied by the TSO to the DSOs. Table 2-5 indicates the billing variables in the transmission tariff applied by the DSOs, as well as additional observations.

Table 2-5 - Transmission tariff applied by the DSOs

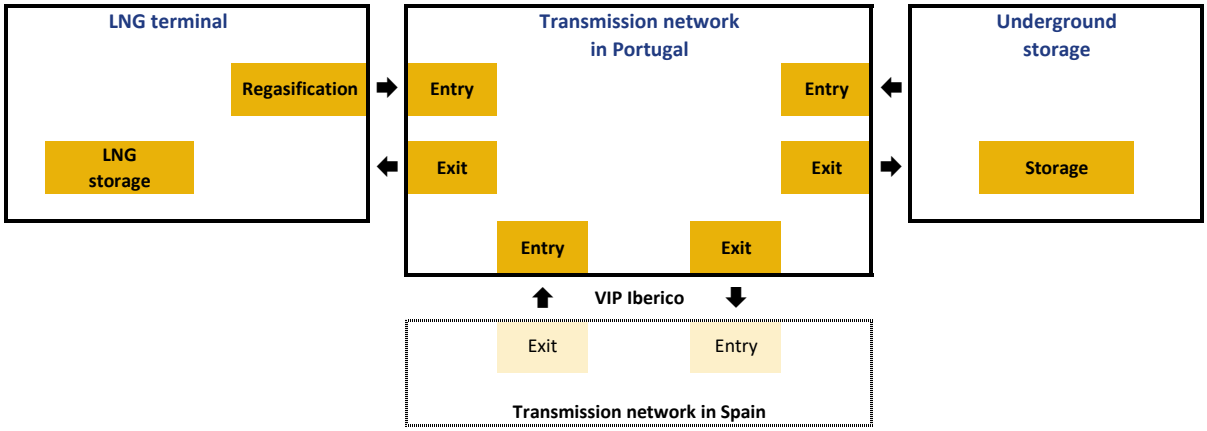
	User of the transmission network	Observation	Billing variable
Exit from the RNDG	Clients at Medium Pressure	▪ Included in the network access tariff ▪ Available in different tariff options	Energy EUR/kWh
	Clients at Low Pressure		

As can be seen in Article 75 of the ERSE Gas Tariff Code, the transmission tariffs to be applied by the DSOs to deliveries to customers result from the conversion, by applying adjustment factors for losses and self-consumption and are based on consumption profiles. For this reason, the price of the transmission tariff, in EUR/kWh, is different between MP and LP [13].

2.3 CAPACITY PRODUCTS

In the high pressure infrastructure of the national gas system (SNG) (LNG terminal, underground storage, entry and exit points of the transmission network to these infrastructures and international interconnection points), there is a capacity allocation model with binding reservation, through market mechanisms, subject to payment, regardless of its use. Figure 2-3 illustrates the capacity products in Portugal that arise from capacity allocation processes.

Figure 2-3 - Illustration of capacity products in Portugal



Legend: Capacity product in Portugal, whose reserve prices are approved by ERSE

Capacity product in Spain, whose reserve prices are approved by CNMC

At the LNG terminal, the two capacity products refer to LNG storage and regasification. In underground storage, the only capacity product is storage. In transmission, capacity products concern the entry and exit points of the RNTG with binding reservation, namely at the interface with the VIP Iberico, the LNG terminal

[13] The price of the transmission tariff is the same for all tariff options and consumption thresholds within the same pressure level.

and underground storage. As a complement, the figure also indicates the capacity products on the Spanish side of VIP Iberico, referring to the transmission network in Spain.

In addition to the individual capacity products in Figure 2-3 there are also '*bundle*' products, i.e. capacity products allocated jointly, called harmonised or grouped capacity products:

- '*Bundle*' products in VIP Iberico, which involve an entry point and an exit point for the transmission networks in Portugal and Spain, in both directions of gas transmission.
- '*Bundle*' product at the border of the transmission network with the LNG terminal, which involves the terminal's regasification service and entry into the transmission network.

Table 2-6 presents capacity products, of a firm and interruptible nature, in the RNTG.

Table 2-6 - Capacity products for the RNTG

Infrastructure	RNTG point		Capacity product
RNTG	Entry to the RNTG	VIP Iberico	Firm: A, Q, M, D, WD Interruptible: D, WD
		LNG terminal	Firm: A, Q, M, D, WD Interruptible: WD
		Underground storage	Firm: D, WD Interruptible: WD
	Exit from the RNTG	VIP Iberico	Firm: A, Q, M, D, WD Interruptible: D, WD
		LNG terminal	Interruptible: D, WD
		Underground storage	Firm: D, WD Interruptible: WD

Legend: A – annual, Q – quarterly, M – monthly, D – daily and WD – within-day.

The last column of Table 2-6 identifies the booking horizons (annual, quarterly, monthly, daily, within-day) available for firm and interruptible capacity products.

3 REFERENCE PRICE METHODOLOGY

Pursuant to the Tariff Network Code, transmission tariffs must be based on a reference price methodology.

The Tariff Network Code defines «**reference price methodology**» as the methodology applied to the part of the transmission services revenue to be recovered from capacity-based transmission tariffs with the aim of deriving reference prices (Article 3(2)). In turn, the network code defines as a «**reference price**» the price for a capacity product for firm capacity with a duration of one year, which is applicable at entry and exit points and which is used to set capacity-based transmission tariffs (Article 3(1)).

The reference price methodology used to determine entry and exit prices, as well as the pre-scaling prices that the methodology determines, were kept constant and the same as in the previous regulatory period, which covered the gas years 2019-2020 to 2022-2023.

With the implementation of the Tariff Network Code in 2019, ERSE began to determine the tariff for the use of the transmission network, to be applied by the transmission system operator, in accordance with the modified capacity weighted distance methodology, under the terms of Directive no. 8/2019, of 4 April. This methodology determines, each year, the prices for the transmission tariff at the entry and exit points of the transmission network. These prices result from the application of a multiplicative scaling factor to the pre-scaling prices at the entry points and a multiplicative scaling factor to the pre-scaling prices at the exit points in order to ensure that the allowed revenues are recovered, based on the forecasted capacity. Pre-scaling prices were held constant during the regulatory period (Article 2(9) of Directive no. 8/2019).

3.1 REFERENCE PRICE METHODOLOGY

The reference price methodology currently adopted and which ERSE continues to propose is called the **modified capacity-weighted distance methodology** (modified CWD [14] methodology). The designation of the methodology reflects the proximity to the capacity-weighted distance methodology (CWD methodology), defined in Article 8 of the Tariff Network Code, whose application is optional, but which must be presented for comparison purposes (in line with Article 26(1)(a)(vi) of the Tariff Network Code).

[14] Abbreviation for 'capacity weighted distance' (CWD).

There are two main reasons why ERSE introduced modifications to the CWD methodology described in the Tariff Network Code. On the one hand, the CWD methodology is restrictive, as it does not adequately reflect the economic value of the transmission network assets, using mainly distance as a cost driver. On the other hand, the use of forecasted capacity for the next tariff period disconnects the tariff calculation from the use of the technical capacity of the transmission network, making it impossible to define price signals for situations of capacity shortage. ERSE incorporates these two concerns through two parameters, namely the economic value factor and the commercial utilisation factor.

The economic value factor reflects for each entry-exit combination the use of transmission network assets from the economic point of view, by weighting the distances between an entry point and an exit point. In particular, a gas flow leaving the transmission network at a consumption exit point uses both gas pipelines, measured in kilometres, and the Gas Regulation and Metering Stations (GRMS). The economic value factor, which corresponds to a multiplicative factor, assumes a value greater than 100% for entry-exit combinations that use GRMS, in order to reflect the economic value of GRMS, and assumes a value equal to 100% for the entry-exit combinations that do not use GRMS.

The commercial utilisation factor reflects, for each entry point and each exit point, the proximity of the commercial capacity to the respective technical capacity. The closer the commercial capacity is to the technical capacity for a given point in the transmission network, the more likely it is that congestion situations will occur. The commercial utilisation factor, which corresponds to a multiplicative factor, will be determined by the ratio between the commercial capacity and the technical capacity of a given point.

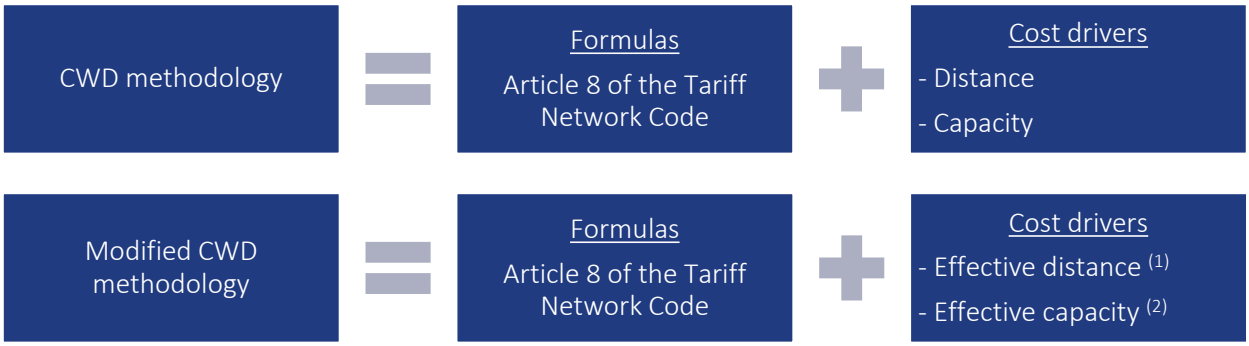
The two factors described are used to adjust the two cost drivers of the CWD methodology, distance and forecasted capacity. These adjustments give rise to two new concepts, namely effective distance and effective capacity.

The concept of effective distance allows reflecting investments in GRMS, which are only used by gas flows destined for HP customers and distribution networks. On the other hand, the concept of effective capacity makes it possible to identify points whose commercial use is closer to the technical capacity, allowing the price signal to be increased at these points and consequently identifying a higher probability of congestion situations.

3.1.1 CALCULATION METHODOLOGY

The modified CWD methodology consists in applying the concepts of effective distance and effective capacity [15] to the formulas of the CWD methodology, defined in Article 8 of the Tariff Network Code. Figure 3-1 presents, in a simplified illustration, the comparison between the CWD methodology and the modified CWD methodology. While both methodologies use the formulas in Article 8 of the Tariff Network Code, they are distinguished by the cost drivers used, namely by the fact that the modified CWD methodology uses effective distance and effective capacity as cost drivers.

Figure 3-1 - Illustration of the CWD and the modified CWD methodologies



Notes: (1) The effective distance (D^e) corresponds to the product between the distance (D) and the economic value factor (v), that is, $D^e=D\times v$. (2) The effective capacity (K^e) corresponds to the product between the capacity (K) and the commercial utilisation factor (f), that is, $K^e=K\times f$.

This section details the mathematical formulas for applying the modified CWD methodology.

The effective distance is equivalent to the distance between two points in the network, adjusted by a multiplicative factor that will be greater than 100% if the gas flow between these two points uses additional network assets that are not measurable in terms of distance, but rather in economic terms. The multiplicative factor will be greater than 100% for all entry-exit combinations that have HP clients or distribution networks as their exit point [16]. This multiplicative factor is called economic value factor. The expression to determine the effective distance is:

[15] With the exception of the expression for determining pre-equalisation prices, which will continue to use forecasted capacity, and not effective capacity.

[16] And equal to 100% in all other situations.

$$D^{e}_{i,j}=D_{i,j}\times v_{i,j}$$

Where:

$D^{e}_{i,j}$ – effective distance, measured in km, between an entry point i and an exit point j

$D_{i,j}$ – distance, measured in km, between an entry point i and an exit point j

$v_{i,j}$ – economic value factor, to be set by ERSE, for the path between an entry point i and an exit point j, to reflect the economic value of the assets of the transmission system being used

The effective capacity is equivalent to the forecasted capacity for each entry point and each exit point, corrected by a multiplicative factor that measures the utilisation of that point. For a point that is permanently utilised at its technical capacity, the multiplicative factor, known as the commercial utilisation factor, will be equal to 100%. For points whose utilisation is less than their technical capacity, the commercial use factor will be less than 100%, and determined by the ratio between commercial utilisation and technical capacity. The expressions to determine the effective capacity at entry points and exit points are:

$$K^{e}_{i}=K_{i}\times f_{i}$$

$$K^{e}_{j}=K_{j}\times f_{j}$$

Where:

K^{e}_{i} – effective capacity, measured in kWh/day, at entry point i

K_{i} – forecasted capacity, measured in kWh/day, at entry point i

f_{i} – commercial utilisation factor, to be set by ERSE, at entry point i

K^{e}_{j} – effective capacity, measured in kWh/day, at exit point j

K_{j} – forecasted capacity, measured in kWh/day, at exit point j

f_{j} – commercial utilisation factor, to be set by ERSE, at exit point j

Based on the values of the effective distance and effective capacity, the weighted average distances are determined for each entry point and for each exit point, using the following formulas, equivalent to the formulas used by the CWD methodology of the Tariff Network Code:

$$AD_i = \frac{\sum_{j=1}^{J} K_j^e \times D_{i,j}^e}{\sum_{j=1}^{J} K_j^e}$$

$$AD_j = \frac{\sum_{i=1}^{I} K_i^e \times D_{i,j}^e}{\sum_{i=1}^{I} K_i^e}$$

Where:

AD_i – weighted average distance, measured in km, for entry point i

K_j^e – effective capacity, measured in kWh/day, at exit point j

$D_{i,j}^e$ – effective distance, measured in km, between an entry point i and an exit point j

AD_j – weighted average distance, measured in km, for exit point j

K_i^e – effective capacity, measured in kWh/day, at entry point i

J – total number of exit points j

I – total number of entry points i

Once the weighted average distances have been calculated, the weight of cost for each entry point and each exit point is calculated. The weight of cost determines the proportion of revenue to be recovered at each entry and exit point. Here, it is also worth mentioning that the formulas presented are equivalent to the formulas of the CWD methodology of the Tariff Network Code. The expressions to determine the weight of cost at entry points and exit points are:

$$W_{c,i} = \frac{K_i^e \times AD_i}{\sum_{i=1}^{I} K_i^e \times AD_i}$$

$$W_{c,j} = \frac{K_j^e \times AD_j}{\sum_{j=1}^{J} K_j^e \times AD_j}$$

Where:

$W_{c,i}$ – weight of cost for entry point i

K_i^e – effective capacity, measured in kWh/day, at entry point i

AD_i – weighted average distance, measured in km, for entry point i

I – total number of entry points i

$W_{c,j}$ – weight of cost for exit point j

K_j^e – effective capacity, measured in kWh/day, at exit point j

AD_j – weighted average distance, measured in km, for exit point j

J – total number of exit points j

Given the values for the weight of cost for each network point, and given the entry-exit split between entry and exit points, the pre-equalisation prices for each point are determined. The expressions for determining pre-equalisation prices at entry points and exit points are:

$$T_i = \frac{W_{c,i} \times S_I \times R_{total}}{K_i}$$

$$T_j = \frac{W_{c,j} \times S_J \times R_{total}}{K_j}$$

Where:

T_i – pre-equalisation price resulting from the reference price methodology for entry point i

$W_{c,i}$ – weight of cost for entry point i

S_I – proportion of allowed revenues to be recovered across all entry points i

R_{total} – allowed revenues of transmission services, measured in euros, to be recovered from capacity-based transmission tariffs

K_i – forecasted capacity, measured in kWh/day, at entry point i

T_j – pre-equalisation price resulting from the reference price methodology for exit point j

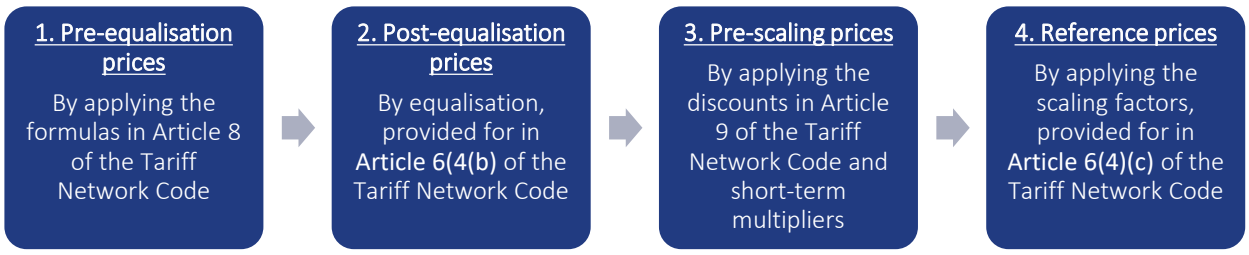
$W_{c,j}$ – weight of cost for exit point j

S_J – proportion of allowed revenues to be recovered across all exit points j

K_j – forecasted capacity, measured in kWh/day, at exit point j

Finally, the adjustments referred to in Article 6(4), the discounts provided for in Article 9 of the Tariff Network Code and the multipliers applicable to capacity products with a period other than the annual horizon apply to pre-equalisation prices. Firstly, the price equalisation resulting from Article 6(4)(b) is applied, which allows the equalisation of prices between points belonging to a homogeneous group of points. In this specific case, equalisation applies to the two interconnection points, forming VIP Iberico, and to the exit points for customers connected to the transmission network and to distribution networks. The resulting prices are called post-equalisation prices. Secondly, the discounts provided for in Article 9 and multipliers for a non-yearly capacity apply. The prices obtained are called pre-scaling prices. Finally, a multiplicative scaling factor is applied to the pre-scaling prices of the entry points and another multiplicative scaling factor to the pre-scaling prices of the exit points, in order to ensure that the allowed revenues are recovered, based on the forecasted capacities, maintaining the entry-exit split. The application of scaling factors is provided for in Article 6(4)(c) of the Tariff Network Code. Figure 3-2 summarises the different steps to determine reference prices in the modified CWD methodology.

Figure 3-2 – Steps for determining references prices according to the modified CWD methodology



3.1.2 DATA INPUT

This section presents the data input used to determine the indicative reference prices presented in section 6.1. The reference prices are indicative, as some of the information will necessarily be updated at the time of setting the transmission tariff for the gas year 2024-2025, which will be the first gas year in which the methodology will be applied under the terms proposed in this public consultation. Table 3-1indicates the source and year of the modified CWD methodology input data.

Table 3-1 – Input data to determine the indicative reference prices

Input data	Source of the information	Year of the information
Allowed revenues	Gas Tariffs	Forecast for gas year 2023-2024
Forecasted capacity (1)	Gas Tariffs	Forecast for gas year 2023-2024
Multipliers for non-yearly capacity products	Gas Tariffs	Forecast for gas year 2023-2024
Discounts	Gas Tariffs	Forecast for gas year 2023-2024
Entry-exit split	Motivated decision from 2019	Years 2010 to 2022
Economic value factor	Motivated decision from 2019	Years 2010 to 2022
Commercial utilisation factor	ENTSOG TP, TSO information and computations by ERSE	Years 2019 to 2022
Distance matrix	TSO information and calculations by ERSE	RNTG diagram of 31 December 2021
Capacity structure by domestic exit point	TSO information and calculations by ERSE	Years 2019 to 2021

Notes: (1) Includes products with firm and interruptible capacity and capacity used at domestic exit points.

The allowed revenues, the forecasted capacity, the multipliers for non-yearly capacity products and the discounts are the values available in the gas tariffs defined for the gas year 2023 2024[17]. For the purposes of applying the reference price methodology, capacity values are calculated using an equivalent capacity

[17] Information available at ERSE's webpage (only in Portuguese).

reference, in which the capacity value is multiplied by the respective multiplier, whenever a multiplier other than 1 is applicable [18].

The entry-exit split and the economic value factor correspond to the values defined in ERSE's 2019 motivated decision [19]. Since the RNTG has not presented investments expanding the network, these two parameters were kept unchanged.

The commercial utilisation factor resulted from a new analysis by ERSE, based on information from the ENTSOG Transparency Platform (ENTSOG TP) and the actual and forecast information of the TSO submitted within the scope of the information provision rules established by the regulator. The determination of the commercial utilisation factor is described in section 3.1.3.

The distance matrix and capacity structure per domestic exit point were determined based on information requested from the TSO. Compared to the 2019 motivated decision, instead of using a simplified RNTG diagram, the distance matrix is now based on the complete characterisation of the network, with four entry points and 89 exit points. Additionally, in order to accommodate the possibility of connections to the RNT by gas producers, the reference price methodology determines a reference price for these entry points assuming, in the absence of real information, that these producers are located close to underground storage [20].

3.1.3 COMMERCIAL UTILISATION FACTOR

As previously mentioned, the commercial utilisation factor reflects for each entry point and for each exit point the proximity of commercial capacity to the respective technical capacity, allowing the price signal to be increased at points where commercial utilisation is closer to technical capacity. The commercial utilisation factor is determined using the following expression:

$$f_k = K_k \div K_k^T$$

[18] This procedure ensures that the reference price to be determined by the reference price methodology does not depend on the structure of the capacity products.

[19] Information available at ERSE's webpage.

[20] With a post-equalisation price equivalent to the equivalent price, on an annual horizon, at the entry from underground storage.

Where:

f_k – commercial utilisation factor at the point of entry or exit k

K_k – commercial capacity, in kWh/day, at the point of entry or exit k

K_k^T – technical capacity, in kWh/day, at the point of entry or exit k

At points subject to capacity allocation processes, commercial capacity K_k corresponds to the contracted capacity in a firm capacity product. In the remaining points, without capacity allocation processes, the commercial capacity K_k corresponds to the used capacity, which is the billing variable for the network access tariff. Table 3-2 presents, for the two types of RNTG points, the sources of information used to determine commercial capacity K_k. In both cases, commercial capacity corresponds to the average value for the years 2019 to 2022.

Table 3-2 - Source of information for commercial capacity

Type of network point	Point of the RNTG	Source of information
Points subject to capacity allocation processes	Entry: VIP Iberico, LNG terminal, Underground storage Exit: VIP Iberico, LNG terminal, Underground storage	Average value of booked firm capacity in the years 2019 to 2022. Information available on the ENTSOG Transparency Platform.
Points not subject to capacity allocation processes	Exit: HP customers, DSOs	Average value of used capacity in the years 2019 to 2022. Information reported to ERSE within the reporting requirements, based on actual and forecasted information.

Table 3-3 and Table 3-4 detail the calculation of the commercial utilisation factor at the entry and exit points, respectively. In addition to presenting the value for the period from 2019 to 2022, the value for each of these years is also presented.

Table 3-3 - Computation of the commercial utilisation factor at entry points

	VIP Iberico	LNG terminal	Underground storage
	Technical capacity		
	GWh/day		
Years 2019-2022	**144,00**	**200,00**	**85,68**
	Commercial capacity		
	GWh/day		
Year 2019	85,95	189,31	8,58
Year 2020	51,92	200,00	13,24
Year 2021	16,79	200,00	14,61
Year 2022	18,69	200,00	8,55
Years 2019-2022	**43,34**	**197,33**	**11,25**
	Commercial utilisation factor		
	%		
Year 2019	59,7%	94,7%	10,0%
Year 2020	36,1%	100,0%	15,5%
Year 2021	11,7%	100,0%	17,1%
Year 2022	13,0%	100,0%	10,0%
Years 2019-2022	**30,1%**	**98,7%**	**13,1%**

Table 3-4 - Calculation of the commercial utilisation factor at exit points

	VIP Iberico	LNG terminal	Underground storage	Domestic exits
	Technical capacity			
	GWh/day			
Years 2019-2022	**80,00**	**0,00**	**24,00**	**613,23**
	Commercial capacity			
	GWh/day			
Year 2019	7,08	0,00	11,27	288,06
Year 2020	8,77	0,00	10,49	298,47
Year 2021	12,72	0,00	17,32	334,93
Year 2022	17,67	0,00	11,63	301,49
Years 2019-2022	**11,56**	**0,00**	**12,68**	**305,74**
	Commercial utilisation factor			
	%			
Year 2019	8,9%	0,0%	47,0%	47,0%
Year 2020	11,0%	0,0%	43,7%	48,7%
Year 2021	15,9%	0,0%	72,2%	54,6%
Year 2022	22,1%	0,0%	48,4%	49,2%
Years 2019-2022	**14,5%**	**0,0%**	**52,8%**	**49,9%**

Table 3-5 presents the values of the commercial utilisation factor adopted in the modified CWD methodology, by entry point and exit point, based on the results for the period from 2019 to 2022.

Table 3-5 - Commercial utilisation factor at entry and exit points

	Entry	Exit
VIP Iberico	30,1%	14,5%
LNG terminal	98,7%	0,0%
Underground storage	13,1%	52,8%
Gas producers	13,1%	-
Domestic exits	-	49,9%

Notes: Based on the average value of commercial capacity in the years 2019 to 2022.

Finally, the arguments that led ERSE to replace the physical utilisation factor[21] with the commercial utilisation factor in the modified CWD methodology are presented below. Both parameters correspond to a ratio whose denominator is technical capacity: while the first used a measure of physical gas flows in the numerator, the second uses the concept of commercial capacity. There are two arguments for the change.

Firstly, the use of commercial capacity represents a methodological improvement, as it uses the two concepts of capacity [22] used for billing the transmission tariff in Portugal, which ultimately will be used to determine the capacity-based prices of the tariff. The previous parameter, when considering physical gas flows, is closer to an energy concept. Secondly, the change improves the coherence of the effective capacity variable. As the effective capacity is now equal to the product between the forecasted capacity, which necessarily corresponds to the commercial dimension, and the commercial utilisation factor, the effective capacity now has a solely commercial nature. Previously, the effective capacity variable simultaneously combined commercial and physical perspectives, thus making its interpretation more difficult.

It is also worth noting that the measure used in the numerator of the commercial use factor corresponds to the average value for the years 2019 to 2022, which is equivalent to the duration of the regulatory period in Portugal. The use of the average value over a period of four years proves to be less volatile, and therefore more suitable for guaranteeing tariff stability, than a concept oriented towards a certain percentile, as was

[21] The physical utilisation factor, in the 2019 motivated decision, corresponded to the ratio between a measure for the most relevant physical gas flows and the respective technical capacity, both measured in kWh/day. Specifically, the measure of physical flows corresponded to the average value of daily natural gas flows on the 10% of days with the highest value for a period of 3 years. More information can be found in section 3.2 of Motivated Decision of 2019.

[22] At points subject to capacity allocation processes, commercial capacity corresponds to the booked capacity in a firm capacity product. In the remaining points, without capacity allocation processes, commercial capacity is equivalent to the used capacity used, which is the billing variable for the network access tariff.

the case with the 2019 motivated decision. This has become particularly evident in recent years with the change in the dominant entry point from VIP Iberico to the LNG terminal.

3.1.4 DISTANCE MATRIX

The distance matrix was determined based on information requested from the TSO, namely on the lengths of the various gas pipelines and on the existence of unidirectional gas pipelines. Based on this information, ERSE classified the various network segments into primary and secondary gas pipelines, in addition to identifying gas pipelines that should not be included in the calculation of the distance matrix, as they are beyond the GRMS. Table 3-6 presents a summary of the classification of gas pipelines.

Table 3-6 – Classification of the gas pipelines of the RNTG

Primary pipelines	1 117,124 km
Secondary pipelines	248,999 km
Pipelines beyond the GRMS	8,990 km
TOTAL	**1 375,113 km**

Primary pipelines correspond to segments required to transport gas to and from interconnection points, the LNG terminal, underground storage and other possible entry points, with all of these pipelines classified by the TSO as bidirectional pipelines. Secondary gas pipelines correspond to the segments that transport gas from central gas pipelines to GRMS, with all of these pipelines classified by the ORT as unidirectional gas pipelines.

Therefore, for the purposes of the reference price methodology, the distance matrix was determined exclusively from the primary and secondary gas pipelines, totalling 1 366,123 km in length. To obtain the distance matrix, an algorithm[23] was applied to minimise the distance required for each route between an entry point and an exit point[24].

[23] Applied through the statistical programme R.

[24] To execute the algorithm, it was necessary to include instrumental distances of 1 meter at some overlapping points. The lengths presented in Table 3-6 include a total of 13 meters of instrumental distances. More specifically: the primary gas pipelines include 4 segments of instrumental distances, totalling 4 meters; secondary gas pipelines include 9 segments of instrumental distances, totalling 9 meters.

3.1.5 UPDATE FREQUENCY OF THE REFERENCE PRICES

For each gas year, reference prices will be recalculated according to updated information on allowed revenues, forecasted capacity and the distance matrix. Additionally, reference prices may also vary depending on applicable multipliers and discounts. Therefore, each gas year the various prices indicated in Figure 3-2 will be updated.

The remaining data input will be kept constant until a new periodic consultation on the reference price methodology, namely the following parameters: entry-exit split, economic value factor and commercial utilisation factor.

3.2 COMPLIANCE WITH THE EUROPEAN REGULATORY FRAMEWORK

This section assesses whether the reference price methodology to be applied in the calculation of transmission tariffs in Portugal complies with the requirements of Article 7 of the Tariff Network Code and of Article 13 of Regulation (EC) 715/2009.

Pursuant to Article 7 of the Tariff Network Code, a set of requirements must be met, namely: (i) to enable network users to reproduce the calculation of reference prices; (ii) to take into account the actual costs incurred for the provision of transmission services (considering the level of complexity of the transmission network); (iii) to ensure non-discrimination and to prevent undue cross-subsidisation; (iv) to ensure that significant volume risk related to gas transits is not assigned to final customers; and (v) to ensure that the resulting reference prices do not distort cross-border trade.

Pursuant to Article 13 of Regulation (EC) 715/2009, which concerns tariffs for access to networks in the natural gas sector, thus covering transmission tariffs, tariffs (or the methodologies used to calculate them) shall be "(i) transparent, take into account the need for system integrity and its improvement and reflect the actual costs incurred;" (ii) shall be "applied in a non-discriminatory manner;" (iii) shall "facilitate efficient gas trade and competition, while at the same time avoiding cross-subsidies between network users and providing incentives for investment and maintaining or creating interoperability for transmission networks;" and (iv) "shall neither restrict market liquidity nor distort trade across borders of different transmission systems".

In ERSE's understanding, the reference price methodology adopted meets the above requirements. Firstly, the reference price methodology is simple enough and well documented to be transparent, allowing users to reproduce calculations by the system users. The availability of a simplified tariff model in Excel contributes to this objective and allows estimating the evolution of transmission tariffs until the end of the regulatory period.

On the other hand, the methodology considers the real costs of the transmission activity, by taking into account the complexity of the transmission network. Compared to the 2019 motivated decision, which was based on a simplified diagram of the transmission network, this proposal applies the reference price methodology to the actual network diagram[25]. This change contributes to the definition of cost drivers based on the actual characterisation of the network, therefore constituting an improvement.

Secondly, the use of a single methodology to allocate all allowed revenues of the TSO contributes to non-discrimination and the absence of cross-subsidisation. The results of the cost allocation assessment confirm the absence of cross-subsidisation between intra-system and cross-system uses[26].

Thirdly, although the allocation of the volume risk of gas transits to final consumers is not a real concern for Portugal when compared to other Member States, since cross-border flows represent residual values for Portugal, this requirement is met. The cost allocation assessment determines that revenues from cross-system use represent 5% of the TSO's allowed revenues, considering the indicative reference prices in chapter 6 [27].

Lastly, cross-border trade is promoted through reference prices that encourage an efficient use of the transmission network, through the price signal applied at each entry and exit point, particularly in the case of VIP Iberico. Taking into account the analysis of the indicative reference prices in chapter 6, the following observations can be made regarding the reference prices applicable to VIP Iberico:

[25] While the simplified network diagram, used since 2019, considered a total of seven clusters of exit points for national consumption, the current network diagram, used now and reflected in the distance matrix, considers a total of 85 exit points for national consumption.

[26] Based on the result obtained for the case in which capacity and distance are used as cost drivers. See section 6.4.

[27] The information published within the scope of transmission tariffs transparency shows that this value has been lower in the past, assuming values of 0,7% and 2,9% for gas years 2021-2022 and 2022-2023, respectively.

- Compared to other possible approaches [28], the update of the reference price methodology ensures lower prices in both directions at VIP Iberico, avoiding the risk of contributing to the 'tariff pancaking' [29] issue. The adoption of any of the other methodologies presented would always increase reference prices in the VIP Iberico, in both directions, contradicting the objective of greater integration of the Portuguese and Spanish markets, requiring a gradual reduction in tariffs at the interconnection of the two countries.
- Compared to the tariffs approved for the gas year 2023-2024, the update of the reference price methodology increases the reference prices applicable at the point of exit to VIP Iberico and at the point of entry from the LNG terminal, contradicting arguments that the tariff structure seeks to favour the export of gas to Spain from the LNG terminal [30].

3.3 INJECTION OF RENEWABLE OR LOW-CARBON GASES

Decree-Law 62/2020 of 28 August introduced, among other changes, a new activity in the gas sector, requiring a regulatory review [31] of the ERSE Gas Tariff Code [32] to ensure the adaptation of the tariff rules for the injection of renewable or low-carbon gases into the gas transmission and distribution networks.

As a result, the ERSE Tariff Code was revised to define the tariff system applicable to the injection of renewable gases into the gas transmission and distribution networks. In gas year 2021-2022, a price applicable to gas producers' deliveries to the transmission network was published for the first time, in EUR/(kWh/day)/day, applied to the utilised injection capacity [33], i.e. the maximum daily injection over the last twelve months.

[28] The other approaches analysed are: CWD methodology with a 50/50 entry-exit split; CWD methodology with a 28/72 entry-exit split; and, postage stamp methodology with a 28/72 entry-exit split.

[29] 'Tariff pancaking' refers to the accumulation of transmission tariffs paid by cross-border flows of natural gas: since gas flows pay entry and exit tariffs each time it moves across entry-exit systems, a cross-border flow has to pay entry and exit tariffs of the various transmission networks it crosses. Several market players consider this accumulation excessive.

[30] The sum of the reference prices applied at the entry point from the LNG terminal and at the exit point to VIP Iberico changes with the update of the reference price methodology from 0,1040 to 0,1491 EUR/kWh/day/year. This variation represents a relative increase of 43,4% compared to the price structure in force in the gas year 2023-2024.

[31] ERSE's public consultation No. 96.

[32] Regulation no. 368/2021, Of 28 April.

[33] The billing variable is the capacity used for injection, since the intention is not to apply a capacity reservation system to the injection of these gases.

In fact, the use of the transmission network tariff applied by the TSO presents entry and exit prices for the transmission network. Entry points include VIP Iberico, the LNG terminal at Sines, underground storage at Carriço and gas producers connected to the transmission network.

Since the tariff structures applied to transmission (entry-exit model) and distribution (exit model) are objectively different, no price is applied to the injection of renewable or low-carbon gases when the injection takes place in the distribution network.

In Spain, entry prices are also applied to gas producers only when injection takes pl ace in the transmission network. The injection of renewable or low-carbon gases into local networks [34] in Spain benefits from a tariff exemption, via Circular 6/2020 of 22 July.[35]

Taking into account the preparation of the 4th European Gas Package, which will probably address tariff issues for the injection of gas from renewable or low-carbon sources, it is considered more prudent to wait for the new European framework to possibly revisit this issue.

3.4 ALLOCATION OF COSTS FROM SECONDARY PIPELINES AND GRMS

In ERSE's public consultation No. 66, the investments in the transmission network between 2010 and 2022, at constant prices of year 2019, resulted in the following average structure by type of network asset: primary pipelines (56%), secondary pipelines (20 %) and GRMS (24%).

Considering that secondary pipelines and GRMS are assets that can potentially be considered as regional network assets, which are only intended for intra-system use, the ERSE methodology introduced two modifications to address this situation.

Firstly, the choice of the entry-exit split of 28/72 reflects an equal distribution of the value equivalent to primary gas pipelines between entry and exit points and an allocation exclusively to exit points of the value equivalent to secondary gas pipelines and GRMS. Primary gas pipelines represent the main infrastructure of the transmission network, connecting the various entry points directly to GRMS or secondary pipelines

[34] The concept of "local networks" in Spain is equivalent to the concept of "distribution networks" in Portugal, since local networks in Spain cover networks that are not subject to the application of Commission Regulation (EU) 2017/460 of 16 March.

[35] https://www.cnmc.es/sites/default/files/3074982_6.pdf

in HP. Since any entry point or exit point uses primary gas pipelines, it is considered that these must be allocated in equal proportions to the entry points and exit points, resulting in weights of 28% for each set of points. The remaining assets of the transmission network (secondary gas pipelines and GRMS), which represent on average 44% of investments in the transmission network, are assets that must be allocated exclusively to exit points. Therefore, a proportion of 44% of the allowed revenue to be recovered each year must be attributed exclusively to exit points. Therefore, this rationale results in the entry-exit split of 28/72.

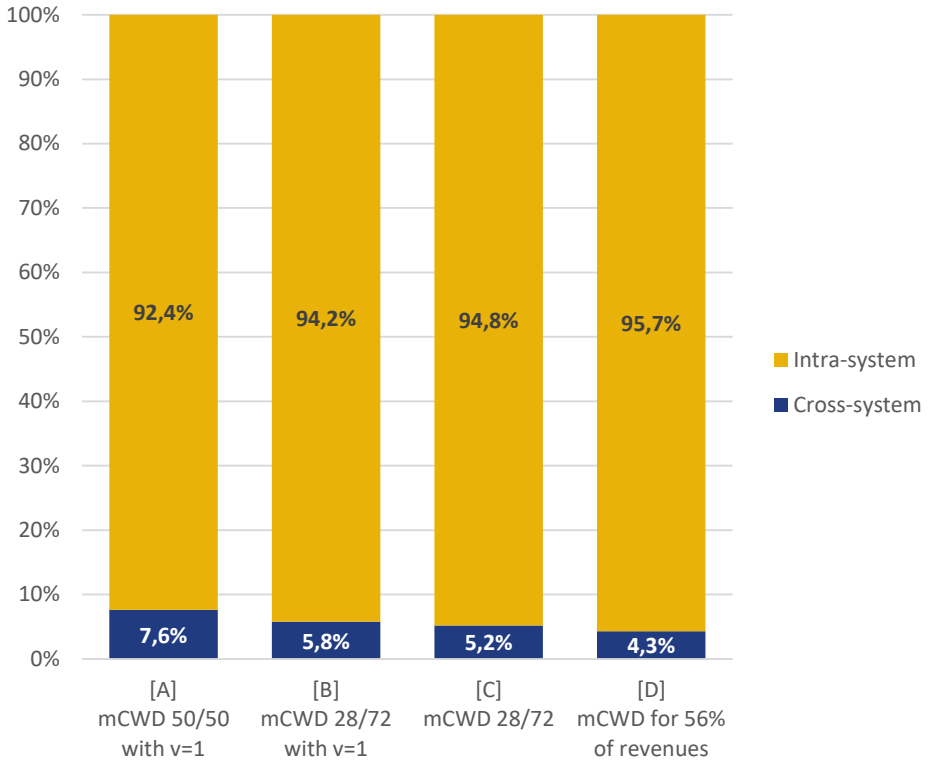
Secondly, the introduction of the economic value factor aimed to allocate the value equivalent to GRMS exclusively to exit points for national consumption. The economic value factor of 131,6%, to be applied to combinations of entry-exit points that use GRMS, results from the fact that GRMS represent, on average, 24% of investments in the national transmission network. Therefore, compared to primary and secondary gas pipelines, which represent the remaining 76%, the use of GRMS represents an additional value of 31,6% (24% ÷ 76%).

Figure 3-3 illustrates the distribution of revenues between intra-system and cross-system uses [36], for different methodological approaches. The first approach [A] corresponds to the case in which the reference price methodology does not reflect the two previously mentioned modifications to improve the allocation of costs of regional network assets, that is, it corresponds to a case in which the entry-exit split is 50/50 and the economic value factor assumes a neutral value, that is, a value that is always 100%. The second approach [B] corresponds to the case in which the reference price methodology reflects only one of the two modifications mentioned, namely the entry-exit split of 28/72. The third approach [C] corresponds to the case in which the reference price methodology reflects both modifications, that is, with an entry-exit split of 28/72 and the economic value factor reflecting the GRMS value for the combinations of entry-exit points using GRMS. Finally, the fourth approach [D] corresponds to the case in which the reference price methodology only applies to 56% of the allowed revenues [37], the value corresponding to the primary gas pipelines, and the remaining value is allocated through a uniform capacity price applied only to the exit points to national consumption.

[36] This separation follows the assumptions adopted in the cost allocation assessment, in accordance with Article 5 of the Tariff Network Code.

[37] In this case with an entry-exit split of 50/50 and the economic value factor assuming a neutral value, that is, a value that is always equal to one.

Figure 3-3 - Distribution of revenues between intra-system and cross-system uses, for different approaches



Notes: **[A]** Modified CWD methodology with a 50/50 entry-exit split and unitary values for the economic value factor. **[B]** Modified CWD methodology with an entry-exit split of 28/72 and unitary values for the economic value factor. **[C]** Modified CWD methodology with an entry-exit split of 28/72 and the economic value factor equal to 1.316 for entry-exit point combinations using GRMS. **[D]** Modified CWD methodology applied to only 56% of the allowed revenues, with the remaining amount allocated to exit points for national consumption through a uniform capacity price.

Approach [D] thus reflects an outcome in which the reference price methodology is only applied to assets that are not considered to be regional network assets, with the remaining value being allocated separately through a uniform capacity price. As can be seen, the two modifications introduced in the modified CWD methodology help to bring the distribution of revenues between intra-system and cross-system uses closer to the distribution suggested by approach [D]. Hence, the methodology proposed by ERSE in this consultation, in approach [C], which incorporates the two aforementioned modifications, represents a reasonable approximation to the distribution that could be obtained by separating regional network assets.

4 ALLOWED REVENUES FOR THE TRANSMISSION SYSTEM OPERATOR

The gas transmission activity consists of transporting gas through the interconnected high-pressure network, connecting the SNG entry points to the SNG exit points, namely to large customers directly connected to the transmission network (power stations and industrial customers) and to the distribution networks that are interconnected to the high-pressure network.

The RNTG is operated by REN Gasodutos, under a public service regime and is subject to regulation by ERSE. Revenues from the gas transmission activity are recovered by applying the tariff for use of the transmission network under the terms defined in the ERSE Gas Tariff Code.

The information presented in this chapter is based on the values set by ERSE for gas tariffs in force in the gas year 2023-2024. This gas year marks the beginning of a new regulatory period for this sector, which runs from 2024 to 2027. The regulation parameters and methodologies reflect the objectives set out in the ERSE Gas Tariff Code, namely ensuring the economic sustainability of regulated activities in the gas sector, in a context of decarbonisation of economic sectors and energy transition.

4.1 ALLOWED REVENUES FOR THE GAS TRANSMISSION SYSTEM OPERATOR

The transmission system operator's (TSO) allowed revenues[38] for the gas year 2023-2024 and the percentage variation compared to the previous gas year are shown in the table below.

Table 4-1 - Revenues to be recovered by the Transmission System Operator

Art. 30 (1)(b)(i) Allowed or target revenue, or both, of the transmission system operator	70 874 364 € (revenues recovered)
Art. 30 (1)(b)(ii) Information related to changes in the revenue referred to in point (i) from one year to the next year	196,4% (change of annual revenues recovered compared with gas year 2022/2023)

[38] Article 30 (1)(B)(I,II) Commission Regulation (EU) 2017/460 of 16 March 2017.

The large variation that occurred when comparing the level of revenues for 2023-2024 with the allowed revenues for 2022-2023 was due to the lower level of adjustments that occurred in the allowed revenues for 2021 and 2022, which according to the ERSE Gas Tariff Code integrate the allowed revenues for each year. The final adjustments to the allowed revenues for year s-2 are taken into account in tariffs two years after they occur. These adjustments represent the difference between the operator's invoiced revenues in year s-2 and the allowed revenues calculated with audited real values. The estimated adjustment for year s-2 that was taken into account in the previous year's tariffs is deducted from this value. The s-1 adjustments are taken into account in the following tariffs and represent the difference between estimated invoicing and the best estimate of allowed revenues[39], both for the year s-1. The adjustments considered in the TSO allowed revenues for the gas year 2023-2024 are around 0,8 million euros in favour of consumers, while in the previous year they were 38,5 million euros, also in favour of consumers. This high level of adjustments was due to the reimbursement to the tariff of amounts received by the TSO relating to premiums received from a capacity allocation auction[40]. It should be noted that the s-1 adjustments are not included in 2023-2024 allowed revenues.

4.2 ALLOWED REVENUE PARAMETERS

This chapter presents the parameters applied to the calculation of the allowed revenues for the gas transmission activity, as established in Article 30 (1)(b)(iii) of Commission Regulation (EU) 2017/460 of 16 March. The structure of the information, which follows the ACER Recommendation[41], is divided in the following topics:

1. Description of the methodology for calculating the allowed revenues
2. Values and parameters
3. Values and costs of expenses used to calculate allowed revenues or the forecast of allowed revenues.

Table 4-5 (Annex A) and Table 4-6 (Annex B) also provide detailed information on asset depreciation.

[39] The inclusion of the provisional adjustments for year s-1 in the allowed revenues for gas year t is subject to prior annual assessment of the resulting tariff impacts.

[40] Further detailed in section 4.3.

[41] «The internal gas market in Europe: The role of transmission tariffs», ACER, April 2020, page 71.

Table 4-2 - Methodology for regulating the gas transmission activity in the 2024 to 2027 regulatory period

Art. 30 (1)(b)(iii) **(1) A description of the methodology, including at least a description of:**	
(a) The overall methodology, such as revenue-cap, hybrid, cost-plus or tariff benchmarking;	A price cap methodology is applied to operational expenditures, with a fixed part and a variable amount indexed to the evolution of physical variables. For CAPEX, a rate-of-return type methotodology is applied. Allowed revenues are adjusted every two years, based on real audited values of the costs and the incomes.
(b) The methodology to set the regulated asset base;	The regulated asset base consists of the average value of assets net of investment subsidies and amortisations and depreciations. The value of works in progress are not considered in the regulated asset base.
i. Methodologies to determine the initial (opening) value of the assets;	For the first regulatory period (2007) the RAB was re-evaluated by the government (ICR).
ii. Methodologies to re-evaluate the assets;	No revaluation of assets (ICR).
iii. Explanations of the evolution of the value of the assets;	Assets grow annually by the addition of new assets and the deduction of asset write-offs and subsidies.
(c) The methodology to set the cost of capital;	In the gas year 2023-2024, the new regulatory period 2024-2027 begins. Gas TSO WACC is a pre-tax nominal. The calculation methodology for the cost of equity is the Capital Asset Pricing Model (CAPM) and the methodology for the cost of debt is the default spread. The WACC to be applied in the regulatory period 2020-2023 is indexed to the Portuguese 10 year bond benchmark and depends, in each year, on its evolution, with a cap (8,80%) and a floor (4,50%). The WACC to be applied in the regulatory period 2024-2027 is indexed to the Portuguese 10 year bond benchmark and depends, in each year, on its evolution, with a cap (7,40%) and a floor (3,10%).
(d) The methodology to determine the TOTEX or, if applicable, OPEX and CAPEX;	For OPEX, a price cap methodology is applied, with a fixed part and a variable part indexed to the evolution of physical variables (used exit capacity based on the daily maximum over a 12 month period and an annual efficiency target of 3% in 2023 and 2% for regulatory period 2024-2027). At the OPEX level, LNG transport costs by road are also considered. CAPEX is determined by the remuneration of the regulated asset base (WACC x RAB), plus amortisations and depreciation net of investment subsidies. Works in progress are not remunerated.
(e) The methodology to determine the efficiency of the cost, if applicable.	In order to set parameters for the gas transmission activity, the evolution of OPEX over the last few years is analysed. Based on this evolution, the regulatory cost base is reviewed, which aims to share efficiency performance with consumers. Based on the analysis carried out, it is also assessed whether the efficiency targets imposed on the company in the previous regulatory period are in line with the level of costs achieved, and depending on the result, the efficiency factors may be revised (for the regulatory period 2024-2027 the efficiency target to be applied to the gas transmission activity is 2% per year. In the regulatiory period 2020-2023 it was 3% per year). Finally, the relative position of the transmission system operator compared to other European peers in terms of efficiency, with emphasis on the work done to define the parameters for the 2024-2027 regulatory period, in collaboration with the CNMC. The position of the Portuguese operator compared to other operators is also assessed and monitored through participation in European benchmarking studies.

Table 4-3 - Parameters for calculating the gas transmission activity revenues for the gas year 2023-2024

(2) The values of the parameters:	
(a) Cost of equity and cost of debt or weighted average cost of capital in percentages;	Weighted average cost of capital: 2023: 5,69% 2024: 5,30% Values are revised ex-post, taking into account the evolution of the Portuguese 10-year bonds, as explained above - paragraph 1 c)
(b) Depreciation periods in years;	Depreciation rates have remained stable since gas year 2018/2019 . See table below (Annex A with average rates of depreciation by type of asset).
(c) Efficiency targets in percentages;	2023: 3% 2024: 2%
(d) Inflation indices;	2023: 5,8% 2024: 2,3%

Table 4-4 - Values of costs and expenditures that are used for setting the allowed revenues of the gas transmission activity for the gas year 2023-2024

Art. 30 (1)(b)(iii) **(3) The values of costs and expenditures that are used for setting the allowed or target revenue in the local currency and in Euro**	
(a) The regulated asset base per asset type;	503 103 479 € (net weighted average asset value)
(b) The depreciation per asset type;	See table below (Annex B with annual depreciation amounts by type of asset).
(c) The cost of capital;	56 539 319 €
(d) Operational expenditures.	21 606 016 €

Table 4-5 - Annex A: average depreciation rate by asset type

Asset type	**Average rate of depreciation**
Industrial property	5,26%
Linepack	4,94%
Land and Natural Resources	2,52%
Buildings and Other Construction	1,68%
Basic Equipment	2,84%
Transporte Equipment	13,90%
Tools and Utensils	6,38%
Office Equipment	6,63%
Other tangible fixed assets	1,65%

Table 4-6 - Annex B: annual depreciation values by assets type

Asset type	Average annual values of depreciation by assets type (gas year)
Industrial property	1 526 316 €
Linepack	668 286 €
Land and Natural Resources	1 951 515 €
Buildings and Other Constructions	342 513 €
Basic Equipment	29 991 886 €
Transporte Equipment	334 879 €
Tools and Utensils	100 811 €
Office Equipment	591 155 €
Other tangible fixed assets	27 510 €

4.3 CAPACITY ALLOCATION AUCTION PREMIUM

The mechanisms for allocating capacity on the National Transmission Network's infrastructure are set out in the ERSE Access to Networks, Infrastructures and Interconnections Code (RARII) [42] and the details of the allocation procedures are published in the ERSE Manual of Procedures for Access to Infrastructures (MPAI) [43]. Revenues obtained through premiums to the allocation of capacity are part of the remuneration for the use of infrastructure provided for in the ERSE Gas Tariff Code, namely revenues from the allocation of infrastructure capacity as a result of the application of capacity auction premiums.

The amounts relating to the capacity auction premiums received by the LNG Terminal, Underground Gas Storage and Gas Transmission operators are returned to the tariff [44].

The adjustment to the 2021 allowed revenues included in the calculation of the gas year 2023-2024 allowed revenues for the Gas Transmission activity includes a value of 25 424 000 euros in auction premiums for the allocation of capacity at the interface between the LNG Terminal and the transmission network. A significant part of this amount, corresponding to 24 504 000 euros, has already had an impact on the 2022-2023 tariffs, through the provisional adjustments for 2021 considered in the allowed revenues for that gas year.

[42] Approved by Regulation no. 407/2021, of 12 May.

[43] Approved by Directive no. 7/2020 of 21 April. (In Portuguese)

[44] According to the ERSE Gas Tariff Code in force.

Overall, the value of the capacity allocation premiums received by the gas TSO between 2020 and 2022, and which have already been returned via the tariff, totalled 34 494 000 euros.

Table 4-7 -Value of capacity allocation auction premiums received by the TSO that benefited tariffs

Unit: 10^3 EUR

	Year of receipt			Total 2020-2022
	2020	2021	2022	
REN Gasodutos	**8 227,2**	**25 424,1**	**842,9**	**34 494,1**
Interface				
entry LNG Terminal	8 227,2	24 431,5	323,1	**32 981,8**
entry Underground Storage		0,1		**0,1**
exit LNG Terminal		0,8		**0,8**
exit Underground Storage		991,7	519,7	**1 511,4**

A new capacity allocation auction took place in 2023, which again resulted in an auction premium at the interface between the LNG terminal and gas transmission.

5 ENERGY-BASED TRANSMISSION TARIFFS AND NON-TRANSMISSION TARIFFS

According to ERSE's 2019 motivated decision, the transmission tariff applied by the TSO no longer has energy-based transmission tariffs[45].

Under the Tariff Network Code "transmission services" means the regulated services that are provided by the transmission system operator within the entry-exit system for the purpose of transmission (Article 3(12)). Furthermore, a given service shall be considered a transmission service where both of the following criteria are met (Article 4):

a) the costs of such service are caused by the cost drivers of both technical or forecasted contracted capacity and distance;

b) the costs of such service are related to the investment in and operation of the infrastructure which is part of the regulated asset base for the provision of transmission services.

If any of the criteria in points (a) and (b) are not met, a given service may be allocated to non-transmission related services or to transmission related services, subject to the conclusions of the periodic consultation by the TSO(s) or the national regulatory authority and the decision of the national regulatory authority, as provided for in Articles 26 and 27.

In contrast, according to the Tariff Network Code, "non-transmission services" means the regulated services other than transmission services and other than services regulated by Regulation (EU) No 312/2014 that are provided by the TSO (Article 3(15)). Non-transmission services, under the terms of the Tariff Network Code, may apply "non-transmission tariffs", i.e. charges payable by network users for non-transmission services provided to them.

Pursuant to the Tariff Network Code, revenue from non-transmission services will be recovered through non-transmission tariffs applicable to a given non-transmission service. These tariffs will be (Article 4(4)):

a) cost-reflective, non-discriminatory, objective and transparent;

[45] With the exception of the value applied to customer-owned Autonomous Gas Units (AGU), since in this case there is no measurement of a capacity value due to measurement restrictions. In this case, the capacity-based price determined using the reference price methodology is converted into an energy-based price.

b) Charged to the beneficiaries of a given non-transmission service with the aim of minimising cross-subsidisation between network users within or outside a Member State, or both.

Where according to the national regulatory authority a given non-transmission service benefits all network users, the costs for such service shall be recovered from all network users.

Considering the information released by ACER regarding the evaluation of the reports on the application of reference price methodologies in the Member States, it can be seen that 11 countries do not report non-transmission services[46] while 13 countries[47] report the existence of specific tariffs for non-transmission services. The services most frequently identified as not related to transmission are the pressure reduction, odourisation, the provision of non-standard information, services and connection to the network, market area conversion rates, biogas injection rates and the use of regional networks.

In Portugal, all the services provided by the TSO are transmission-related services. With regard to connection to the transmission network, connection costs are the result of an agreement between the applicant and the TSO, with ERSE's approval, under the terms of the ERSE´s Commercial Relations Code. In the case of the connection of gas producers, payment is due for the connection elements, but no prices have yet been approved by ERSE. As in both cases there are no predetermined prices, it is considered that these are not yet included in the tariffs for non-transmission services.

[46] In particular, Austria, Bulgaria, Slovakia, Spain, Estonia, Northern Ireland, Latvia, Lithuania, the Netherlands, Poland (OGP Gaz-System S.A.), Czechia. Information available at https://acer.europa.eu/gas/network-codes/tariffs/acer-reports-national-tariff-consultations/acer-analysis-national-tariff-consultation-documents.

[47] In particular, Germany, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Romania, Slovenia, Sweden. Information available at https://acer.europa.eu/gas/network-codes/tariffs/acer-reports-national-tariff-consultations/acer-analysis-national-tariff-consultation-documents.

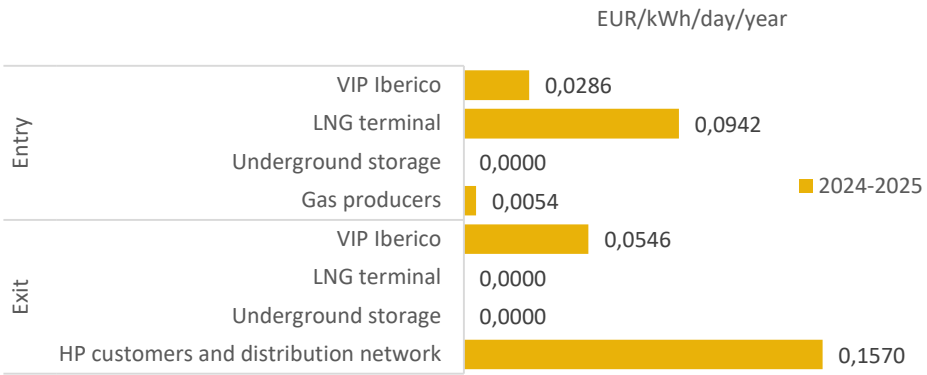
6 ANALYSIS OF THE INDICATIVE REFERENCE PRICES

This chapter presents indicative reference prices, determined in accordance with the reference price methodology presented in section 3.1.

6.1 INDICATIVE REFERENCE PRICES FOR GAS YEAR 2024-2025

The indicative reference prices for the gas year 2024-2025, in the definition of the Tariff Network Code [48], are presented in Figure 6-1. These prices were determined based on the reference price methodology in section 3.1, which is proposed to be implemented as of gas year 2024-2025 onwards, based on information on the forecasted capacity and allowed revenues that were the basis for the decision on gas tariffs for the gas year 2023-2024, of 1 June 2023 [49].

Figure 6-1 - Indicative reference prices for gas year 2024-2025



Notes: Prices assume forecasted capacity and allowed revenues from the tariff decision for the gas year 2023-2024.

[48] Price for a capacity product for firm capacity with a duration of one year, which is applicable at entry and exit points and which is used to set capacity-based transmission tariffs.

[49] Information available at ERSE's webpage (only in Portuguese).

At entry points, the LNG Terminal price is higher than the VIP Iberico price by a factor of 3,3x. Additionally, the price of underground storage is zero, due to the 100% discount [50], and the price from gas producers represents approximately 19% of the VIP Iberico price.

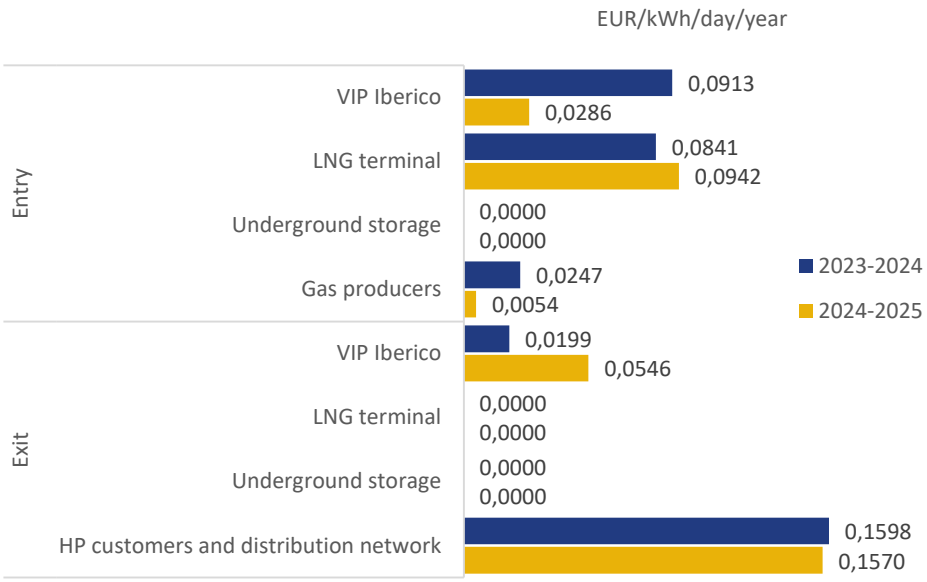
At exit points, the price of VIP Iberico represents approximately 35% of the price for customers in HP and distribution networks. Furthermore, the price of underground storage is zero, due to the 100% discount, and the price of the LNG Terminal, applicable to virtual counter-flow booking, is zero.

6.2 COMPARISON WITH THE REFERENCE PRICES OF GAS YEAR 2023-2024

As previously mentioned, the indicative reference prices, presented in section 6.1, use the forecasted capacity and allowed revenues that were the basis for the gas tariff decision for the gas year 2023-2024. For this reason, they can be compared with the reference prices approved for the gas year 2023-2024, which were determined with the reference price methodology current in place. This comparison is shown in Figure 6-2.

[50] See section 7.1.

Figure 6-2 - Comparison with the reference prices for gas year 2023-2024



Notes: (1) Prices for the gas year 2023-2024 correspond to the prices approved for that gas year. (2) Prices for the gas year 2024-2025 correspond to the indicative reference prices presented in section 6.1.

The reference prices approved for the gas year 2023-2024 present some structural differences compared to the indicative reference prices for the gas year 2024-2025.

At entry points, considering the gas year 2023-2024, the LNG terminal price is lower than the VIP Iberico price by approximately 8%. This situation is reversed with the reference prices determined for 2024-2025, with the entry price from the LNG terminal being more than three times the entry price from the VIP Iberico. This change results from a high capacity booking at the entry point from the LNG terminal [51]. The price of underground storage is zero, due to the 100% discount, and the price from gas producers represents approximately 27% of the VIP Iberico price.

At exit points, considering the gas year 2023-2024, the price of VIP Iberico represents approximately 12% of the price for customers in HP and distribution networks. Considering the reference prices for the gas year 2024-2025, the price of VIP Iberico would represent 35% of the price for customers and distribution

[51] In the reference price methodology, this high utilisation is reflected in a commercial utilisation factor of 98,7%, according to the Table 3-5.

networks. Furthermore, the prices for underground storage and counter-flow booking at the LNG terminal are zero.

In summary, compared to the methodology in force in the gas year 2023-2024, the main changes in the proposal for the updated reference price methodology are: (1) at VIP Iberico, a relative reduction in the entry price and a relative increase in the exit price; (2) at the LNG terminal, a relative increase in the entry price.

6.3 COMPARISON WITH THE CWD METHODOLOGY

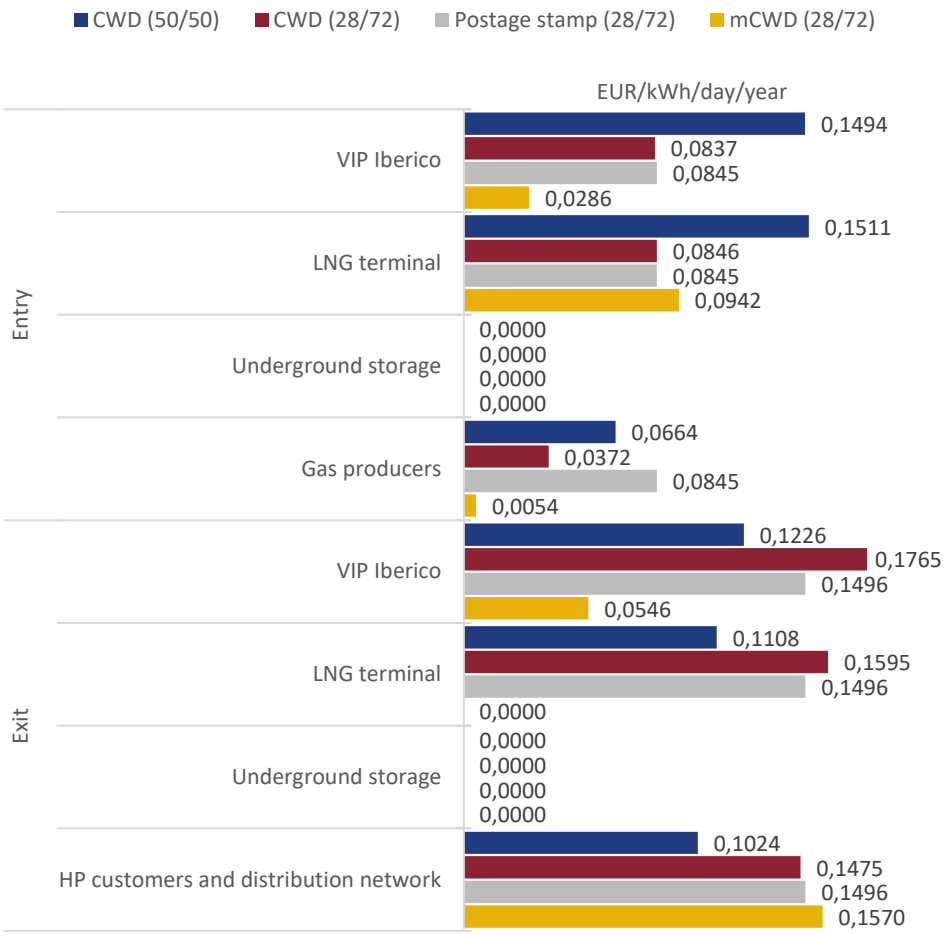
Whenever the reference price methodology is different from the capacity-weighted distance methodology (CWD methodology), defined in Article 8 of the Tariff Network Code, its comparison with the latter is mandatory [52].

In addition to presenting the results of the CWD methodology with an entry-exit split of 50/50, as provided for in the Tariff Network Code, the comparison that follows also presents the results of the CWD methodology with an entry-exit split of 28/72, in order to be more comparable with the relative prices of entry and exit points. Additionally, the results for the postage stamp methodology [53] with an entry-exit split of 28/72 and the results of the modified CWD methodology (mCWD) were also included, as presented in section 3.1. The comparison of indicative reference prices for the gas year 2024-2025, determined using the various methodologies, is shown in Figure 6-3.

[52] Article 26(1)(a)(vi) of the Tariff Network Code.

[53] Methodology according to which prices are the same at the various entry points and the same at the various exit points.

Figure 6-3 - Comparison with the CWD methodology and other methodologies



Notes: **CWD (50/50)** – CWD methodology with a 50/50 entry-exit split; **CWD (28/72)** – CWD methodology with an entry-exit split of 28/72; **Postage stamp (28/72)** – Postage stamp methodology with an entry-exit division of 28/72; **mCWD (28/72)** – Modified CWD methodology with an entry-exit split of 28/72. The indicative reference prices for the gas year 2024-2025, of the various methodologies, assume the forecasted capacity and the allowed revenues that were the basis for the gas tariff decision for the gas year 2023-2024.

The CWD methodology, with an entry-exit split of 50/50, produces a pricing structure that is less comparable to the other methodologies presented. On average, prices are higher at entry points and lower at exit points, due to the different distribution of revenues between entry points and exit points.

Comparing the three methodologies with an entry-exit split of 28/72, the conclusions are as follows for the entry points:

– The CWD methodology and the postage stamp methodology produce a similar pricing structure between the VIP Iberico and the LNG terminal. In the price applicable to VIP Iberico, the three methodologies produce different prices, with the following hierarchy, from the highest price to the lowest price: Postage stamp > CWD > mCWD. In the price applicable to the LNG terminal, the three methodologies produce different prices, with the following hierarchy, from the highest price to the lowest price: mCWD > CWD > Postage stamp.

– When comparing the CWD and mCWD methodologies, the latter produces a greater differentiation between VIP Iberico and the LNG terminal, with the two methodologies producing a price ratio between the LNG terminal and VIP Iberico of 1,01 and 3,29, respectively.

– In the price applicable to gas producers, the three methodologies produce very different prices, with the following hierarchy, from the highest price to the lowest price: Postage stamp > CWD > mCWD. However, it should be remembered that the price applicable to this case is being determined provisionally, as there is still no information on connection of gas producers to the transmission network.

In the case of exit points, the comparison of the three methodologies with an entry-exit split of 28/72 results in the following conclusions:

– In the price applicable to VIP Iberico, the three methodologies produce very different prices, with the following hierarchy, from the highest price to the lowest price: CWD > Postage stamp > mCWD.

– In the price applicable to the counter-flow to the LNG terminal, the CWD and postage stamp methodologies result in positive prices, comparable in level to the price applicable to customers in HP and distribution networks. The mCWD methodology results in a zero price.

– In the price applicable to customers in HP and distribution networks, the three methodologies produce a hierarchy inverse to the hierarchy at the exit point to VIP Iberico (from the highest price to the lowest price): mCWD > Postage stamp > CWD.

6.4 COST ALLOCATION ASSESSMENT

In accordance with Article 5 of the Tariff Network Code, a cost allocation assessment must be carried out to assess whether there is cross-subsidisation between the use of the network at a cross-system level (gas

transits that cross the country) and at an intra-system level (gas flows intended for national consumption). If there are only capacity-based prices, the capacity cost allocation comparison index (CACI) must be calculated to assess whether the recovery of revenue for cross-system and intra-system uses is proportional to the cost drivers of those uses. The indicator for the presence of cross-subsidisation varies between the values 0% and 200%, where 0% indicates the absence of cross-subsidisation and 200% indicates the situation of maximum cross-subsidisation. Article 5(6) establishes that if the calculated indicator exceeds the value of 10%, the national regulatory authority must justify these results in its motivated decision referred to in Article 27(4).

To calculate the capacity CACI, it is necessary to establish which cost driver to use, among the four options indicated in Article 5(1)(a). Since the modified CWD methodology uses effective capacity and effective distance as cost drivers, the calculation of the capacity CACI applies the cost factor that uses forecasted contracted capacity and distance, referred to in subparagraph (iv).

Since the Tariff Network Code does not present formulas to determine the cost driver when it combines the forecasted contracted capacity and the distance, ERSE´s calculation uses directly the weight of cost resulting from the reference price methodology formulas, which corresponds to the variables $W_{c,i}$ and $W_{c,j}$ for the entry and exit points [54,55], respectively, multiplied by the percentage of revenue to be recovered at the entry and exit points, respectively.

Table 6-1 presents the result for the capacity CACI for four different methodologies, namely the CWD methodology, the CWD methodology with an entry-exit split of 28/72 (CWD 28/72), the postage stamp methodology with an entry-exit split of 28/72 and the modified CWD methodology, the latter corresponding to the reference price methodology proposed by ERSE.

[54] The variables for the weight of cost ($W_{c,i}$, $W_{c,j}$) reflect the product between capacity and the average distance of a given point.

[55] In intersystem use: the weight of cost for the exit points corresponds to the value $W_{c,j}$ of the exit point for VIP Iberico, while the weight of cost for the entry points corresponds to the value of the entry point from the LNG terminal, in the proportion that the exit value at VIP Iberico represents in the total entry from the LNG terminal. For intra-system use: the weight of cost for entry and exit points is calculated to add up to 100% when added to the respective value for cross-system use.

Table 6-1 - Cost allocation assessment for capacity-based prices

		CWD 50/50	CWD 28/72	Postage stamp 28/72	mCWD 28/72
Revenues					
Cross-system	million €	6,79	6,48	5,81	3,69
Intra-system	million €	64,08	64,39	65,06	67,18
Cost driver					
Cross-system	%	9,40%	8,96%	8,96%	5,16%
Intra-system	%	90,60%	91,04%	91,04%	94,84%
Ratio = Revenues ÷ Cost driver					
Cross-system	million €	72,29	72,38	64,87	71,65
Intra-system	million €	70,73	70,73	71,46	70,83
Capacity cost allocation comparison index		**(-) 2,2%**	**(-) 2,3%**	**(+) 9,7%**	**(-) 1,2%**

Note: The cost driver is calculated based on the weight of cost, multiplied by the percentage of revenue recovered at the entry and exit points. The sign in parentheses in the capacity CACI result indicates the direction of cross-subsidisation: a positive sign (+) indicates that cross-system uses are being subsidised; a negative sign (-) indicates that intra-system uses are being subsidised.

Given the selected cost driver, the four methodologies present values below the 10% threshold indicated in the Tariff Network Code. With the exception of the postage stamp methodology, a low value for the capacity CACI was expected to result in the CWD and modified CWD methodologies, since these precisely use capacity and distance as cost drivers [56].

The cost driver determined for the mCWD methodology follows the formulas presented in section 3.1.1, which means that its value reflects the effective capacity and effective distance variables.

6.5 INDICATIVE EVOLUTION OF THE REFERENCE PRICES

Given the great volatility in the use of the transmission network in the recent past, and which continues in the face of the war in Ukraine, a forecast of reasonable reference prices until the last gas year of the current regulatory period would be challenging, leading ERSE to not present a particular forecast for the various gas years. However, the simplified tariff model that is made available allows users to introduce demand and revenue forecasts in order to determine a trajectory of reference prices.

[56] If there were no discounts when applying the reference price methodology, it is possible to show that the CWD methodologies and the mCWD methodology would result in a capacity CACI value equal to 0,0%.

7 DISCOUNTS, MULTIPLIERS AND SEASONAL FACTORS

This section responds to Article 28(1) of the Tariff Network Code, which establishes the need to consult, on the one hand, the national regulatory authorities of all directly linked Member States and, on the other hand, relevant stakeholders on the level of multipliers, the level of seasonal factors and the discounts provided for in Articles 9 and 16.

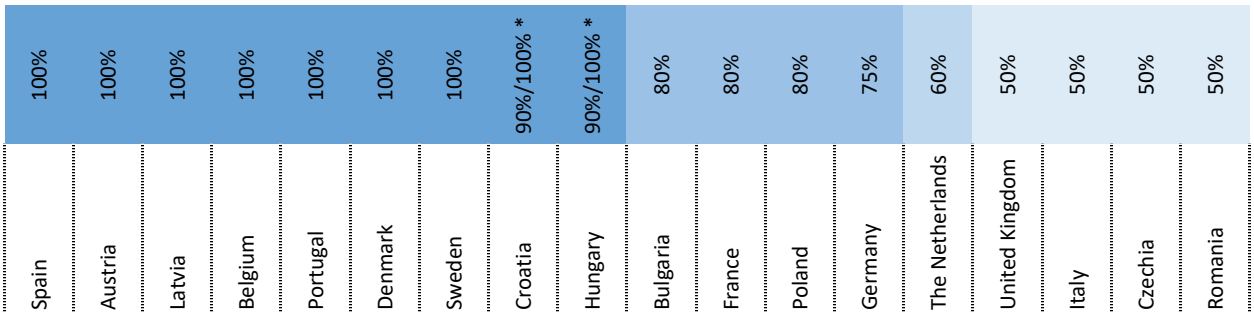
7.1 DISCOUNTS AT POINTS OF INTERFACE WITH UNDERGROUND STORAGE

According to Article 9(1) of the Tariff Network Code, a discount of at least 50 per cent must be applied to the reference prices applicable at the entry points to the transmission network from storage facilities and at the exit points from the transmission network to storage facilities (unless the storage facility connected to more than one transmission or distribution network is used to compete with an interconnection point).

This discount, which has been 100% in Portugal since the gas year 2019-2020, is intended to make it easier for suppliers to balance the use of underground storage, taking advantage of the flexibility that this infrastructure can provide and thus better contributing to the system's balance.

A comparison of the level of discount applied in various European countries with underground storage facilities, in Figure 7-1, shows that around half apply a 100% discount and all apply a percentage of 50% or more.

Figure 7-1 - Discounts at entry/exit points from/to storage facilities, by Member State



* Entry / Exit

Source: ACER report on Member States consultation documents

The granting of these discounts thus helps to encourage agents to contract and use storage capacity, which contributes to the proper implementation of EU Regulation 2022/1032 on emergency storage measures, which requires member states to adopt minimum filling measures and trajectories (90% as of 1 November 2023).

7.2 MULTIPLIERS

The Tariff Network Code establishes rules for multiplier levels (Article 13), applicable to standardised firm capacity products at interconnection points. The multipliers, applied to the annual reserve prices, make it possible to find the respective non-annual reserve prices, namely at the quarterly, monthly, daily and intraday horizons.

Pursuant to Article 13(1) of the Tariff Network Code, the level of the multiplier must not be less than 1 or more than 1,5 for quarterly and monthly standardised capacity products. For daily and intraday standardised capacity products, the level of the respective multiplier must not be less than 1 or greater than 3. In duly justified cases, it may be greater than 3 and less than 1, but greater than zero.

Table 7-1 shows the multipliers in force for the 2023-2024 gas year, applicable to VIP Iberico, LNG terminal and Carriço underground storage. The multipliers shown in this table comply with the limits set out in Article 13(1).

Table 7-1 - Multipliers in force for the 2023-2024 gas year

	Transmission network Entry point			**Transmission network Exit point**		
	Iberian VIP	LNG Terminal	Underground Storage	Iberian VIP	LNG Terminal	Underground Storage
Quarterly	1,3	1,3	-	1,3	1,3	-
Monthly	1,5	1,5	-	1,5	1,5	-
Daily	2,0	2,0	1,0	2,0	2,0	1,0
Intradaily	2,2	2,2	1,1	2,2	2,2	1,1

The multipliers applied to the quarterly, monthly and daily products in the 2023-2024 gas year have remained unchanged since the 2013-2014 gas year. From the 2015-2016 gas year, reference prices were also established for the intraday capacity product in the VIP Iberico. From the 2016-2017 gas year, the existence of intraday products was also extended to entry and exit through the LNG Terminal and entry through Underground Storage. The multiplier for intraday products has been constant since the 2016-2017 gas year.

Article 28(3)(a) of the Tariff Network Code mentions five criteria to be taken into account when approving multipliers by the national regulator, namely: i) the balance between facilitating short-term gas trade and providing long-term signals for efficient investment in the transmission network; ii) the impact on transmission service revenues and income recovery; iii) the need to avoid cross-subsidisation between network users and increase the reflection of costs in reserve prices; iv) situations of physical and contractual congestion; and v) the impact on cross-border flows.

The first criterion, a balance between short-term gas trade and long-term signals for efficient investment, is considered to be met insofar as the multipliers in force have not prevented market agents from reserving capacity in the VIP Iberico at the various horizons of the capacity products according to their commercial supply strategy: in the VIP Iberico there has been a transfer from contracting annual capacity to capacity in shorter maturity products since the 2020-2021 gas year (see Figure 2-1), together with a total contracting of the LNG terminal's technical regasification capacity through the annual product, since the 2019-2020 gas year. Given the permanence of the multipliers, this change in the supply strategy of market agents is essentially the result of the price relationship between LNG and natural gas and the long-term contracts held by agents operating in the Iberian Peninsula and, in particular, in Portugal. The value of the multipliers in capacity products with a term of less than one year must ensure that, on the one hand, long-term reserves are not discouraged in order to justify long-term investments in infrastructure and the fair recovery of revenues by infrastructure operators and, on the other hand, that barriers to short-term contracting are not created, jeopardising tariff flexibility and the entry of new agents into the market. In addition, the multipliers should increase as the maturity of the product decreases, encouraging capacity contracting that gives greater predictability to system management.

The second criterion, the impact on revenue recovery, is ensured through the stability of the multipliers, which has allowed ERSE to estimate the use of the VIP Iberico over the various time horizons with greater certainty, mitigating the risk of revenue deviations due to the multipliers[57].

[57] The main reason for the volatility of the revenues recovered at the points in the transmission network is the demand for gas from the power stations, which depends on the dynamics of the wholesale electricity market, as well as weather conditions. The level of the multipliers applied in VIP Iberico does not contribute to this volatility.

With regard to the third criterion, cross-subsidisation between network users is avoided as the same multipliers are applied to the two supply points in the Portuguese system, represented by the VIP Iberico and the LNG terminal in Sines.

Regarding the fourth criterion, on situations of physical and contractual congestion, this situation is not applicable to Portugal since there have not yet been situations of physical congestion in the VIP Iberico, nor the application of risk premiums in the respective capacity auctions.

Finally, for the criterion relating to cross-border flows, it is considered that the current multipliers are neutral for cross-border flows, since the same multipliers apply in both directions of the VIP Iberico and both entry points to the Portuguese system.

The defined multipliers condition the behaviour of users, since each market agent will adopt a temporal use in order to minimise their bill.

Considering that the level of multipliers for short-term capacity products must ensure that revenues are recovered without constituting a barrier to short-term contracting, an exercise was carried out to calculate the level of multipliers for short-term products, ensuring that the revenues obtained from short-term products, for each quarterly, monthly and daily maturity, are equivalent to the revenues provided by the annual product.

The exercise was carried out on the basis of daily contracted capacity data extracted from the ENTSOG Transparency Platform[58], for the period between 1 January 2017 and 31 December 2022, for two of the entry points into the RNTG (VIP Iberico and LNG terminal) and the same two exit points from the RNTG (VIP Iberico and LNG terminal). No information was analysed for the entry or exit points of underground storage, since the price is zero, as discussed in section 7.1.

Table 7-2 shows the level of multipliers obtained considering the aforementioned methodology of equivalence between the invoicing of the annual product and the short-term product.

[58] https://transparency.entsog.eu/#/zones/data?zones=

Table 7-2 - Proposed short-term multipliers for the 2024-2025 gas year

	Transmission network Entry point			**Transmission network Exit point**		
	Iberian VIP	LNG Terminal	Underground Storage	Iberian VIP	LNG Terminal	Underground Storage
Quarterly	1,22	1,22	-	1,22	1,22	-
Monthly	1,43	1,43	-	1,43	1,43	-
Daily	2,17	2,17	1,00	2,17	2,17	1,00
Intradaily	2,39	2,39	1,10	2,39	2,39	1,10

Source: ERSE calculations

It should be noted that this methodology for setting the multipliers for short-term products results in the application of an increase of around 9% to the price of the daily product and the price of the intraday product in force in gas year 2023-2024[59], which is the most significant difference in the short-term multipliers. The comparison between the multipliers in force and those now proposed is shown in Table 7-3.

Table 7-3 – Comparison between current and proposed multipliers

	Portugal (Entry = Exit)	
	Current	Proposed
Quarterly	1,3	1,22
Monthly	1,5	1,43
Daily	2	2,17
Intradaily	2,2	2,39

Multiplier values similar to those currently in force are obtained. The quarterly and monthly multipliers decrease slightly, while the daily and intraday multipliers increase slightly.

Although the multipliers now proposed are similar to those in force, it is suggested that they be adopted, since the proposed multipliers derive from the application of a quantifiable methodology and are therefore more robust and justifiable. ERSE believes that the suggested change, although small, is in line with the comments made by agents on previous occasions[60], which favour the stability of multipliers.

[59] At VIP Iberico and the LNG terminal, the daily and intraday product multipliers are 2,0 and 2,2, respectively. In underground storage, the multipliers for daily and intraday products are 1,0 and 1,1, respectively.

[60] For example, in the responses to ERSE's public consultation No. 66.

7.3 SEASONAL FACTORS

The Tariff Network Code also establishes rules for the levels of seasonal factors in Article 13(2), applicable to standardised firm capacity products at interconnection points. ERSE informs that it intends to continue not applying seasonal factors to standardised firm capacity products at interconnection points [61].

[61] It should be noted that there is a definition of seasonal factors, which vary with the month, applicable to the capacity used in the flexible tariff options, which are intended exclusively for exit points for customers at HP. As these seasonal factors do not apply to interconnection points with Spain, they fall outside the scope of the public consultation provided for in Article 28(1).

8 RELATION TO OTHER EUROPEAN LEGISLATION

This chapter provides a general description of the most relevant legal and regulatory elements that have a direct influence on the decision regarding gas transmission tariff structures.

8.1 HYDROGEN AND GAS DECARBONISATION PACKAGE

Natural gas (fossil methane) makes up around 95% of the gaseous fuels currently consumed in the European Union (EU). Gaseous fuels account for around 25% of the EU's total energy consumption, including around 20% of electricity production and 39% of heat production [62]. As well as being an energy carrier, gaseous fuels are also a fundamental raw material for industrial processes and are one of the sources of flexibility for an energy system that is increasingly based on renewable energy sources.

As part of the second batch of proposals under the "Fit-for-55" measures[63], on 15 December 2021, the Commission presented proposals to amend Gas Directive 2009/73/EC on common rules for the internal markets in natural gas and renewable gases and hydrogen and Regulation (EC) No 715/2009 on the hydrogen and decarbonised gas market (via COM/2021/803 final and COM/2021/804 final, respectively).

On 28 March 2023, the European Council reached a general approach on proposals to amend Gas Directive 2009/73/EC[64] and Regulation (EC) No 715/2009[65]. It should be noted that the legislative revisions still need the approval of the European Parliament.

In the general approach reached on the amendments to Regulation (EC) No 715/2009, the Council clarified the rules on tariffs and tariff discounts for hydrogen and renewable gases requesting connection to the gas network and gave Member States more flexibility in setting them. In addition, it differentiated the tariff discounts for renewable gases (100%) and for low-carbon gases (75%) in the natural gas system.

[62] Source: https://ec.europa.eu/commission/presscorner/detail/pt/qanda_21_6685 and https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0803&qid=1640002501099.

[63] Package Fit-for-55 - https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/

[64] Available at: https://data.consilium.europa.eu/doc/document/ST-7911-2023-INIT/en/pdf.

[65] Available at: https://data.consilium.europa.eu/doc/document/ST-7909-2023-INIT/en/pdf.

Regarding the certification of storage system operators, the provisions of the Gas Storage Regulation adopted in June 2022 are integrated and introduce a 100% discount on capacity-based transmission and distribution tariffs for underground gas storage facilities and LNG facilities. The general approach also establishes levels for hydrogen blending in the natural gas system of up to 2% by volume (instead of 5%) in order to ensure harmonised gas quality.

It is worth highlighting, with respect to the general approach, the Council's proposed extension until 2035 of the transition phase for the application of detailed rules to hydrogen and the addition to the definitions of "low carbon" of the reference to the fossil fuel comparison parameter established in the Renewable Energy Directive, in order to guarantee a level playing field in the assessment of the total greenhouse gas emissions footprint of the different gases. The outcome of the negotiations with the European Parliament, expected for the end of 2023, will determine the provisions and framework for decarbonised gases and hydrogen in the coming years.

8.2 EU GAS STORAGE REGULATION

Gas storage plays an important role in guaranteeing the security of supply of the European Union (EU), covering, in a normal winter, 25 to 30% of the gas consumed throughout the EU[66].

Given their relevance to the security of energy supply and other essential security interests, both at national and European Union level, underground gas storage facilities are considered critical infrastructure within the meaning of Council Directive 2008/114/EC. In this context, Member States are encouraged to take into account the measures introduced by Regulation (EU) 2022/1032 of the European Parliament and of the Council amending Regulations (EU) 2017/1938 and (EC) No 715/2009 as regards gas storage in their national energy and climate plans and in the progress reports adopted pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council.

Based on the European Commission's analysis, in particular on the adequacy of measures to secure gas supply and the enhanced risk-preparedness analysis at Union level carried out in February 2022, each Member State should ensure, in principle, that underground gas storage facilities located on its territory

[66] Source: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/eu-action-address-energy-crisis_pt. For up-to-date data on storage levels by member state, see: https://agsi.gie.eu/#/.

and directly connected to a market area of that Member State are filled to at least 90% of their capacity at Member State level by 1 November each year (filling target), with a series of intermediate targets (filling trajectory) the following year.

From 2023, the monitoring of gas storage levels is mandatory in order to avoid the sudden withdrawal of gas from underground gas storage facilities in the middle of winter. In order to avoid unjustified gas price increases in the phase of mandatory gas procurement for filling, under Regulation (EU) 2022/1032, regulators will be able to apply a discount of up to 100% to capacity-based transmission and distribution tariffs at the entry and exit points of storage facilities, both for underground gas storage facilities and LNG facilities, making storage more attractive to market participants.

In order to guarantee the EU's energy supply at affordable prices, the European Commission and the Member States have set up an EU platform for the common procurement of gas, LNG and hydrogen[67]. This is a voluntary coordination mechanism, which supports the purchase of gas and hydrogen for the Union[68].

To strengthen the mechanisms for action at Union level, Regulation (EU) 2022/1369, of 5 August 2022 on coordinated measures to reduce gas demand, laid down rules to deal with a situation of serious difficulties in gas supply, in a spirit of solidarity[69]. This Council Regulation defines a set of rules, namely a voluntary reduction in gas demand in the period between 1 August 2022 and 31 March 2023 of, at least 15%, compared to the average gas consumption during the previous five consecutive years in the same period [70]. Following the adoption of this Regulation, Member States reduced their gas demand by 19% between August 2022 and January 2023, compared to the average of the last five years[71].

[67] Approved by Regulation (EU) 2022/2576.

[68] More information at: https://energy.ec.europa.eu/topics/energy-security/eu-energy-platform_en. EU countries are obliged to aggregate demand for gas volumes equivalent to 15% of their respective storage filling obligations. Beyond 15%, aggregation will be voluntary, but based on the same mechanism.

[69] It should be noted that the solidarity mechanism as an instrument to mitigate the effects of a major emergency situation was introduced by Regulation (EU) 2017/1938 of the European Parliament and of the Council.

[70] Demand reduction monitoring is carried out by the Directorate-General for Energy and Geology. More information at: https://www.dgeg.gov.pt/pt/areas-setoriais/energia/planeamento-energetico-e-seguranca-de-abastecimento/seguranca-de-abastecimento/monitorizacao-da-reducao-do-consumo-de-energia/

[71] According to the Report from the Commission to the European Parliament and the Council on certain aspects of gas storage based on Regulation (EU) 2017/1938 of the European Parliament and of the Council (COM/2023/182 final), of 27 March 2023.

The European Commission's analysis[72] concluded that, despite the observed reduction, a continuous 15% reduction in demand over a 12-month period until the end of March 2024 is necessary to ensure that Member States can meet the 90% storage target set out in Regulation (EU) 2017/1938, which is imperative for security of gas supply and to avoid any supply deficit in the winter of 2023-2024. These measures were approved by Council Regulation (EU) 2023/706 of 30 March 2023 amending Regulation (EU) 2022/1369 as regards the extension of the demand reduction period and strengthening the communication of information and the monitoring of the implementation of these measures.

[72] Report from the Commission to the Council on the review of Regulation (EU) 2022/1369 on coordinated measures to reduce gas demand (COM/2023/173 final), of 20 March 2023.

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