Consultation Document
under
Commission Regulation (EU) 2017/460

1. Table of Contents

2. Terms and abbreviations

TAR NC
COMMISSION REGULATION (EU) 2017/460 of 16 March 2017 establishing a network code on harmonised transmission tariff structures for gas

CAM NC
COMMISSION REGULATION (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013

The CWD model
The capacity weighted distance reference price methodology

ERO
The Energy Regulatory Office, Czech Republic

Transmission system operator, TSO
NET4GAS, s.r.o.

NET4GAS
NET4GAS, s.r.o., the holder of an exclusive licence for gas transmission in the Czech Republic

The Energy Act
Act No 458/2000 on conditions for business and state administration in energy industries and amending certain laws (the Energy Act), as amended

International transmission, transit transmission
The use of the transmission system in the Czech Republic for the purpose of gas transport[1] to customers in other market areas

National transmission
The use of the transmission system in the Czech Republic for the purpose of gas transport to customers in the Czech Republic

C4G, the Capacity4Gas project
New gas infrastructure interconnecting the Czech transmission system with the EUGAL gas pipeline in Germany and enhancing the capacity of the Czech transmission system for the purposes of gas supply to the Czech Republic and further transit across Slovakia. The project will be implemented at two stages, the completion of which is being planned for 2019 and 2021.[2]

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1 Article 2 (1) of Regulation (EC) No 715/2009 of the European Parliament and of the Council
2 https://www.net4gas.cz/cz/projekty/projekt-capacity4gas/

The SEP (*SEK in Czech*)
The State Energy Policy; https://www.mpo.cz/cz/energetika/statni-energeticka-politika/statni-energeticka-koncepce--223620/

DSO
Distribution system operator

UGS, UGS facility (*ZP in Czech*)
Storage facility

SSO (*PZP in Czech*)
Storage system operator

DCC (*PPZ in Czech*)
Customer directly connected to the transmission system

3. Introduction

COMMISSION REGULATION (EU) 2017/460 of 16 March 2017 establishing a network code on harmonised transmission tariff structures for gas, i.e. TAR NC, entered into force on 6 April 2017. The provisions of this Regulation enter into force at different times: some of the Articles of the TAR NC shall apply as from its entry into force, some other Articles shall apply as from 1 October 2017, and still some others shall apply as from 31 May 2019. In the Czech Republic, the tariffs set under the TAR NC shall apply as from 1 January 2020.

This consultation document serves for the carrying out of the final consultation prior to the decision referred to Articles 26 to 28 TAR NC. The consultation document serves for setting forth the proposed transmission tariff methodology and the relevant regulated prices for transmission services, and for public consultation on the proposal.

Based on the suggestions and comments on this document, raised as part of the public consultation, the ERO will issue a decision on TAR NC implementation, which will be published by 31 May 2019.

TAR NC implementation is bound to necessitate changes in the tariffs related to the use of the Czech transmission network, and will therefore have an impact on the whole gas system and the gas market in the Czech Republic in general. In view of the importance of the expected impacts for the market participants and consumers, the ERO and NET4GAS have sought such a solution for the implementation of the TAR NC, which will be completely in compliance with the binding provisions of the TAR NC while minimising any adverse effects on the various groups of gas market participants in the Czech Republic.

Intensive monitoring of the Czech and European gas markets has helped to identify the following key characteristics, which have been and will be assessed when reviewing the effectiveness of the proposed methodology:

- liquidity of the within-day gas market
- development of competition
- security of supply
- use of the existing infrastructure
- avoiding cross-subsidisation between the various groups of transmission network users
- promotion of cross-system network use
- safe, reliable, and economical operation, and maintenance and development of the gas infrastructure
- market integration

This document describes the aspects that the ERO has taken into consideration, and summarises the results of the preparations for the implementation and also the proposed implementation of the future tariff structure. In compliance with the requirements for transparency, the document details the reasons on the strength of which the ERO is convinced that the presented proposal is in accordance with the TAR NC and the relevant European legislation, while supporting the objectives that are crucial for the Czech gas market.

For this reason, the Energy Regulatory Office would like to express its gratitude to all the concerned gas market participants in the Czech Republic who will help to improve the presented proposal through their suggestions and comments.

4. The legal environment

The TAR NC requires the national regulatory authority or the transmission system operator, as decided by the national regulatory authority, to perform the steps referred to in Article 5 (1), Article 26 (1), Article 27 (1), Article 29, and Article 30 TAR NC.

The ERO has assessed this allocation of competences in the context of the applicable Czech legislative framework and concluded that, for the reasons set out in the following, the ERO will be the entity responsible for the required steps, noting that the transmission system operator's proactive participation in and assistance with each of the steps is expected in all respects.

Being a Commission Regulation, the TAR NC is a directly applicable part of the Czech legal system. Furthermore, in relation to the ERO, the issue covered by the TAR NC is provided for in Act No 265/1991 on the competences of the authorities of the Czech Republic in pricing, as amended (the Price Act), and in Act No 458/2000 on conditions for business and state administration in energy industries and amending certain laws (the Energy Act), as amended. Within the Czech legal system, the basis for meeting the requirements of the Regulation must mainly include Section 2c of Act No 265/1991. The price regulation competence has been vested in the ERO by the law, and therefore the ERO vesting this competence in itself through its decision in administrative proceedings appeared and continues to appear to be not only redundant, but even impermissible from the perspective of Czech constitutional principles. And so, if the required outcome of the above decision is that the activities under the TAR NC, which are to be the subject matter of the decision, will be carried out by the ERO (as Act No 265/1991 taken together with the Energy Act requires already now) to the full extent and exclusively, then the following is true: the non-issuance of the decision (imposing an obligation on the transmission system operator to perform certain activities) means that the ERO shall perform these activities (by the operation of law). In the present case, the rules contained in all three basic pieces of legislation in fact complement each other with a view to fulfilling the meaning and purpose of the TAR NC.

It is relevant to note for completeness that the ERO is performing the activities of consultation and publication already now, and precisely on the basis of its general competence laid down in Act No 265/1991 taken together with the Energy Act, and so in fact, only the modification of such activities and their adjustment to the requirements of the Regulation should be ensured.

5. Disclaimer

The Energy Regulatory Office is presenting a consultation document that has been prepared in compliance with the applicable legislation and based on its own information sources as well as information provided by the transmission system operator, i.e. NET4GAS, s.r.o.

The Energy Regulatory Office notes that the principles and parameters for the fifth regulatory period (2021–2025) have not yet been determined and are not the subject matter of this consultation document. The consultation process for designing the regulatory rules for the fifth period will be launched in line with the approved timetable.

All calculation models presented for public consultation are based on data, information, and assumptions available as at the day of launching the consultation under Article 26 TAR NC.

The consultation document is intended exclusively for the purposes set out in Regulation (EU) 2017/460.

6. New tariff structure in relation to market developments

Compared with the systems in other EU member states, the Czech gas transmission system has its specificities in certain respects. The specificities of the Czech transmission system must be taken into consideration when implementing the TAR NC. This chapter describes the historical development and the root causes of the system's specific features.

6.1. Market development over the last ten years

The current settings and arrangements in the transmission system are the result of the long development of the gas market not only in the Czech Republic but also, from the broader perspective, in the whole of Europe. We therefore consider it to be important to describe the factors that have influenced the formation of the transmission system and the tariff structure in the Czech Republic.

6.1.1. Deregulation and unbundling

The Czech gas market has been fully liberalised since 2007. The ERO therefore only controls the prices that cannot be formed by market mechanisms in a competitive environment for technical or organisational reasons. Satisfying the requirements of Directive 73/2009/EC, which has been implemented in the Czech legislation, the ERO puts in place rules that provide for the gas market's secure functioning and promote a competitive environment. Based on the requirements for gas market liberalisation, the various lines of business pursued by the incumbent business groups operating in the Czech gas market have been gradually unbundled. Such legislation was enacted and subsequently such organisational and property-related changes were made, which have resulted in the unbundling of gas trade, distribution, transmission, and storage.

In connection with the liberalisation of the Czech gas market the prices of gas supply are no longer regulated. Effective competition exists in the market, and it therefore does not have to be substituted with regulation by the ERO. In this respect the European Commission's objective has been accomplished to the full extent. Several dozen gas traders are operating in the Czech gas market on a long-term basis, although some of them are, due to the completed business acquisitions, part of the portfolio of different owners who offer diversified services to customers. The well-developed competitive environment in the gas market has spawned a broad range of traders' quotations in terms of both the price and the related commercial terms and conditions. The Czech gas market thus works on the basis of a non-discriminatory approach, where every trader can approach any customer, and, vice versa, every customer can enter into a contract with any trader. The prices are subsequently formed based on a match between the traders' quotations and the customers' demand and in close correlation with the prevailing situation in the gas market.

Due to the full liberalisation of the Czech gas market the ERO only sets, under the Price Act, the prices for the gas distribution service, the prices for the gas transmission service, and the prices for the market operator's services, because these services are provided by organisations having a natural monopoly in the respective area. Under the Energy Act, the ERO issues Price Decisions whereby it regulates the above-mentioned prices to prevent their disproportionate development in an environment where competition is not feasible.

Depending on their annual gas consumption and the purpose for which they use gas, in the Czech Republic customers are included in four categories: high-demand customers, medium-demand customers, low-demand customers, and households. The structure of customers in the Czech Republic and the share of each of the categories in the total number of gas supply points in 2017 are shown in Table 1.

Customer category	Number of supply points	Share [%]
High-demand customers	1,703	0.06
Medium-demand customers	6,817	0.24
Low-demand customers	203,138	7.14
Households	2,632,599	92.56
Total	**2,844,257**	**100.0**

Table 1 Number of gas supply points in 2017

Although the Czech gas market is fully liberalised and every customer has the right to switch suppliers free of charge, only a small percentage of customers actually make use of this opportunity. For some of those customers the reason is the existence of gas supply contracts for a fixed term and with a price that cannot be changed, and these contracts cannot be terminated early without a penalty. Some of the customers also continue to feel certain mistrust and concerns about supplier switching or lack willingness to cope with supplier switching. Table 2 shows the number of supplier switches by customer category.

Customer category	2011	2012	2013	2014	2015	2016	2017
High-demand customers	537	979	449	330	329	617	305
Medium-demand customers	1,142	2,951	3,061	1,572	1,326	1,973	1,357
Low-demand customers	26,994	27,829	29,091	23,704	21,642	28,411	26,205
Households	333,268	316,297	264,680	174,783	154,465	172,949	199,678
Total	**361,941**	**348,056**	**297,281**	**200,389**	**177,762**	**203,950**	**227,545**

Table 2 Number of gas supplier switches between 2011 and 2017

Since the beginning of the liberalisation of the Czech gas market, when only a few ‘dominant’ gas suppliers existed, the retail gas market has developed so much that almost one hundred gas suppliers are offering gas supply now. The incumbent suppliers, which existed before the liberalisation, continue to hold the largest share of the gas market, but a number of additional traders have succeeded and attracted customers in the competitive environment. The structure of traders in the retail gas market is shown in Chart 1.

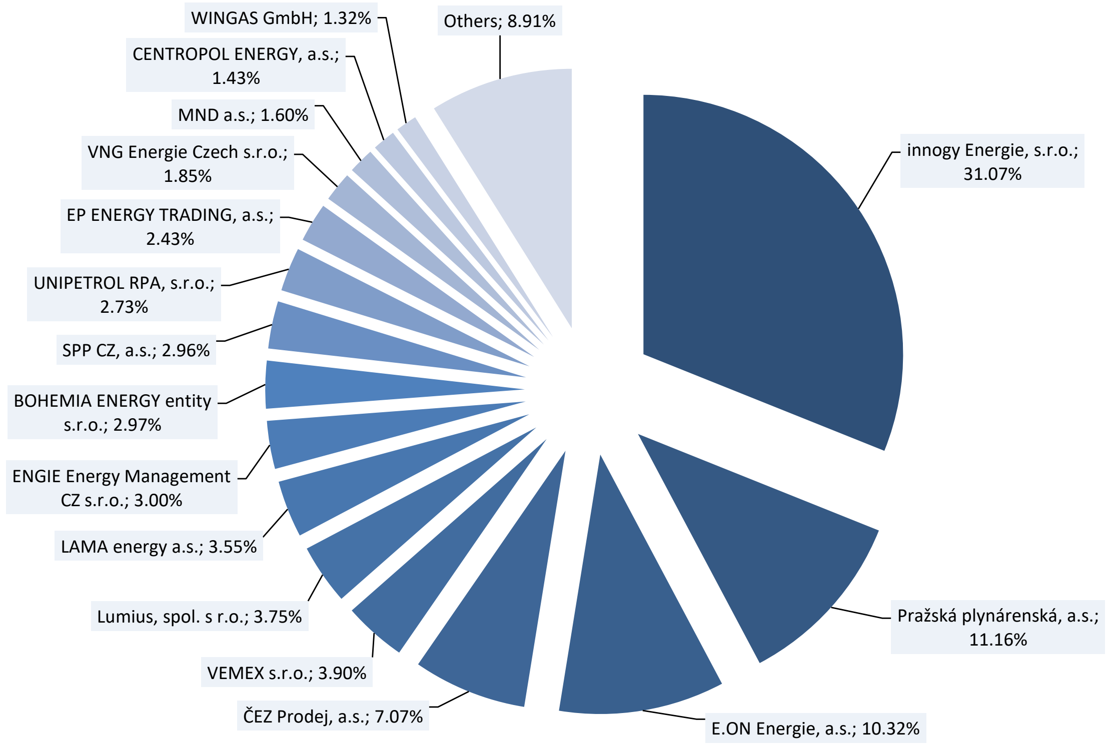

Chart 1 Traders' shares of gas supply in 2017

6.1.2. Gas flows and consumption in the Czech Republic

Chart 2 shows the gas quantity entering the Czech Republic (green columns) and the gas quantity exiting the Czech Republic (red columns) between 2007 and 2016. The chart also shows annual gas consumption inside the Czech Republic and clearly indicates that the gas transit flows across the Czech Republic constitute the predominant portion and are three to four times larger than the country's gas consumption. Thus, the Czech transmission system has primarily been designed as a transit system and its transmission capacity significantly exceeds the needs of customers in the Czech Republic. However, it would not be possible to supply gas to other countries downstream of the Czech Republic without such a robust system in place.

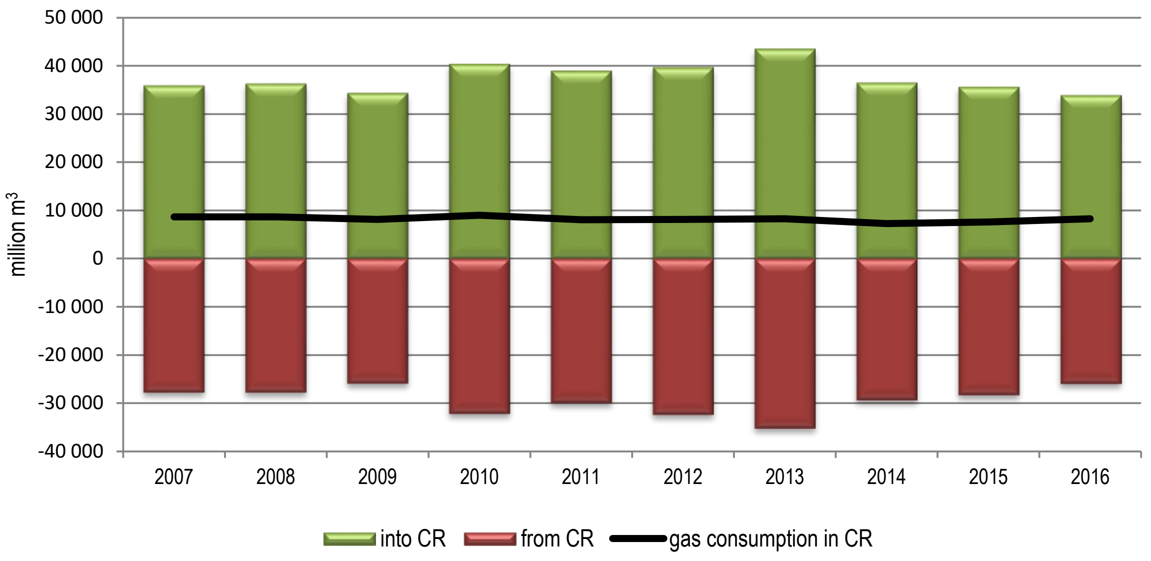

Chart 2 Gas flows into and from the Czech Republic, and the country's gas consumption

6.1.3. The entry-exit model of gas transmission in the Czech Republic

The Czech gas market model is based on the implementation of the third energy package employing a complete entry-exit model. Network users (contracting partners of the transmission system operator) book transmission capacity independently for each entry and exit point of the transmission network (entry/exit). This was the first and foremost requirement of Regulation (EC) No 715/2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks. Thus, gas enters the transmission network through the cross-border entry points or the exit points of the virtual storage facility. Gas exits from the transmission network through cross-border exit points, exit points of customers directly connected to the transmission network, entry points of virtual storage facilities, and points of delivery into distribution systems. In practice this arrangement means, in compliance with the requirements of the third energy package, that gas input into the system at any entry point is available completely independently of any exit point. By the same token, every exit point can be regarded as supplied from any entry point. Figure 1 depicts a diagram of the Czech entry/exit model.

In compliance with Regulation 715/2009 the virtual trading point (VTP), where network users trade in gas, is located among the above-mentioned points. Thus, the whole of the Czech Republic forms a single balancing zone, i.e. the virtual trading point, where all gas trades are registered; an exception is old gas transit contracts, to which the entry/exit regime does not apply. The virtual trading point is therefore not connected with any physical point in the network and is accessible without the need to book entry or exit transmission capacity; these principles are illustrated in Figure 2, which indicatively shows the cumulative gas flows through all entry and exit points of the transmission network. The VTP so designed has made it possible to depart from conventional trading associated with 'making gas physically available', traditionally on the flanges of entry or exit points of the network. The applied, completely flexible approach to capacities at entry and exit points makes it possible for traders to input gas into the system (i.e. to each of the exit points) and to the VTP through any entry capacity. Similarly, a trader who has booked exit capacity has the right to supply gas from any entry point and from the VTP to that point. The trader can therefore limit his activities solely to the entry points if he focuses on gas input into the system, or uses only the exit capacities if the VTP is the source of all of his gas. In addition, the trader has the right to buy and sell gas only at the VTP without having to book entry or exit capacity.

Another characteristic feature of the applied model is the full inclusion of gas distribution in the entry-exit system. The transmission system operator and operators of distribution systems directly connected to the transmission system provide capacity and interconnection at the relevant delivery points. The trader then arranges for capacity only at the level where the gas definitively leaves the system. This arrangement means in practice that a trader supplying gas at the level of distribution needs exit capacities only at this level and is able to meet his contractual obligations from any entry point, including the VTP, while the required capacity at the delivery point between the transmission and distribution systems is covered by a contract between the DSO and the TSO.

The distribution level is therefore part of the balancing zone. The differences between the quantities entering into and exiting from the system (taking account of the transactions at the VTP) are then assessed in aggregate for all entry and exit capacities in the trader's portfolio, regardless of the level of the system.

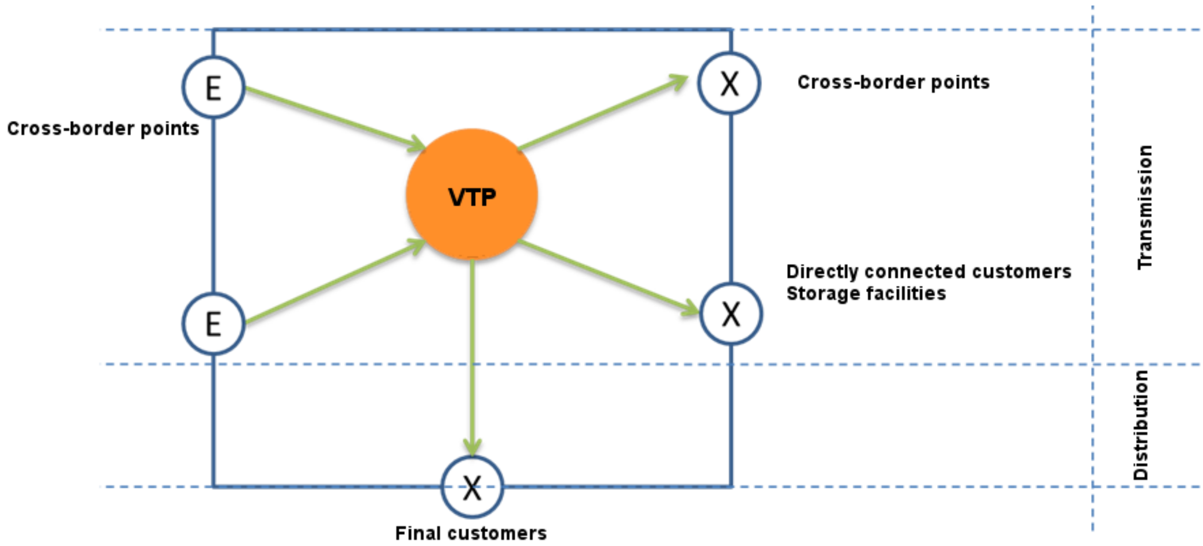

Figure 1 Schematic diagram of the Czech entry-exit system (source: ERO)

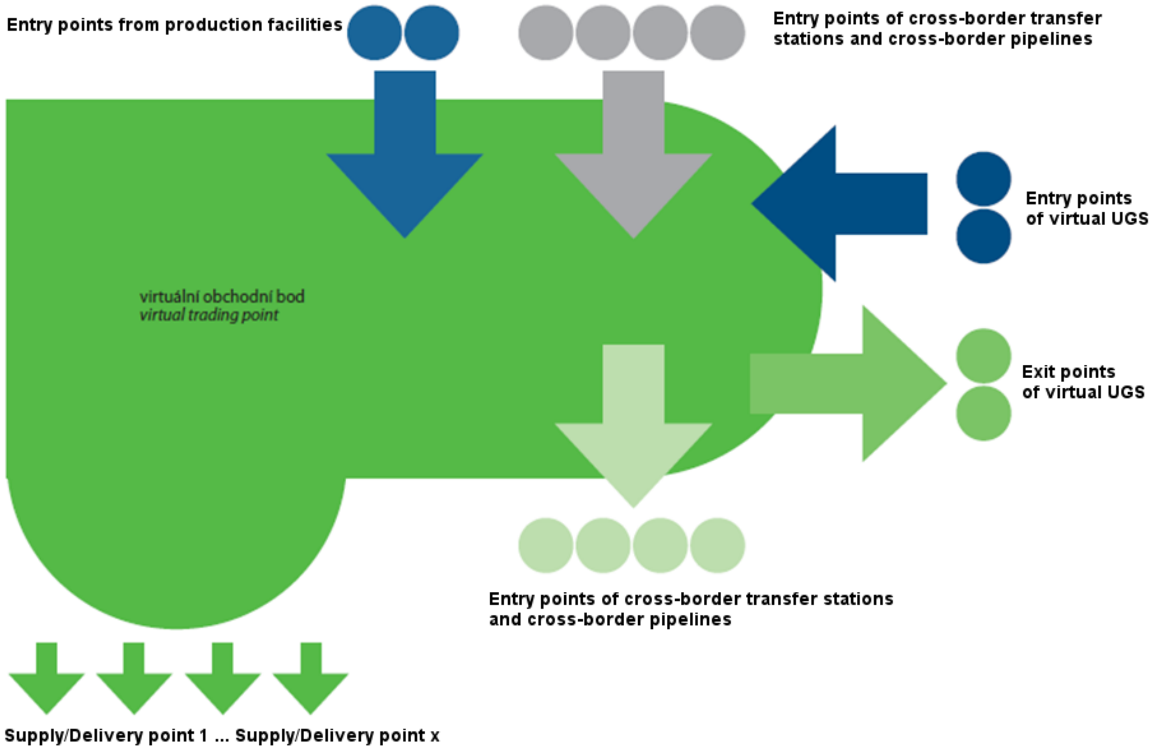

Figure 2 Balancing zone of the Czech gas market (Source: OTE, a.s.)

6.1.4. Converting gas transit contracts to the entry/exit regime

In 1998, the EU member states adopted Directive 98/30/EC of the European Parliament and of the Council concerning common rules for the internal market in natural gas. The general objective of that Directive was to create an open internal market in natural gas in Europe and to enhance competition, taking due account of security of supply. The ensuing developments and discussions resulted in Regulation (EC) No 715/2009 of the European Parliament and of the Council on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005. Regulation (EC) No 715/2009 (in particular Recital (19) and Article 13) requires TSOs to implement an entry/exit system.

The entry/exit system enables network users to book transmission capacity independently at entry and exit points. This model has clearly brought a measure that promotes market development, since it provides network users with a greater flexibility, system transparency, and cost-reflective tariffs. The independence of entry and exit capacities is further underpinned by the virtual trading point at which network users can sell or buy gas. In this configuration gas can easily change hands, and this facilitates gas trade and increases the liquidity of the gas market.

Due to the entry into force of the above-mentioned legislative changes the relevant implementing acts were amended at the national level, and the entry/exit model was put in place in the Czech Republic on their basis. Thus, since 2007 the transmission system operator has been offering entry and exit capacity at each of the entry and exit points into/from its transmission system independently. Accordingly, the TSO charges the prices for entry and exit capacity bookings at each individual entry and exit point separately, and this constitutes a major change compared with the system where prices were charged based on the use of the route between two points (the point-to-point model). Further to the newly implemented configuration of the Czech gas market, the law has made it possible to convert the transmission contracts concluded in the point-to-point model to the entry/exit model. During this conversion it has been necessary to prevent impacts on the agreed entry and exit points of the transmission network and at the same time, the transmission capacity at each of the points had to be equal to the transmission capacity agreed in the concluded contract based on the contractual path. The sum of the payments for transmission capacity at the entry and exit points of the transmission network and other related charges had to be equal to the sum of all payments under the concluded contract and the payment for the transmission capacity at the entry point into the transmission network had to be equal to the payment for the transmission capacity at that entry point using the applicable tariff.

6.1.5. The 2009 gas crisis

Early January 2009 saw initially a reduction and then an interruption in gas transport across Ukraine into the Czech Republic as a consequence of the Russian-Ukrainian dispute over the payment of a debt for supplied gas. Thus, from 7 January a number of EU countries, including the Czech Republic, were left without Russian gas supply. The affected countries therefore withdrew gas from storage facilities and looked for gas supply via some other routes and under short-term contracts. Russian gas supply to the Czech Republic was ensured, to some extent, via the 'north route' through the Yamal gas pipeline across Poland and Germany to the Hora Svaté Kateřiny/Olbernhau cross-border transfer station (as replacement for missing deliveries via the Lanžhot cross-border transfer station), with the transmission system operator reversing the gas flow (reverse flow) as much as the system's technical capabilities allowed, so that gas flowed from the west to the east. This arrangement for the gas flow combined with the maximum possible gas withdrawal from storage facilities helped to avoid the disruption risk to continuous supplies for customers in the Czech Republic throughout the time of the complications with the gas flow across Ukraine. In addition, the technical solution that was used made possible the first ever gas transport from the Czech Republic across the Czech-Slovak national border from the west to the east in 2009. Slovakia was therefore receiving 6.3 million m^3 of gas per day during the crisis. This relatively short episode (some two weeks) revealed, however, that longer persistence of this problem would not be sustainable for the Czech Republic and other countries connected to the Czech transmission system for a number of reasons, including the insufficient reverse flow capability. The decision was therefore taken to carry out technical measures that would support a quick implementation of reverse flow, i.e. from the northwest to the east and further, and also to the southwest. Figure 3 illustrates gas supply and flows in the above-described critical period.

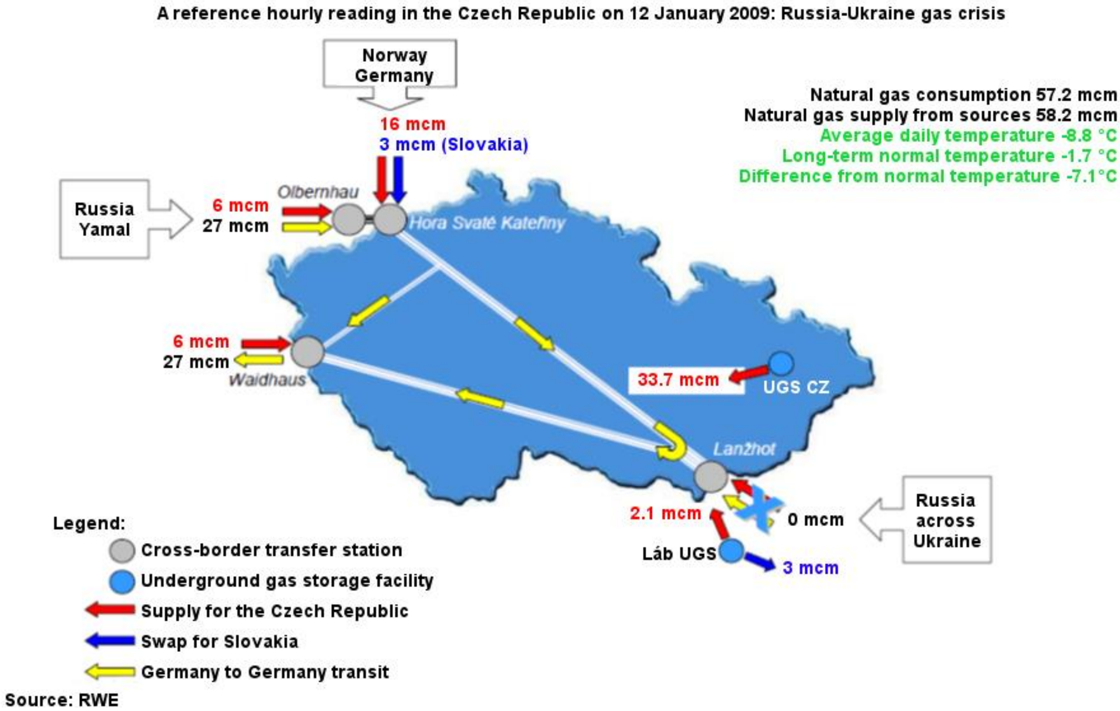

Figure 3 Diagram of gas supply and flows on 12 January 2009, when consumption peaked

6.1.6. Reverse use of the transmission network

As part of its strategy, which reflects the obligations laid down in the law, the transmission system operator seeks to enhance the security of gas supply to the Czech Republic and other European countries, increase competition in gas supply, boost the Czech Republic's strategic position amongst European transmission routes, strengthen the diversification of strategic energy sources in Europe, promote the Czech Republic's energy diversification, and reinforce the capacity for gas transport for the Czech Republic. Responding to the trends in the European market, it focuses on diversifying gas sources and reinforcing transmission capacity and flexibility and on the further development of the Czech transmission system and the capacity products offered.

In the event of interruptions in gas supply to the Czech Republic across Ukraine, i.e. from the traditional direction, the Czech transmission system has sufficient transmission capacities at the other entry points into the transmission network.

Due to the above-outlined strategy and based on the experience from the January 2009 crisis, large amounts of funds were invested in the transmission system between 2009 and 2011; the investments have made the use of reverse flow possible to the full extent at all entry and exit points, i.e. gas can be transported in various directions; thus, in line with the regional cooperation strategy it is possible to ensure the permanent availability of physical bidirectional capacities that can be used for supplying gas to neighbouring EU member states as well as further down the stream to other countries along the gas supply corridor.

The *Reverse Flow in the West-East Direction* project has helped to reinforce the transmission capacity and infrastructure required for the reverse flow of gas, i.e. from the west to the east. The objective of the project was to increase the transmission system's capacity by 15 million m^3 per day in the direction from the German-Czech border to the Czech-Slovak border, thereby diversifying transmission flows for Slovakia, Austria, Hungary, and southern Germany (Bavaria).

The *Reverse Flow in the West-East Direction* project was composed of six individual capital projects that mainly involved modifications to piping and equipment at border transfer stations, selected compressor stations, and junction points (see https://www.net4gas.cz/en/projects/eepr-projects/reverse-flow-direction-west-east).

6.1.7. The transmission system operator

Based on the legislation contained in the Energy Act, in the case of gas transmission only one exclusive licence for gas transmission has been awarded in the Czech Republic. The transmission system operator is NET4GAS, s.r.o., which operates gas pipelines for international gas transit and national gas transmission having a total length of approximately 3,820 km, with DN 80 to DN 1400 pipes and rated pressures from 4 to 8.4 MPa. The transmission network features a topography divided into four main branches. The northern branch runs from Lanžhot to Brandov/Hora Svaté Kateřiny, the southern branch runs from Lanžhot to Rozvadov, and the western branch interconnects the northern and southern branches in western Bohemia. In the eastern part of the country, the Moravian branch helps to supply gas to Moravian regions and joins the Polish transmission network. The northern, southern and western branches are interconnected at the key junction points in Malešovice, Hospozín and Přimda. Annex 2 contains a map showing the routes.

NET4GAS sells transmission capacity at the individual entry and exit points via which gas transmission takes place. The entry points of the gas system include physical or virtual cross-border points, points of virtual storage facilities, points of gas production facilities, and the virtual points of the transmission system operator. The exit points of the gas system include physical or virtual cross-border points, points of virtual storage facilities, supply points of customers directly connected to the transmission network, and the virtual points of the transmission system operator. The virtual trading point is located among all the entry and exit points of the gas system; see Figures 1 and 2.

Upon entering into and exiting from the Czech Republic, gas is 'delivered and accepted', that is, gas quantity and quality are metered at the cross-border transfer stations between the Czech Republic and Slovakia at Lanžhot and at Mokrý Háj; and between the Czech Republic and Germany at Hora Svaté Kateřiny, Olbernhau, Brandov (Saxony), and Waidhaus (Bavaria). Between the Czech Republic and Poland, gas is metered in Cieszyn on the Polish side of the national border.

Gas flows from the long-distance (transit) transmission system into the national transmission system through delivery stations. Through the national part of the transmission network, gas is transported via delivery stations into each of the distribution systems in each of the regions, to customers directly connected to the transmission network, and to storage facilities.

The pressure required in the gas pipelines is maintained by four compressor stations (CS) located in the northern branch at Kralice nad Oslavou and at Kouřim and in the southern branch at Veselí nad Lužnicí and at Břeclav. All compressor stations are capable of bidirectional operation. The installed power of the compressors totals 243 MW.

Compressor stations	Kralice nad Oslavou	Kouřim	Břeclav	Veselí nad Lužnicí
Number of turbine sets and their power	5 x 6 MW	5 x 6 MW	9 x 6 MW	9 x 6 MW
	2 x 13 MW	2x 13 MW	1 x 23 MW	
Installed power at compressor stations	56 MW	56 MW	77 MW	54 MW
Total installed power for transmission	243 MW			

Table 3 Compressor stations in the transmission network and their capacities

6.2. Recapitulation of the development of the Czech transmission network

The transmission network in the Czech Republic, earlier the whole of former Czechoslovakia, was originally designed and built for transporting large volumes of gas from the east from Russia to the west to what earlier were East Germany and West Germany, and to Austria, France, Italy, and other western European countries. Thus, it is a robust system featuring a technical capacity that exceeds the Czech Republic's gas supply requirements by several times. Nevertheless, this configuration whereby a single network serves for both national supply and international transmission can be regarded as the most economical one possible, because it would not be economical to operate two parallel systems for different purposes of gas transmission.

The rate of growth in the technical transmission capacity of formerly the Czechoslovak and now the Czech transmission network has been significant. From the initial transmission capacity of 28.0 bcm/year, which in the 1970s was thought to remain the final quantity for a long time, the transmission capacity gradually increased to 80 bcm/year (some 840,000 GWh) during the 1980s and 1990s.

In view of the current geopolitical situation and the changed gas flows in a broader context, the Czech transmission network was modernised between 2011 and 2015 to be fully able to transport gas in the east to west direction and in the west to east (reverse flow) direction. Its interconnections with storage facilities and with neighbouring transmission system operators have also been reinforced. Due to the limited gas flow across Ukraine, the largest quantity of gas currently flows into the Czech Republic via the Brandov and Hora Svaté Kateřiny cross-border points connected to the German OPAL pipeline transporting gas from the Nord Stream I pipeline.

In 2011, the STORK pipeline was put into operation, offering an interconnection, until then missing, between the Czech and Polish transmission networks.

6.2.1. The Gazelle pipeline

The construction of the Gazelle pipeline was started in 2010. It is a 166-km high-pressure pipeline connected with OPAL near Brandov; it is also connected, via the Rozvadov-Waidhaus cross-border transfer station, with the MEGAL transmission network that supplies gas to southern Germany and eastern France. Gazelle was put into full operation in 2013.

As early as 2011, the ERO's decision exempted Gazelle from the obligation to allow third party access (TPA) under the conditions of the Energy Act and from the obligation of the ownership unbundling of the transmission system operator within the meaning of Section 67 of the Energy Act for the period until 1 January 2035. The European Commission confirmed this in 2011 by its decision to grant an exemption from TPA under Article 36 of Directive 2009/73/EC. Thus, a special status has been granted to Gazelle and not all gas market participants have access to it. Under normal operating conditions, Gazelle is used exclusively for transiting gas from OPAL further down to southern Germany and it is not used for the purposes of supplying the Czech Republic. The above decision exempts a direct forward-flow capacity of up to 30 bcm/year in the Gazelle pipeline from the obligation to allow regulated TPA (Articles 32, 33 and 34 of Directive 2009/73/EC) and from tariff regulation (Article 41 (6), (8) and (10) of Directive 2009/73/EC) for 23 years.

6.2.2. Long-term contracts

Since the very beginning, the construction and development of the transmission network have been associated with the existence of long-term contracts for gas transport between gas producers and integrated commercial transmission and distribution companies, which formed an integral part of commodity contracts for gas supply. Each of the transit contracts was concluded in parallel with the "mother" gas supply agreement as the necessary condition for performance under the gas supply agreement. For the transmission system operator, the long-term contracts constitute a secure source of funds needed to meet the statutory obligation to ensure safe, reliable, and economical operation. They also support the future upgrade and development of the transmission network[3], provide for the operability of the whole system, and also create the certainty required for investment in further development[4].

Thus, due to the high demand for gas from Russian fields, the Czech transmission networks features considerable transmission capacities at entry and exit cross-border points (and the corresponding gas pipelines). It is in full compliance with the EU legislation[5] imposing the obligation to adopt such regulatory measures that will be the guarantee of security of gas supply across the Union and reduce the exposure of individual Member States to the harmful effects of disruptions of gas supply. Where a

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3 Section 58 (8) (a) of Act No 458/2000, as amended

4 Brown, M. H.; Rewey, Ch.; Gagliano, T.: Energy Security; The National Conference of State Legislatures; Denver; 2003

5 Regulation (EU) 2017/1938 of the European Parliament and of the Council, Recital (7)

Member State's security of gas supply is threatened, there is a risk that measures developed unilaterally by that Member State may jeopardise the proper functioning of the internal gas market and damage the gas supply to customers in other Member States. To allow the internal gas market to function even in the face of a shortage of supply, provision must be made for solidarity and coordination in the response to supply crises, as regards both preventive action and the reaction to actual disruptions of gas supply.

Regional cooperation should therefore help to mitigate the risks and optimise the benefits of coordinated action and also to carry out the most cost-effective measures for consumers in the EU. At the same time, the transmission capacities that are currently being used for gas transport in other than standard situations, such as an unexpectedly high gas demand, must be maintained fully available. The benefits deriving from this regional cooperation, which constitutes one of the key pillars of the internal gas market, should, however, at all times be allocated together with the costs that are necessarily incurred in the implementation of the measures. Taking into account the requirements for the reference price methodology, there is no doubt whatsoever that it is necessary to ensure that there is no discrimination in the form of cross-subsidisation[6] and that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system[7].

6.2.3. Distribution systems

Three operators of distribution systems that are directly connected to the transmission network operate in the Czech Republic. They are GasNet, s.r.o., Pražská plynárenská Distribuce, a.s. [PPD in the matrix of distances], and E.ON Distribuce, a.s. In the Czech Republic, 65 (local) distribution systems are also currently registered; they are connected to the gas system through one of the above operators of (regional) distribution systems. Areas served by the regional distribution systems are apparent from Figure 4.

Figure 4 DSOs' areas of operation

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6 Article 7(c) of Regulation 2017/460

7 Article 7(d) of Regulation 2017/460

6.2.4. Storage facilities

Gas storage facilities, owned and operated by innogy Gas Storage, s.r.o., MND Gas Storage a.s., Moravia Gas Storage a.s., and SPP Storage, s.r.o., constitute another component of the Czech gas system. The situation of storage facilities in the Czech Republic is shown in Figure 5. These storage facilities constitute an important tool with the help of which the Czech Republic partly meets its year-long gas demand. The system is arranged as follows: in periods of lower gas consumption, gas is injected into the storage facilities, so that in periods of increased gas consumption the storage facilities help traders to fill the gap between the current consumption and the current gas import into the country.

Gas storage plays a crucial role in smoothing out gas demand, which changes in relation to seasons of the year and in relation to peaks in gas consumption, and in ensuring reliable and safe gas supply. Gas market participants throughout the logistics chain of gas supply can benefit from the opportunity to store gas until the time when their gas has to be used as an adequate response to the gas market's increased demand caused by meteorological and other events.

As in other EU countries, the liberalised Czech gas market has experienced an expansion of the traditional role of gas storage in meeting the seasonal swings in demand. At present, storage facilities are also used for covering and optimising short-term changes in gas demand, for ensuring security of gas supply, and as an arbitrage instrument for spot trades on organised gas markets.

In this connection, the seasonal differences in gas prices continue to be the principal tool for storage capacity valuation. However, from the perspective of its users the value of storage capacity is also determined by the opportunity to profit from short-term ups and downs in prices. The third component of the value of storage capacity for traders is its contribution to providing for the security of supply to their customer portfolios.

Despite the partial shift from its function as a strategic reserve to a tool for short-term liquidity in the gas market, gas storage continues to be a fundamental element of the gas market and plays a crucial role in providing for the stability and effective functioning of this market. The economics of the operation of the existing storage assets – which, however, is not protected by regulation – has faced strong pressures in recent years due to margin squeezes.

The above facts are reflected in the initial discount set out in Article 9 TAR NC at 50% of capacity-based transmission tariffs at entry points from and exit points into storage facilities. This discount constitutes a regulatory measure that reflects, also in the conditions of the Czech gas market, the benefit of storage facilities for the gas system, and in turn the gas market viewed as a comprehensive whole.

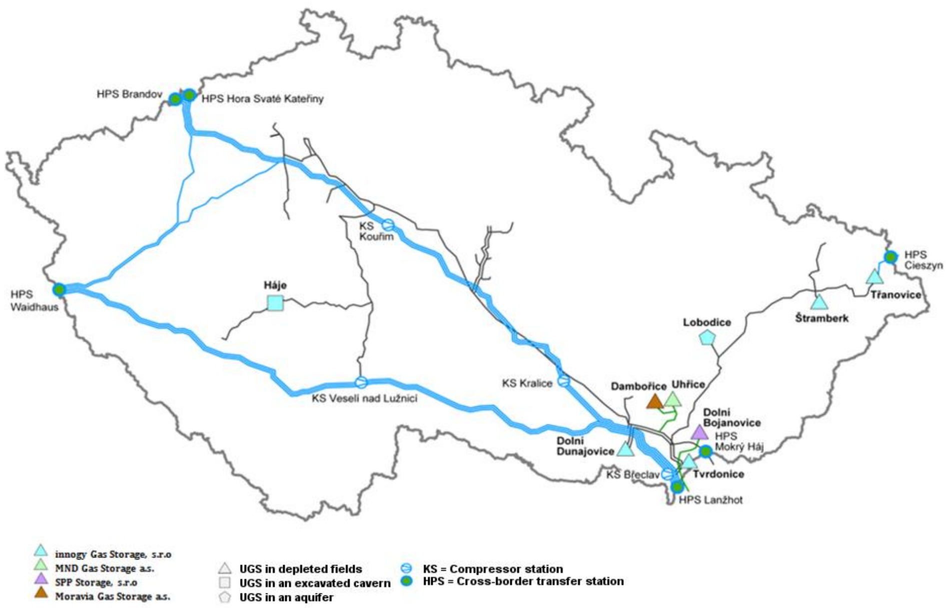

Figure 5 Map of storage facilities in the CR and their connection to the transmission network

6.2.5. Development of the Czech gas infrastructure

The Czech gas infrastructure is highly developed and robust enough to respond to the changing nature of international gas transmission across the country. The changes of the directions of gas flows across Europe will significantly influence the future development of the transit system within the Czech transmission network. Development projects for new international pipelines and declining gas production in Europe will determine the direction of transit flows in the future. From the perspective of current demand and current transit, the transit system of the transmission network has a sufficient size. Entry and exit capacities at cross-border transfer stations are shown in Figure 6. Gas supply to northern Moravia and Silesia is conditional on the transmission system operator's cooperation with the operators of the local storage facilities in that area. However, due to the legislative requirements for the unbundling of the transmission system operator and storage system operators, it is not feasible to manage the gas system as historically designed and built[8]. Currently, this region is supplied by only one line of the transmission network, with an annual capacity of approximately 4 bcm, but this pipeline is also used for gas transmission to Poland via the Cieszyn (Český Těšín) cross-border transfer station.

The capacity of storage facilities and their withdrawal and injection capacities are adequate to the current gas demand in the Czech Republic. Traders' obligation to provide for the security standard of gas supply to protected customers has not yet been reflected in any major increases in demand for storage capacities, and therefore also not in the price of storage capacity in storage facilities offered by storage system operators

[8] The Ten-year Plan for the Development of the Transmission System in the Czech Republic (https://www.net4gas.cz/cz/projekty/rozvojove-plany/)

in auctions. The strong competition in the flexibility market is directly reflected in the price that gas traders are willing to pay for storage capacity. This price can therefore drop to or even under the level of operating costs, which discourages from investment in the expansion of storage capacities. In some EU countries, the situation has even made the operators to close down or mothball some storage facilities.

Mid-term horizon

Over the medium term, we can expect the implementation of projects responding to the change of the direction of transit flows across the Czech Republic to Austria, Italy, and southern Germany. These mainly include the expansion of the existing Hora Svaté Kateřiny cross-border transfer station and the construction of a line running in parallel with Gazelle. The modifications carried out in 2016 at the Veselí nad Lužnicí compressor station already enable gas transmission in the direction from Přimda to Lanžhot. Combined, these projects will reinforce the transmission capacity between the Gaspool (Germany) and CEGH (Austria) trading areas. For these purposes, the BACI pipeline project is being prepared; if carried out, it will enable direct interconnection between the Czech and Austrian gas markets. The final decision on the implementation and capacity of the BACI project will depend on the evaluation of traders' interest in a virtual interconnection between the Czech Republic and Austria, referred to as the TRU service with an annual capacity of 850 GWh (80 million m^3). The TRU service has been in trial operation since 2018 and consists of bundled capacity services created in close cooperation between NET4GAS, s.r.o., GAS CONNECT AUSTRIA GmbH, and eustream, a.s.

For 2022, the completion of the national Moravia pipeline is being planned; its purpose is to provide sufficient exit capacity for northern Moravia and also a potential additional expansion of capacities in connection with the development of the North-South Corridor. The implementation of the project, in any of the variants being considered and addressed, is associated with an upgrade of the Břeclav compressor station.

In 2022, the STORK II pipeline is also expected to be put into operation; it will interconnect the Czech and Polish gas systems with a sufficient capacity, thereby creating the potential for diversifying gas sources and gas supply routes through interconnection with LNG terminals in Poland and Croatia.

The implementation of the project for a pipeline running to Oberkappel, Austria, has been put on hold, and probably will not be carried out in the medium term.

No new storage facility is expected to be commissioned over the medium term; the full capacity of the Dambořice facility will only be put into operation at stages. The transmission system operator and SPP Storage, s.r.o. are preparing a connection between the Dolní Bojanovice facility and the Czech gas system. Following the completion of this project, the ratio of the total capacity of storage facilities and gas demand in the Czech Republic will be 40-48%, and the SEP's requirements will therefore be met with a reserve margin.

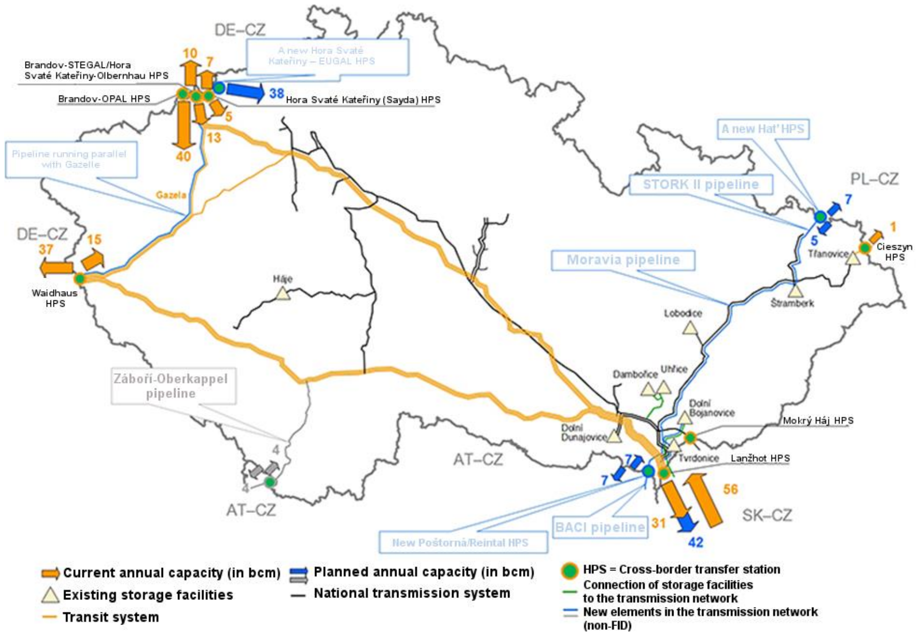

Figure 6 Map of entry and exit transmission capacities at cross-border transfer stations

Long-term horizon

It is not feasible to determine clearly how the supply routes from the south, which are now being prepared or considered (TurkStream, South Corridor, Eastring, etc.), will change the situation in the European gas market. A wider portfolio of gas sources would increase supply in the market and probably strengthen the change of the directions of gas flows in Europe. Long-term trading is likely to be replaced, to a larger extent, with spot trades at exchanges/pools. Infrastructure development will be strongly tied to and follow the market's demand. The Czech transmission network will probably not increase its capacity significantly over the long term. From 2035, Gazelle will be opened to third party access (an exemption has been granted only in the Brandov–Waidhaus direction).

In view of the expected growth in gas demand under the SEP scenarios, up to 1.2 bcm of new storage capacity[9] will have to be put into operation by 2050 to meet the SEP's requirements, depending on the particular scenario, together with matching transmission capacity.

6.3. Current situation

6.3.1. The current regulatory approach

The ERO regulates the prices for the gas transmission service under Section 19a of the Energy Act. They are set as fixed prices ['fixed price' as per the Price Act] and the TSO and network users cannot change them. To provide for the virtual separation of revenue from national transmission and revenue from transit transmission, the pricing process

[9] Report on the electricity and gas demand expected in the future and the method for balancing electricity and gas supply and demand, OTE, a.s., 2017

is split. This approach ensures that there are no cross-subsidies or assignment of the volume risk between the transiting users of the network (traders transporting gas across the Czech Republic) and the users of the national part of the network (domestic customers).

The Czech transmission network was built as predominantly a transiting network in the past. Its transmission capacity exceeds the needs of gas supply to customers in the Czech Republic by several times. The Czech transmission capacity was primarily intended for transporting gas to other countries (Germany, France, Austria, and Italy) in the past. It is therefore justified that the costs incurred in maintaining transit capacities are defrayed by those network users as part of the entry/exit system and are not assigned to domestic customers who do not need this service.

In the case of prices for the gas transmission service, two different methodologies are used for pricing national transmission and for pricing transit transmission. In respect of national transmission, the revenue cap approach is applied: a precise amount of funds earmarked for the operation, maintenance, and development of the transmission network is determined for the transmission system operator for every calendar year. If the transmission system operator recovers lower or higher revenue, for the next subsequent year its revenue is adjusted by the difference between the allowed and actual revenues. The national part of transmission includes:

- virtual delivery points into distribution networks
- delivery points of virtual storage facilities
- delivery points of customers directly connected to the transmission network
- cross-border entry points into the transmission network to the extent required for supplying customers in the Czech Republic

In respect of transit transmission, the price cap approach, underpinned by international comparisons of transmission tariffs (benchmarking) is applied. Thus, for the transit part of transmission, the transmission system operator is not given any precise amount of revenue that it has the right to recover; the basis is the assumption that a price cap determined by comparing similar transmission systems and routes provides the transmission system operator with an adequate amount of revenue, including cover for the risks related to the operation of transit transmission, because the recovered funds are not then adjusted to any preset level. The transit part of transmission includes:

- cross-border exit points from the transmission network
- cross-border entry points into the transmission network, but without the part needed for supplying customers in the Czech Republic

6.3.2. Compatibility of the current regulatory approach with TAR NC implementation

Because of the expected development of new major gas transport routes and the resulting changes in gas flow directions in the EU, systems with the currently existing transit routes are facing the risk of declining capacity bookings and increasing instability in transmission capacity bookings beyond domestic demand. This volume risk and the related aspects should be addressed with a view to preventing crossfinancing between network users and also to preventing any reduction in the capacities used for transporting gas to other countries, even though their full usage occurs with a low intensity only.

The situation must be addressed where the volume risk, i.e. the risk of insufficient bookings of technical capacities and covering the related costs, cannot be defrayed by the domestic users of the network in fairness. This requirement is all the more visible due to the fact that the advantages related to the technical capacity in question are being enjoyed by other network users, i.e. the transmission system is used for transporting gas to final customers in other market areas. This mainly includes systems with a very large proportion of capacities dedicated to transit flows, which are determined by the capacity at cross-border exit points, but with significantly volatile transmission capacity bookings.

If the transmission system operator accepts the volume risk for the 'transit' part of the technical capacities in the system and the recovery of the related revenue is based on the price cap regime, revenue will necessarily be differentiated as well. To prevent cross-subsidisation, it would be necessary to separate the revenue the recovery of which is guaranteed by the domestic users of the network in the revenue cap regime from the revenue from transit transmission the recovery of which is not guaranteed in the Czech Republic due to the price cap regime. Because of the different levels of risk deriving from the regulatory mechanism employed, this fact must be taken into account when setting revenue for national transmission and revenue for transit transmission. The model employed for implementing the TAR NC must therefore contain a solution whereby the costs are transparently allocated to the users of the national part of the network and to customers in other market areas, who use only the transit part of the network, because at the end of the day it is those customers who have necessitated such costs. This requires an opportunity for a clear-cut identification of the needs of transit and of the needs of domestic customers, and for reflecting these needs in a methodology the mechanisms of which meet the key requirements of the TAR NC, including the provision in Article 7 (d), which requires to ensure that volume risk related particularly to transports across an entry-exit system (i.e. the transit part of the network) is not assigned to final customers within that entry-exit system. At the same time, the solution that will be applied must take into account the requirements of Regulation 2009/715/EC to the full extent.

7. Objectives and required characteristics of the proposed implementation method

The ERO's objective is to adopt a method for implementing the TAR NC, which will satisfy all the binding requirements of the applicable legislation, see Table 4, and which will also provide for a fair allocation of costs to different users. The tariff system should also create conditions for an efficient utilisation of the gas system in order to minimise the possibility of a dramatic increase in tariffs at the affected interconnection points in the event of the absence of long-term transmission capacity bookings.

It is also desirable to provide for the economic sustainability of the gas infrastructure in the event of any reduction in network usage (if the existence of this infrastructure is based on the requirement that gas supply is ensured).

Article 13 Regulation No 715/2009	Articles 7(a) – 7(e) TAR NC	Aim
✓ **Tariffs, or the methodologies used to calculate them are transparent**	✓ The reference price methodology shall enable network users to reproduce the calculation of reference prices and their accurate forecast.	Reproducibility, predictability
✓ **Tariffs, or the methodologies used to calculate them take into account the need for system integrity and its improvement and reflect the actual costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent, whilst including an appropriate return on investments**	✓ The reference price methodology shall take into account the actual costs incurred for the provision of transmission services considering the level of complexity of the transmission network.	Take into account actual costs
✓ **Tariffs, or the methodologies used to calculate them, shall be applied in a non-discriminatory manner** ✓ **Tariffs, or the methodologies used to calculate them, shall avoid cross-subsidies between network users**	✓ The reference price methodology shall ensure non-discrimination and prevent undue cross-subsidisation including by taking into account the cost allocation assessments. ✓ The reference price methodology shall ensure that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system.	Take into account actual costs
✓ **Tariffs for network access shall neither restrict market liquidity nor distort trade across borders of different transmission systems** ✓ **Tariffs, or the methodologies used to calculate them, shall facilitate efficient gas trade and competition**	✓ The reference price methodology shall ensure that the resulting reference prices do not distort cross-border trade.	Consequence of tariffs taking into account costs

Table 4 Legislative requirements for the tariff system

8. Consultation under Article 28

8.1. Setting the level of multipliers

8.1.1. The general principles for setting the level of multipliers

The transmission network has been designed with a capability to transport large gas flows under peak conditions. However, it is utilised only partly under average conditions. Multipliers applied to tariffs for short-term products with a shorter period of validity make it possible to charge more to the network users who contribute to the peak demand than to the network users with a flat profile of transmission requests. When using these multipliers, it is crucial to strike a balance between the efficient utilisation of the network and revenue recovery. Low values of multipliers incentivise traders to shape the profile of their transmission capacity bookings to their own needs, while high values of multipliers should increase their interest in longer-term bookings (yearly or longer bookings).

Thus, the following aspects had to be taken into account when determining the level of multipliers, in compliance with the TAR NC[10]:

- the balance between facilitating short-term gas trade and providing long-term signals for efficient investment in the transmission system,
- the impact on the transmission services revenue and its recovery,
- the need to avoid cross-subsidisation between network users and to enhance cost-reflectivity of reserve prices,
- situations of physical and contractual congestion, and
- the impact on cross-border flows.

The scope of the applicability of the TAR NC to multipliers is limited to cross-border points, or virtual cross-border points, but all tariffs should be non-discriminatory and should prevent cross-subsidisation. Thus, from the perspective of the Czech gas market's characteristics, there are no objective reasons for applying identical multipliers to the transmission network's entry and exit points that the TAR NC does not directly concern.

By their very nature, multipliers therefore determine the level of the price differentiation between capacity products with different durations (yearly, quarterly, monthly, daily, and within-day).

[10] Article 28 (3)(a) of Regulation 2017/460

Assessment criterion	Low value of the multiplier	High value of the multiplier
The need to avoid cross-subsidisation between network users and to enhance cost-reflectivity of reserve prices	-	+
Preventing situations of physical and contractual congestion	+	+
Facilitate short-term gas trade	+	-
Long-term signals for efficient investment in the transmission system	-	+
Impact on the transmission services revenue and its recovery	-	+
Impact on cross-border flows	0	0

Table 5 Assessment criteria for setting multipliers

Arguments in favour of setting a high level of multipliers:

- It promotes transmission capacity bookings on a yearly basis;
- Traders pay for their peak demand for capacity; it is a cost-reflective parameter.

However, the price for booking transmission capacity for less than a year reflects costs only when used for profile-shaping bookings. At the same time, the forecasts for network usage should be taken into account. If it is not possible to determine such forecasts with an acceptable level of probability, the value of the individual multipliers is a tool for achieving cost pass-through into the applied tariff.

From the perspective of long-term signals for efficient investment in the transmission system it is relevant to note that a low value of multipliers renders yearly capacity products relatively unattractive. Traders are not motivated to use these products in the following gas year. Where clear signals for efficient investment are not provided, there is a risk of insufficient investment in the system. Naturally, it is also true that there is a risk of too high investment having no support in demand for transmission capacity.

In the case of the revenue cap regime, the calculation of the values of multipliers must be based on a forecast of an optimised profile of transmission capacity bookings to minimise the likelihood of the occurrence of the under- or over-recovery of revenue attributed to the regulatory account. However, in the environment of the Czech gas market model, the non-recovered part of revenue is transferred to the revenue allocated to the price for distribution capacity booking. In the case of a high level of multipliers the traders' aim is to book transmission capacity based on a yearly product. Capacity is therefore sold before the beginning of the gas year and it is therefore easier to forecast the level of contracted capacity. At the end of the day, the amount of revenue that is subject to reconciliation in the regulatory account decreases.

Low values of multipliers bring positive benefits for the sale of capacity products on a short-term basis. Transmission capacity bookings will directly correlate with the need to actually use such capacity, such use reflecting the currently prevailing conditions determining demand for gas. Users of the transmission network therefore have at their disposal a very flexible tool for responding to dynamic changes in the market.

Positive benefits of the low and high levels of multipliers can be identified in the aspect of physical and contractual congestion. Low values of multipliers support capacity sales based on the market situation, triggering an effect in the form of lower sales of unused capacity, which makes this a measure directed towards the prevention of contractual congestion. On the other hand, a high level of multipliers provides a signal for efficient investment in the system, which therefore makes this a measure directed towards the prevention of physical congestion.

In the case of impacts on cross-border gas flows, it is not feasible to identify clear-cut arguments for a low or a high level of multipliers. The impact on the cross-border flow is primarily determined by the price differentials between markets and the expected development of this spread. As mentioned above, a low level of multipliers encourages the sale of transmission capacity in relation to the prevailing market situation, which helps traders to respond dynamically to changes in price spreads, resulting in increased cross-border gas flows. On the other hand, a high level of multipliers promotes long-term capacity products. Once the transmission capacity has been bought, it constitutes sunk costs, and any price differential can be used for recovering these costs, which in turn leads to increased cross-border gas flows.

The above clearly suggests that not only one correct solution to the problem of setting the level of multipliers exists. The multipliers should always carry information that the choice of a particular capacity product is a compromise between the costs of acquiring such product and its added value, where both of these factors must be related to the price of the yearly capacity product. The costs of transmission capacity are mainly caused by the size of the demand for this capacity. The transmission system operator maintains an extensive network with sufficient capacity to be able to meet requests for transmission in periods of peak demand. From the perspective of determining the size of the system, transmission capacities are therefore available not only in periods of peak consumption but also for the rest of the year. The costs of providing short-term transmission capacity in the periods of high demand therefore do not differ significantly from the costs of offering capacities during the year.

Since a multiplier = 1 cannot be regarded as adequate and matching the situation in the Czech gas market, it is unquestionably very evident that the multiplier must be higher. Its value must create the conditions for striking a balance between the various capacity products so that each of these products enjoys a justified slot in each trader's capacity portfolio (if the value of the multiplier for the quarterly capacity product is higher than for the monthly product, or if the value is the same, the quarterly product will not have any added value). The baseline assumption for setting multipliers is that a quarterly multiplier is lower than a monthly one, which is lower than a daily one, which is lower than a within-day one (the price for within-day transmission capacity booking is set as 1/24 of the daily price for each hour remaining until the end of the gas day).

8.1.2. International multiplier benchmarking

The levels of multipliers vary considerably in the various EU member states, and reflect the specific conditions of the respective national market. In spite of that, certain general similarities and their limits can be found in the settings of multipliers in the various countries, see Charts 3 to 6.

In an international comparison of multipliers for European transmission system operators' capacity products, the levels set for the multipliers for the Czech TSO meet the requirements of Article 13 (1) TAR NC since 2017.

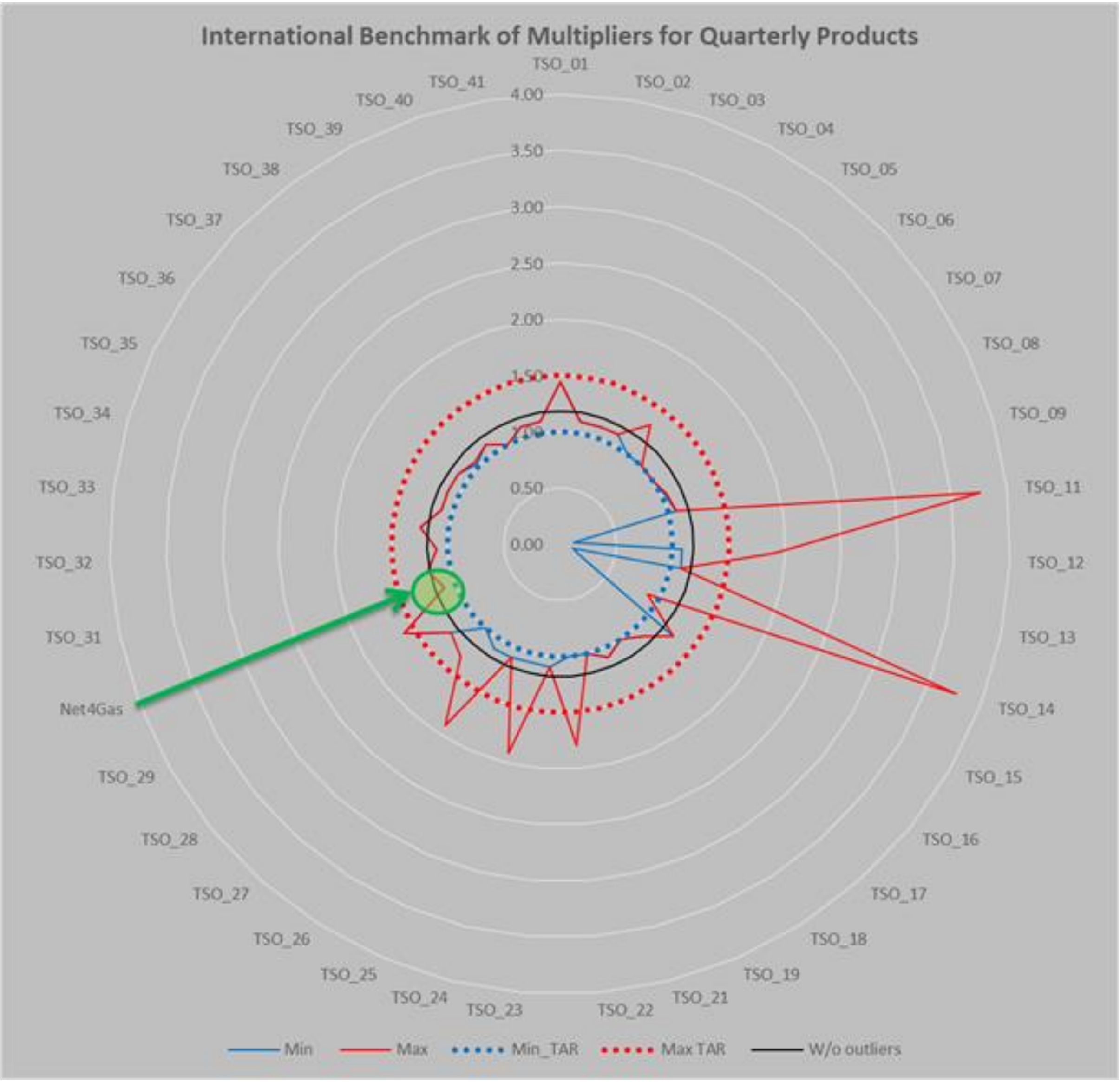

Chart 3 Levels of multipliers for TSOs in Europe in 2017, quarterly products[11]

Based on the conclusions in the ENTSOG report[11] the average quarterly multiplier in 2017 was 1.18. With its multiplier of 1.1, the Czech TSO meets the requirements of Article 13 (1) TAR NC in the international benchmarking of quarterly multipliers of European TSOs.

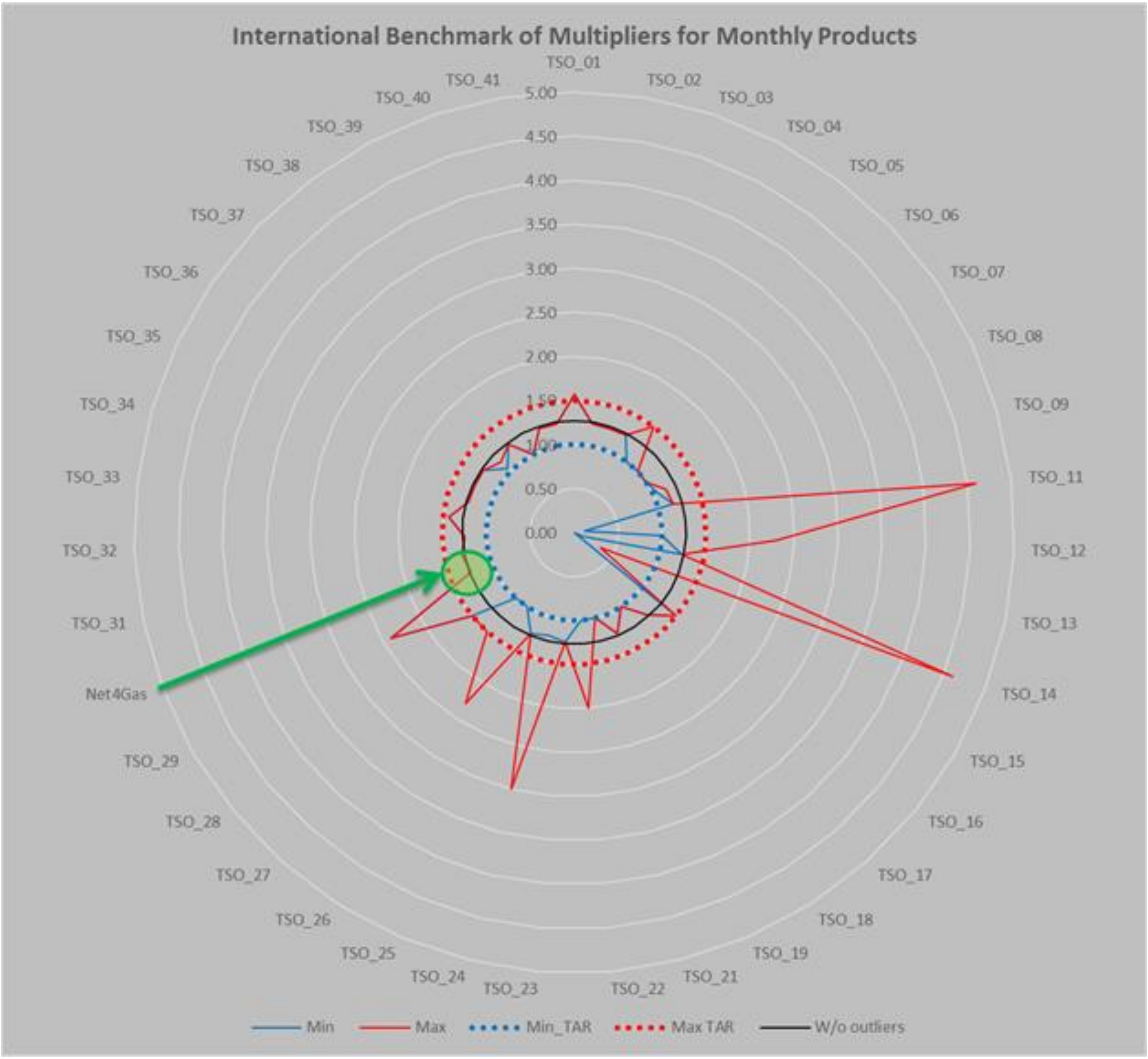

Chart 4 Levels of multipliers for TSOs in Europe in 2017, monthly products[11]

Based on the conclusions in the ENTSOG report [11] the average monthly multiplier in 2017 was 1.27. With its multiplier of 1.25, the Czech TSO meets the requirements of Article 13 (1) TAR NC in the international benchmarking of monthly multipliers of European TSOs.

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11 First ENTSOG Report on Implementation Monitoring and Baseline for Effect Monitoring of the Tariff Network Code, March 2018; edited by ERO

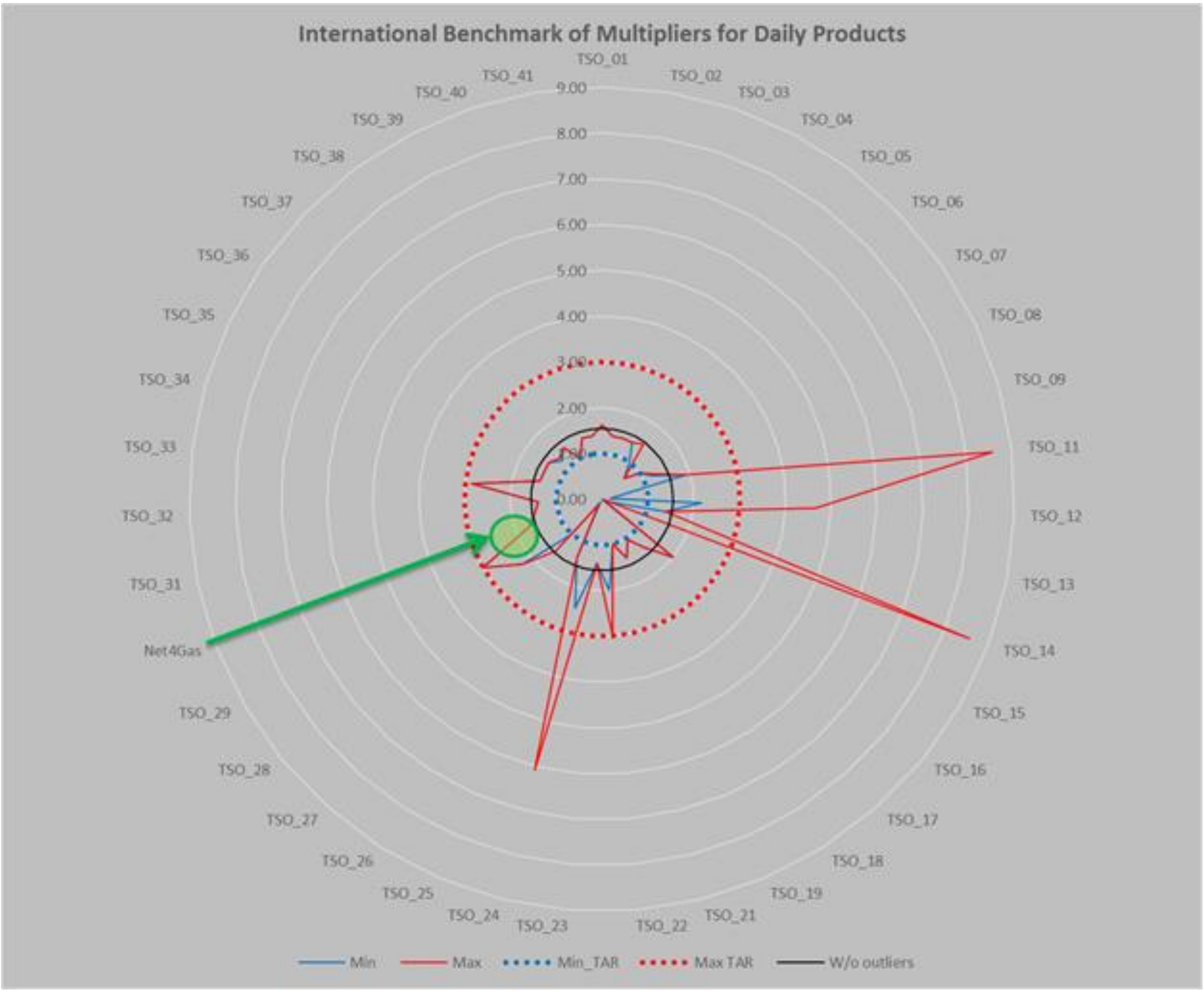
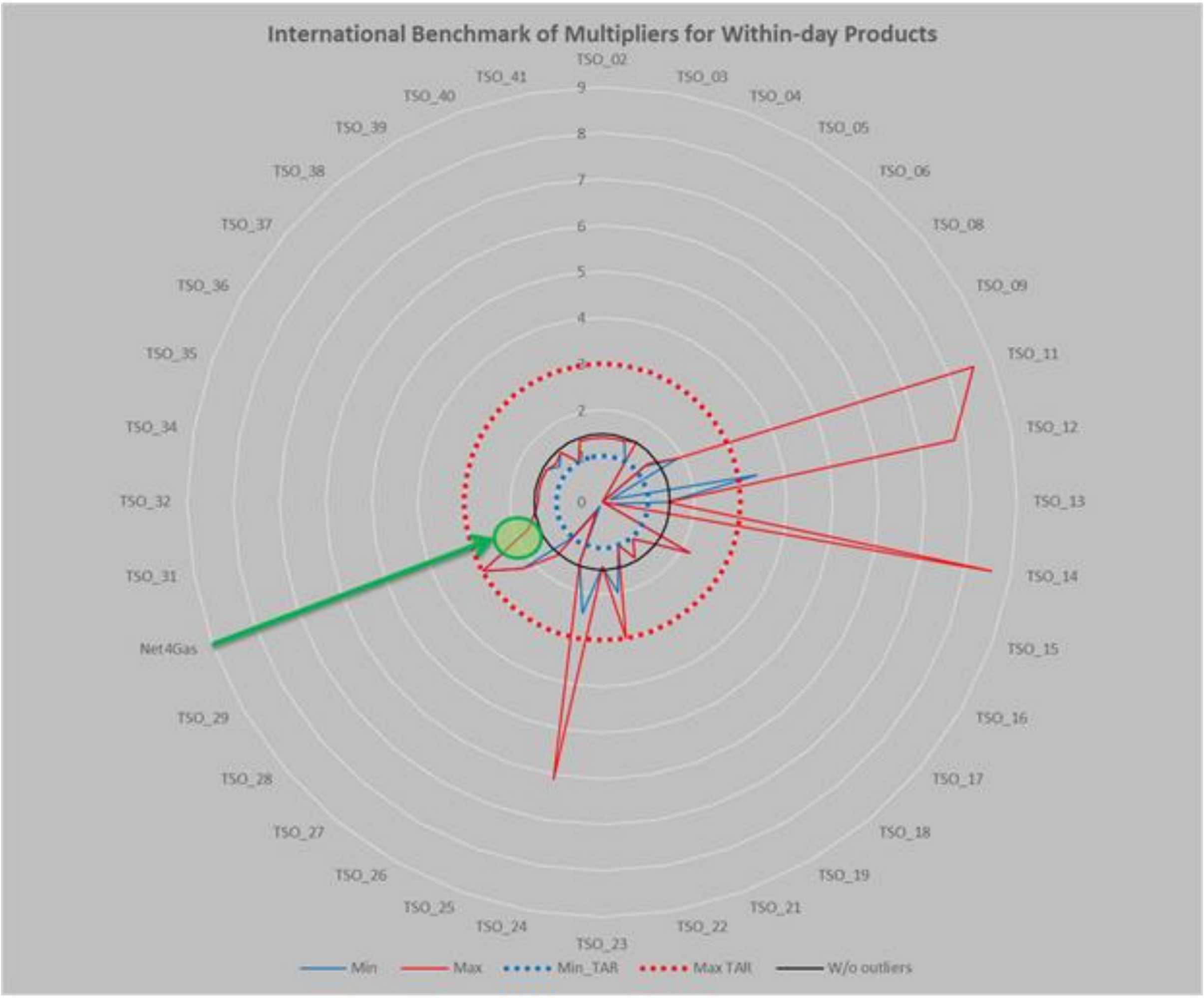


Chart 5 Levels of multipliers for TSOs in Europe in 2017, daily products[11]

Based on the conclusions in the ENTSOG report [11] the average daily multiplier in 2017 was 1.43. With its multiplier of 1.5, the Czech TSO meets the requirements of Article 13 (1) TAR NC in the international benchmarking of daily multipliers of European TSOs.



Graf 6 Levels of multipliers for TSOs in Europe in 2017, within-day products[11]

Based on the conclusions in the ENTSOG report[11] the average within-day multiplier in 2017 was 1.39. With its multiplier of 1.7, the Czech TSO meets the requirements of Article 13 (1) TAR NC in the international benchmarking of within-day multipliers of European TSOs.

8.1.3. Consulted levels of multipliers

The assumptions and reasoning set out in points 8.1.1 and 8.1.2 above result in the following levels of multipliers:

Levels of multipliers	
Capacity product	**Multiplier**
Quarterly	1.1
Monthly	1.25
Daily	1.5
Within-day	1.7

Table 6 Proposed levels of multipliers

8.2. Setting the levels of seasonal factors and the calculations referred to in Article 15

Seasonal factors for calculating reserve prices for capacity products are not used in the Czech Republic and their introduction in the future is not envisaged. In relation to the earlier consultations on proposals for the rules of gas market functioning in the Czech Republic, no demand for introducing seasonal transmission tariffs was expressed by the users or the operator of the transmission system. The probable reason is the existence of short-term transmission tariffs (see subchapter 8.1 above), which makes it possible for transmission network users to structure their capacity requirements to a sufficient extent while taking into account the need to cover the costs caused by short-term transmission products. Because of the size of the Czech transmission network, no cases occur where, for example, a winter season sees shortages of available transmission capacity and such circumstance, and the related higher costs, have to be reflected in the structure of transmission tariffs.

8.3. Discounts referred to in Article 9 (2) and Article 16

In the Czech Republic, no LNG facilities or infrastructure developed with the purpose of ending the isolation of EU member states are currently being operated. Article 9 (2) of the TAR NC will therefore not be applied.

In the Czech Republic, the approach of the ex-post discount, whereby network users are compensated after the actual interruptions occurred, has so far been applied for calculating the reserve prices for capacity products for interruptible capacity. The ERO determines the size of such compensation in a transparent manner.

Because of the above-outlined sufficient amount of transmission capacities at all entry and cross-border exit points, the ERO does not have any data on the basis of which it could determine the probability of interruption referred to in Article 16 (2) TAR NC.

Under Article 16 (4) TAR NC, the ex-post discounts will therefore be applied for capacity products for interruptible capacity.

9. Information published under Article 26 (1) (a)

9.1. Description of the proposed reference price methodology

9.1.1. General pricing assumptions

Because of the long-term dominant role of gas transmission for neighbouring countries' needs satisfied through the Czech transmission system, different regulatory regimes are currently being applied to national gas transmission and international gas transmission in the Czech Republic, primarily to shelter the domestic customers from the risks of changes in bookings for transit purposes.

National transmission, characterised by stable and long usage, is regulated employing the revenue cap method based on actual or expected costs, while the regulation of international transmission is based on the price cap method underpinned by international comparisons of transmission tariffs (benchmarking). Thus, for the transit part of transmission, the transmission system operator is not given any precise amount of revenue that it has the right to recover; the basis is the assumption that a price cap determined by comparing similar transmission systems and routes provides the transmission system operator with an adequate amount of revenue, including cover for the risks related to the operation of transit transmission, because the recovered funds are not then adjusted to any preset level.

With the transition to the cost-reflective methodology for international transmission regulation, also related to the implementation of the TAR NC requirements, the ERO considers (in line with Article 7 (d) TAR NC) that in the Czech Republic, a country with predominating international gas transmission, the volume risk related to this transmission should not be assigned to domestic customers. The ERO therefore prefers retaining the current method of price controls, i.e. revenue cap, for national transmission, and proposes the application of the price cap regime to international transmission, taking into account the higher risk deriving from the uncertainty as to the level of transit transmission bookings.

The risk entailed in transit flows in the Czech Republic is considerably higher than in some other countries that are *de facto* transit countries for other countries having no opportunity to change the direction of their gas imports over the medium term. On the contrary, from the long-term perspective, gas transit across the Czech Republic is directed to countries that are able to change their gas resources completely (for example, switching over to LNG, using a different transport route for Russian gas, or new gas resources in the Mediterranean). The risk premium reflects the fact that after the long-term contracts terminate, the transmission system operator will still have gas pipelines for which it will have no use but which will not yet have been depreciated in full and the costs of which will not have been recouped, see point 9.1.3.

The application of the TAR NC rules to 2020 has to take into account that 2020 will also be the last year of the fourth regulatory period, governed by the regulatory rules set out in *Price Control Principles for 2016-2018 for the Electricity and Gas Industries and for the*

Market Operator's Activities in the Electricity and Gas Industries with Effect Extended to 31 December 2020 ('the Principles').

Since the TAR NC is legislation with a higher legal force, and therefore has to be implemented in the regulatory principles at the national level to the required extent, the following assumptions were taken into account when drafting the proposal under Article 26 TAR NC:

- In respect of national gas transmission, for 2020 ensure the compatibility of the application of the TAR NC rules with the regulatory rules for the fourth regulatory period, in particular as regards the setting of the allowed revenue subsequently used for applying the selected reference price methodology for calculating transmission tariffs;
- Through this consultation document, provide the transmission network users with methodological and pricing information not only concerning 2020 but also offering an outlook for the potential evolution of the tariffs beyond 2020. Through the present document, such outlook is being provided until 2025, i.e. it also covers the minimum expected duration of the fifth regulatory period[12]. Taken together with the publication of the simplified tariff model under Article 30 (2) (b) TAR NC, the outlook should contribute to a reasonable level of transparency and predictability of tariff changes for network users. The ERO considers that this approach meets the objectives of TAR NC as expressed in the recitals (see TAR NC, Recital (2)).

9.1.2. Setting the allowed and target revenue for the TSO

The baseline assumptions for determining the expected allowed revenue and target revenue for calculating the transmission tariffs specified in this document include the following:

- Allowed revenue in respect of national gas transmission in 2020 has been set under the methodology applicable to the fourth regulatory period;
- Target revenue in respect of international gas transmission in the period 2020-2025 and allowed revenue in respect of national gas transmission in the period 2021-2025 are based on the planned investment and depreciation, planned operational expenditures, and the reference value of the regulated rate of return (WACC) applied to the regulatory asset base (RAB) adjusted by the planned investment and depreciation. When setting the allowed revenue for the fifth regulatory period, the costs planned for 2021-2025 will be further analysed and the ERO will set the final amount of the eligible costs that may potentially have an impact on price setting and on the presented models;

[12] In connection with the fifth regulatory period the ERO notes that the principles and parameters for the fifth regulatory period have not yet been determined and are not the subject matter of this consultation document.

- The relevant capital and operational expenditures have been split between international and national gas transmission using the same mechanism that was used for setting the conditions for the fourth regulatory period. The split is based on the allocation of particular parts of the transmission network to national purposes and to transit purposes using an allocation ratio, and the splitting of the costs shared by transit and national usage. The split reflects the use of the system for national purposes vs. transit purposes based on capacity, distances, pressure losses, and typical usage for a given type of transmission over a year;
- Because of the planned change in capacity booking and the considerable reinforcement of the capacity in the Brandov-Lanžhot direction, and also potential other investments to boost both transit and national transmission, the value of the allocation ratio will be verified and specified more accurately as part of determining the parameters for the fifth regulatory period[12], and the result of this re-calculation of the allocation will probably be felt in pricing and will influence the calculation models[13].

Because of the higher risk entailed in international gas transmission, for which the ERO does not expect the coverage of under- or over-recovery of revenue from transmission services or the existence of a regulatory account and its reconciliation over time, the risk premium on the reference value of the regulated rate of return (WACC) will be used as the primary tool to take this risk into account (Article 17 (2) TAR NC).

9.1.3. Reference WACC and risk premium

Whereas:

- A methodology for determining the regulated rate of return (WACC) does not yet exist for international gas transmission;
- The consultation process for setting the regulatory rules, including the rules for WACC for the fifth regulatory period (2021-2025), has not yet been launched; and
- In the light of the historical development of government bond rates, being the key parameter for WACC calculation using the CAPM regulatory methodology, it is most likely that the value of the average risk-free rate of return will be changed for the fifth regulatory period compared with the fourth regulatory period,

the ERO uses, for the purposes of this consultation on the transmission tariffs set out in this document and in line with the CAPM methodology employed, the reference regulated rate of return for the application of the revenue cap regime, which [i.e. the reference rate of return] is determined based on the changing market conditions, with a different value than for the fourth regulatory period. The final level for the fifth regulatory period will be determined later.

[13] The presented calculation models are based on the data and information available as at the day of the consultation launch under Article 26 TAR NC.

In addition to this reference level, the ERO uses a risk premium in the case of the application of the price cap regime; in the calculation of the resulting WACC the risk premium will be applied as a premium on only a part of the cost of equity calculated in the reference WACC. The amount of this risk premium reflects revenue from historically concluded contracts (before 2017), which the transmission system operator should recover in 2020 and 2021.

In the proposal for the reference price methodology, the revenue associated with the application of this risk premium is very clearly assigned to international transmission, i.e. directly allocated to the cross-border exit points of the transmission network, to prevent influence on the tariffs for national transmission, which is subject to a different regulatory regime, i.e. that of revenue cap.

9.1.4. Pricing assumptions and method

The pricing assumptions for the period 2020-2025 include the following:

- The planned values of investment and depreciation with an impact on the RAB value and also operational expenditures are causing a significant year-on-year volatility of regulated revenue, also as a consequence of the C4G project, the implementation of which is expected between 2019 and 2023, which is also borne out by, e.g., the following table of the TSO's planned investment (CAPEX):

CZK million	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Planned investment (CAPEX)	1,406.0	9,852.0	5,195.5	6,235.9	636.7	723.9

Table 7 Planned investment (CAPEX)

- The C4G will also cause gradual year-on-year increases in the booked capacities planned, see Table 8, in particular on the part of cross-system network users (international transmission), which would exacerbate the volatility of prices in the period under review if the prices were directly derived from the unstable values of allowed/target revenue.

MWh/day/year	2020	2021	2022	2023	2024	2025	average
Planned ENTRY capacity – cross-system	927,563	1,262,393	1,141,742	1,258,642	1,267,742	1,270,142	1,188,037
Planned EXIT capacity – cross-system	927,563	1,262,393	1,141,742	1,258,642	1,267,742	1,270,142	1,188,037
Planned ENTRY capacity – intra-system	338,520	349,759	373,379	321,558	322,657	320,757	337,772
Planned EXIT capacity – intra-system*	583,078	583,078	583,078	583,078	583,078	583,078	583,078
Planned ENTRY capacity – storage facilities	117,524	117,524	117,524	117,524	117,524	117,524	117,524
Planned EXIT capacity – storage facilities	127,433	127,433	127,433	127,433	127,433	127,433	127,433

**DSOs + DCCs*

Table 8 Booked capacities planned

In the case of intra-system network users (national transmission), no volatility of booked capacities is envisaged and they have been planned as stable for the whole period.

In the light of the above circumstances the ERO prefers to base the setting of transmission tariffs on the value of average capacities for the period and also, together with this, to introduce a calculation mechanism that will ensure that variations of regulated prices depend on the inflation index (2.3% p.a.[14]) and neutrality of the net present value (NPV) of revenue in the period under review, provided that changes in the parameters set for the fifth regulatory period will be taken into account.

9.1.5. Illustration of the proposed approach

Table 9 shows projections of revenue (the sum of target revenue and allowed revenue) calculated on the basis, which is continuously evolving year-on-year, of underlying capital and operational expenditures, together with a calculation of NPV neutral revenue, which subsequently generate the required year-on-year profile of capacity-based tariffs (without including revenue from transmission services recovered from commodity-based transmission tariffs, i.e. a flow-based charge recovered at the exit points of the transmission network):

CZK thousand	2020	2021	2022	2023	2024	2025
Expected regulated revenue on a continuous basis	5,686,960	6,231,214	6,696,455	7,363,904	7,327,868	7,266,094
Year-on-year change		9.6%	7.5%	10.0%	-0.5%	-0.8%
NPV neutral revenue*	6,378,834	6,523,026	6,670,541	6,821,456	6,975,852	7,133,811
Year-on-year change		2.3%	2.3%	2.3%	2.3%	2.3%

Discount factor		102%	104%	106%	109%	111%
Discounted continuous revenue	5,686,960	6,103,050	6,423,822	6,918,802	6,743,334	6,548,960
Total						**38,424,928**
Discounted NPV neutral revenue	6,378,834	6,388,860	6,398,962	6,409,141	6,419,398	6,429,732
Total						**38,424,928**

* NPV neutrality of revenue calculated to generate inflation-indexed tariffs for average capacities

Table 9 Projected development of revenue

Table 10 shows a calculation of the relevant tariffs on the postage stamp principle, using continuously evolving revenue and continuously evolving capacities, compared with the use of NPV neutral revenue and average capacities (the used capacities are shown in Table 8):

CZK thousand	2020	2021	2022	2023	2024	2025
Continuous base of revenue – implicit tariffs for capacity*						
ENTRY	2,055	1,801	2,051	2,169	2,145	2,127
Year-on-year change		-12.4%	13.9%	5.8%	-1.1%	-0.9%
EXIT	1,736	1,579	1,808	1,870	1,852	1,834
Year-on-year change		-9.0%	14.5%	3.4%	-0.9%	-1.0%
NPV neutral revenue base – implicit tariffs for capacity*						
ENTRY	1,941	1,985	2,030	2,075	2,122	2,171
Year-on-year change		2.3%	2.3%	2.3%	2.3%	2.3%
EXIT	1,680	1,718	1,757	1,796	1,837	1,879
Year-on-year change		2.3%	2.3%	2.3%	2.3%	2.3%

* 50/50 ENTRY/EXIT revenue split

Table 10 Tariffs on the postage stamp principle

[14] This is a value for the purpose of the model.

The contribution of the NPV neutralisation of revenue and of the use of average capacities to the stability of prices required by the TAR NC is very evident from the results shown above, because the year-on-year volatility of tariffs in the case of using continuously evolving revenue and continuously evolving capacities (the evolution of which is strongly affected by the launch of the above-mentioned key development project, C4G) is too strong and, in addition, any changes caused by the capitalisation [i.e. posting to assets] of capital expenditure reflecting the actual progress in C4G construction would heavily influence the stability of prices.

It is noteworthy that although the NPV neutralised revenue required for achieving inflation-indexed tariffs, for example in 2020 (CZK 6,378.8 million), significantly exceeds revenue in the case of the regulatory approach based on continuously evolving revenue (CZK 5,686.9 million), the NPV neutralised revenue is **not** any realistically attainable/actual revenue but only a sort of a calculation base serving for price setting deriving from the requirement for inflation-indexed tariffs increasing over time and using average capacities in the period under review. In reality, 2020 would see recovery of revenue based not on average but on actual (expected) capacities, i.e. significantly lower as indicated by the following calculation:

At entry points: 1,941 x (927,563+338,520+117,524) = CZK 2,685.3 million,

At exit points: 1,680 x (927,563+583,078+127,433) = CZK 2,751.8 million,

i.e., a total of CZK 5,437.2 million of revenue expected to be recovered from network users in the selected year, which would even be CZK 249.8 million less than in the case of using continuously evolving regulated revenue (CZK 5,686.9 million). The proposed procedure therefore does not damage the network users for whom the capacity booking tariffs at the beginning of the selected period would increase considerably in the case of continuously evolving revenue and continuously evolving capacities, which is also evident from a simple comparison of the tariffs in question in the above table.

9.1.6. Implementation of the proposed pricing method

Capacity weighted distance reference price methodology (CWD) with entry-exit split 50/50

The calculation of tariffs described below will be based on the following assumptions:

- Operational expenditures, depreciation, and profit are the building blocks of allowed revenue for intra-system (national) transmission and target revenue for cross-system (international) transmission;
- The sum of allowed revenue and target revenue entering the CWD calculation in the period 2020-2025 is subject to the principle of NPV neutralisation described in point 9.1.5, including the use of average capacities for this period;
- The profit for national transmission is calculated based on a regulated rate of return (WACC) of 7.94% for 2020, and thereafter 6,72% for 2021 to 2025, applied to the regulatory asset base (RAB);

- The profit for international transmission is calculated based on a regulated rate of return (WACC) of 8.18% applied to the regulatory asset base (RAB);
- The values used for the period 2021-2025 are the parameters foreseen for the fifth regulatory period and have not yet been set; their level will have an impact on prices for these years;
- Use of the capacity weighted distance reference price methodology (CWD), with entry-exit split 50/50 (Article 8 TAR NC);
- A discount of 50% applied to tariffs for underground storage facilities (Article 9 TAR NC);
- Equalisation of tariffs for homogeneous groups of points (Article 6 (4) (b) TAR NC) for distribution system operators (one of the reasons is that GasNet, s.r.o., as the largest distribution system operator, provides services to customers located over most of the Czech territory; i.e., if tariffs between distribution systems are not equalised the relevant granularity would also have to be introduced among GasNet's customers in order to be able to regard the system as balanced). Since the prices for national transmission are included in the prices for gas distribution, the system of non-equalised tariffs would also be very challenging for implementation on the part of GasNet, s.r.o.

The splitting of costs between international and national transmission, as the springboard for creating separated target revenue and allowed revenue, has only been used for preserving the possibility to apply two different regulatory regimes (revenue cap and price cap) and different rates of return to the relevant assets due to different risks. Nevertheless, both target revenue and allowed revenue enter the reference price calculation using the CWD methodology as a sum, and the specific revenue generated and contained in it through the risk premium is directly allocated to the exit interconnection points of the network.

Under the above conditions, the inputs into pricing in the period under review would be as follows:

Inputs - financial - cost model		2020	2021	2022	2023	2024	2025
Allowed revenue	**CZK th**	**1,635,158**	**1,679,733**	**1,725,538**	**1,772,608**	**1,820,979**	**1,870,685**
Target revenue w/o revenue from risk premium	CZK th	4,266,774	4,356,376	4,447,860	4,541,265	4,636,632	4,734,001
Revenue from risk premium	CZK th	476,902	486,917	497,142	507,582	518,241	529,124
Target revenue incl. risk premium	**CZK th**	**4,743,676**	**4,843,293**	**4,945,002**	**5,048,847**	**5,154,873**	**5,263,126**
Total revenue	**CZK th**	**6,378,834**	**6,523,026**	**6,670,541**	**6,821,456**	**6,975,852**	**7,133,811**
Inputs - contracted capacities		**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
ENTRY Brandov VIP	MWh/d/yr	1,422,188	1,422,188	1,422,188	1,422,188	1,422,188	1,422,188
ENTRY Lanžhot	MWh/d/yr	54,080	54,080	54,080	54,080	54,080	54,080
ENTRY Waidhaus VIP	MWh/d/yr	18,774	18,774	18,774	18,774	18,774	18,774
ENTRY Cieszyn (Český Těšín)	MWh/d/yr	0	0	0	0	0	0
ENTRY Hať	MWh/d/yr	30,767	30,767	30,767	30,767	30,767	30,767
ENTRY storage facilities	MWh/d/yr	117,524	117,524	117,524	117,524	117,524	117,524
TOTAL ENTRY	**MWh/d/yr**	**1,643,333**	**1,643,333**	**1,643,333**	**1,643,333**	**1,643,333**	**1,643,333**
intra-system	*MWh/d/yr*	*455,295*	*455,295*	*455,295*	*455,295*	*455,295*	*455,295*
cross-system	*MWh/d/yr*	*1,188,037*	*1,188,037*	*1,188,037*	*1,188,037*	*1,188,037*	*1,188,037*
EXIT Brandov VIP	MWh/d/yr	36,786	36,786	36,786	36,786	36,786	36,786
EXIT Lanžhot VIP	MWh/d/yr	1,064,629	1,064,629	1,064,629	1,064,629	1,064,629	1,064,629
EXIT Waidhaus VIP	MWh/d/yr	23,611	23,611	23,611	23,611	23,611	23,611
EXIT Cieszyn (Český Těšín)	MWh/d/yr	4,877	4,877	4,877	4,877	4,877	4,877
EXIT Hať	MWh/d/yr	58,133	58,133	58,133	58,133	58,133	58,133
EXIT DSOs + DCCs	MWh/d/yr	583,078	583,078	583,078	583,078	583,078	583,078
EXIT storage facilities	MWh/d/yr	127,433	127,434	127,434	127,434	127,434	127,435
TOTAL EXIT	**MWh/d/yr**	**1,898,549**	**1,898,549**	**1,898,550**	**1,898,550**	**1,898,550**	**1,898,550**
intra-system	*MWh/d/yr*	*710,512*	*710,512*	*710,512*	*710,512*	*710,513*	*710,513*
cross-system	*MWh/d/yr*	*1,188,037*	*1,188,037*	*1,188,037*	*1,188,037*	*1,188,037*	*1,188,037*

Table 11 Input values for price setting in CWD models

Please note the pass-through of the risk premium contained in the cost of equity in WACC for international transmission into the target revenue; for example, in 2020 this creates a value of CZK 476.9 million (10.1% of the target NPV neutral revenue in 2020). In terms of methodology, the risk premium is treated the same way as indicated in point 9.1.5, i.e. with a view to making it possible to achieve NPV neutrality of revenue and the required inflation-indexed evolution of prices also when the risk premium is reflected.

Table 12 lists the overall results after equalising the tariffs at exit points of distribution system operators, including users directly connected to the transmission system operator's network (homogenisation under Article 6 (4) (b) TAR NC), as follows:

CWD outputs, NON-EQUALISED		**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
ENTRY Brandov VIP	CZK	1,954.4	1,998.8	2,044.3	2,090.8	2,138.4	2,187.1
ENTRY Lanžhot	CZK	1,182.8	1,209.7	1,237.2	1,265.3	1,294.2	1,323.6
ENTRY Waidhaus VIP	CZK	2,092.4	2,139.9	2,188.6	2,238.4	2,289.4	2,341.5
ENTRY Cieszyn (Český Těšín)	CZK	512.2	523.8	535.7	547.9	560.4	573.2
ENTRY Hať	CZK	512.2	523.8	535.7	547.9	560.4	573.2
ENTRY storage facilities	CZK	446.0	456.1	466.5	477.1	488.0	499.1
EXIT Brandov VIP	CZK	2,257.8	2,308.4	2,360.1	2,413.0	2,467.2	2,522.5
EXIT Lanžhot VIP	CZK	2,102.5	2,149.6	2,197.8	2,247.1	2,297.5	2,349.1
EXIT Waidhaus VIP	CZK	1,156.7	1,182.6	1,209.1	1,236.3	1,264.0	1,292.4
EXIT Cieszyn (Český Těšín)	CZK	3,148.5	3,219.0	3,291.2	3,365.0	3,440.5	3,517.7
EXIT Hať	CZK	3,102.5	3,172.0	3,243.1	3,315.8	3,390.2	3,466.3
EXIT DSOs + DCCs	CZK	1,305.8	1,335.5	1,365.9	1,397.0	1,428.8	1,461.3
EXIT storage facilities	CZK	957.3	979.1	1,001.4	1,024.2	1,047.5	1,071.4
TOTAL REVENUE AT ENTRY POINTS	CZK th	2,950,966	3,018,055	3,086,699	3,156,937	3,228,805	3,302,343
TOTAL REVENUE AT EXIT POINTS	CZK th	3,427,868	3,504,972	3,583,841	3,664,519	3,747,047	3,831,468
TOTAL REVENUE	**CZK th**	**6,378,834**	**6,523,026**	**6,670,541**	**6,821,456**	**6,975,852**	**7,133,811**
Revenue for intra-system use	***CZK th***	***1,577,446***	***1,613,316***	***1,650,019***	***1,687,573***	***1,725,999***	***1,765,318***
Revenue for cross-system use	***CZK th***	***4,801,388***	***4,909,710***	***5,020,522***	***5,133,883***	***5,249,853***	***5,368,492***
Comparison index incl. risk premium		**18.9%**	**18.9%**	**18.8%**	**18.8%**	**18.8%**	**18.8%**
Comparison index w/o risk premium		**8.0%**	**8.0%**	**8.0%**	**8.0%**	**8.0%**	**8.0%**
Difference between allowed and intra-system revenues		**-57,713**	**-66,418**	**-75,521**	**-85,037**	**-94,981**	**-105,368**

Table 12 Prices emerging from the CWD 50/50 model

In this variant, the capacity cost allocation comparison index under Article 5 (3) (c) TAR NC is approximately 19%; it is 8% when the risk premium is not reflected. The ERO considers that the risk premium should not be included in the calculation of the capacity cost allocation comparison index under Article 5 (3) (c) TAR NC, because it expresses a price increase associated with the risk of transit transmission allocated to transit transmission users at cross-border exit points. The ERO regards revenue net of the risk premium as comparable between national and transit transmission.

This variant, where the entry-exit revenue split is 50/50, does not ensure equality between allowed revenue and intra-system revenue, and the deficit so arising would therefore be assigned to cross-system network users in the amount shown in the bottom row of Table 12.

Capacity weighted distance reference price methodology (CWD) with optimised entry-exit revenue split

Although the procedure in point 9.1.6.1, when regulated revenue is entry-exit split 50/50, does satisfy – when the impact of the risk premium is not included – the test of the capacity cost allocation comparison index under Article 5 (3) (c) TAR NC, the objective of further procedure will be to try and determine a revenue split that would achieve even more favourable results in this test while meeting one other condition as well.

This one other condition is finding a revenue split that would minimise disruption in the continuity of new prices with the current prices (i.e. between 2019 and 2020), since we also have to take into account that in the Czech Republic, there already exist long-term transmission capacity bookings for fixed prices [as per the Price Act] (which are only subject to future indexation to inflation) at the entry and exit interconnection points of the network, which have originated from the auctions of transmission capacities held in 2017, and this creates a relevant and long-term price benchmark.

By the same token, the whole market is positioned for several coming years (big customers usually buy gas for a few years ahead) and a major change in the setting of prices would have very heavy adverse impacts on the market and, in particular, its proximity with the NCG and GASPOOL markets in terms of prices.

We also expect that the planned merger of the NCG and GASPOOL market areas into a single market area for Germany will trigger the question of the potential future merger of the Czech and German trading zones, i.e. the Czech entry charges would be completely removed and transferred to the exit points. Increasing the portion of entry to 50% in the entry-exit revenue split would not only mean a fundamental change; the change would be quite detrimental from the perspective of the future integration.

Another adjustment ensuring a cost-reflective price allocation is the fact that after calculating prices in the CWD model, the equality between the allowed and target revenue resulting from calculated prices and the input values is checked. Any (actually very small) difference is re-allocated between cross-border exit points and the distribution system operators' exit point. This ensures that cross-system users and intra-system users pay costs determined for them accurately. In real life, the proposed entry-exit split therefore does not influence the level of the prices paid by cross-system and intra-system users.

The assumptions and inputs for pricing used in the period under review are the same as in point 9.1.4.

The calculated tariffs, following their equalisation at distribution system operators' exit points, including users directly connected to the TSO's network (homogenisation under Article 6 (4) (b) TAR NC), are listed in Table 13:

CWD outputs, NON-EQUALISED		2020	2021	2022	2023	2024	2025
ENTRY Brandov VIP	CZK	795.4	813.5	832.0	851.0	870.3	890.2
ENTRY Lanžhot	CZK	481.4	492.3	503.5	515.0	526.7	538.7
ENTRY Waidhaus VIP	CZK	851.6	870.9	890.8	911.0	931.8	953.0
ENTRY Cieszyn (Český Těšín)	CZK	208.5	213.2	218.0	223.0	228.1	233.3
ENTRY Hať	CZK	208.5	213.2	218.0	223.0	228.1	233.3
ENTRY storage facilities	CZK	181.5	185.6	189.9	194.2	198.6	203.1
EXIT Brandov VIP	CZK	3,394.1	3,464.0	3,535.3	3,608.0	3,682.3	3,758.0
EXIT Lanžhot VIP	CZK	3,160.7	3,225.8	3,292.2	3,359.9	3,429.0	3,499.6
EXIT Waidhaus VIP	CZK	1,738.9	1,774.7	1,811.2	1,848.5	1,886.5	1,925.3
EXIT Cieszyn (Český Těšín)	CZK	4,733.1	4,830.5	4,929.9	5,031.4	5,134.9	5,240.5
EXIT Hať	CZK	4,664.0	4,760.0	4,857.9	4,957.9	5,059.9	5,164.0
EXIT DSOs + DCCs	CZK	1,985.9	2,043.8	2,103.3	2,164.5	2,227.6	2,292.4
EXIT storage facilities	CZK	1,528.0	1,562.7	1,598.3	1,634.7	1,671.9	1,710.0
TOTAL REVENUE AT ENTRY POINTS	CZK th	1,201,043	1,228,348	1,256,287	1,284,873	1,314,124	1,344,054
TOTAL REVENUE AT EXIT POINTS	CZK th	5,177,791	5,294,678	5,414,254	5,536,583	5,661,728	5,789,757
TOTAL REVENUE	**CZK th**	**6,378,834**	**6,523,026**	**6,670,541**	**6,821,456**	**6,975,852**	**7,133,811**
Revenue for intra-system use	***CZK th***	***1,635,159***	***1,679,734***	***1,725,539***	***1,772,609***	***1,820,980***	***1,870,686***
Revenue for cross-system use	***CZK th***	***4,743,675***	***4,843,292***	***4,945,002***	***5,048,847***	***5,154,872***	***5,263,125***

Comparison index incl. risk premium		**14.1%**	**13.5%**	**12.9%**	**12.3%**	**11.7%**	**11.1%**
Comparison index w/o risk premium		**1.7%**	**1.7%**	**1.7%**	**1.7%**	**1.7%**	**1.7%**
Difference between allowed and intra-system revenues		**0**	**0**	**0**	**0**	**0**	**0**

Table 13 Prices resulting from the CWD model with entry-exit revenue split 20.35/79.65

Based on the methodology used, the achieved split of regulated revenue between entry and exit points of the network is **20.35% to 79.65%**.

This entry-exit split results in the capacity cost allocation comparison index under Article 5 (3) (c) TAR NC declining to 1.7%, net of the risk premium, while achieving the required price continuity and converging to the long-term price benchmark.

This variant also ensures the equality of allocated and actually recovered and calculated allowed/target revenue, and thus the cost-reflectivity of the whole model.

9.1.7. Justification of the proposed method of implementation

The principles of pricing chosen for the period 2020-2025 and described in the preceding parts of this document bring the following advantages:

- The tariffs are cost-reflective;
- The tariffs are predictable and the calculation methodology constrains their undesirable high volatility caused by the unstable evolution of both the underlying planned expenditure (both capital and operational) as well as capacities in relation to the implementation of the important C4G project;
- There is no cross-subsidisation between intra-system network users and cross-system network users;
- Price continuity with the preceding period (before TAR NC implementation) is preserved, with the exception of tariffs for storage facilities, on which a 50% discount is provided under Article 9 (1) TAR NC;
- The tariffs follow the evolution of prices for long-term transmission capacity bookings for fixed prices [as per the Price Act] from 2017, and therefore also satisfy the price benchmark so established.

9.1.8. Reasons for dismissing other methodologies

Despite the existence of the above-outlined dual system of price controls in the Czech Republic, there is no need to depart from the CWD methodology proposed in the TAR NC. The ERO strongly prefers the application of the CWD reference price methodology and therefore does not opt for any alternative methodologies, including e.g. the postage stamp, or for any oversimplifications of the very principles of the CWD methodology.

10. Indicative information about items referred to in Article 30 (1) (a) (i) TAR NC

The selected parameters such as pressures and other input values applied in the transmission network at its delivery points meet the requirement for ensuring the safe, economical, and reliable operation of the transmission system. They also help to keep the delivery pressures and volumes specified in interconnection agreements with other transmission system operators, distribution system operators, storage system operators, and directly connected customers. For historical reasons, this configuration meets the requirements for ensuring reliable supply both in the Czech Republic and in neighbouring countries.

For reference price calculation using the CWD methodology the ERO has determined:

- the localities of the entry and exit points of the transmission network (see 10.1);
- the distances between the entry and exit points of the transmission network (see 10.2);
- the forecasted contracted capacities at entry and exit points (see 10.3); and
- the forecasted flows via entry and exit points (see 10.4).

The basic parameters and formulas for calculating reference prices using the CWD methodology are described in Article 8 TAR NC.

10.1. Localities of entry and exit points

The exact identification of the physical locality of each entry and exit point of the transmission network is a prerequisite for calculating distances between these points. Based on discussion in a working group, the ERO has developed a procedure for identifying the physical locality for each of four types of points:

- for virtual interconnection points,
- for interconnection points,
- for delivery points between the transmission system and distribution systems and directly connected customers, and
- for points of storage facilities.

10.1.1. Virtual interconnection points (VIP)

Under Article 19 of Commission Regulation (EU) 2017/459 of 16 March 2017 establishing a network code on capacity allocation mechanisms in gas transmission systems and repealing Regulation (EU) No 984/2013 (CAM NC), virtual interconnection points (VIP) will be established. Capacities will be offered and corresponding tariffs will be set directly at these VIPs.

The Brandov virtual cross-border entry point is composed of the following physical cross-border entry points:

- Hora Svaté Kateřiny
- Hora Svaté Kateřiny – Olbernhau
- BRANDOV–OPAL
- BRANDOV–EUGAL

The Brandov virtual cross-border exit point is composed of the following physical cross-border exit points:

- Hora Svaté Kateřiny
- BRANDOV–STEGAL
- BRANDOV–OPAL
- BRANDOV–EUGAL

The ERO has determined, for the purposes of calculating distances, the physical locality of the Brandov VIP at the physical point Brandov EUGAL, which is identical with the Brandov OPAL point, the Brandov STEGAL point, and the Hora Svaté Kateřiny – Olbernhau point, because most of the forecasted contracted capacity is being planned at these points.

The Waidhaus virtual cross-border point is composed of the Waidhaus entry and exit cross-border point. For the purposes of calculating distances, the physical locality of the Waidhaus VIP has been determined at the Waidhaus point, because it is the same point.

	Physical locality of VIPs	Latitude N	Longitude E
Brandov VIP	Physical locality Brandov–OPAL IP, Brandov–STEGAL IP, and EUGAL IP	50.643583865049°	13.373556976147°
Waidhaus VIP	Physical locality Waidhaus IP	49.654283715025°	12.526042103734°

Table 14 Localities of virtual interconnection points

10.1.2. Cross-border interconnection points (IP)

For the purposes of calculating distances, the physical locality of the Cieszyn (Český Těšín) cross-border IP is the same as the actual physical locality of this point.

For the purposes of calculating distances, the physical locality of the Hať cross-border IP is the same as the physical locality of the village of Hať, because the Hať point has not yet been created.

For the purposes of calculating distances, the physical locality of the Lanžhot cross-border IP is the same as the actual physical locality of this point.

	Latitude N	Longitude E
Lanžhot	48.717120859458°	17.011401911342°
Cieszyn (Český Těšín)	49.774454790354°	18.605118759951°
Hať	49.946388885012°	18.239444374383°

Table 15 Localities of cross-border interconnection points

10.1.3. Delivery points between the transmission system and distribution systems and directly connected customers (DSOs + DCCs)

Because of the large number of delivery stations between the transmission system operator and distribution system operators the ERO has decided that these points will be simplified and their number reduced from several dozen to eight points so that only one virtual point is located in each of the regional zones in which distribution companies have historically operated. As part of the simplification, the physical locality of customers directly connected to the transmission network in a given zone is deemed to coincide with the locality of the virtual point determined by calculation.

The technical capacities of each of the delivery stations are based on the transmission system operator's documentation and applicable contracts concluded between the transmission system operator and the operator of a given distribution system. Any technical constraints, such as those for adding up technical capacities, have been taken into account.

Combining entry and exit points into clusters is allowed under Article 8 (1) (c) TAR NC. Preparatory discussions also considered the options for creating the coordinate of the virtual point. For the aggregation of the coordinates of delivery stations separately in each of the zones, the weights of the individual delivery stations were considered:

- by technical capacities,
- by the maximum daily quantity of the gas flow (averaged over three years), and
- by the quantity of the gas flow (averaged over three years).

The sensitivity analysis has shown that the impact of using different weights for determining the coordinate of the resulting point is marginal and therefore the impact on the resulting tariffs is also negligible. The ERO has therefore decided to aggregate the coordinates of delivery stations in each zone separately, weighted by technical capacity. The advantage of this approach is that the resulting coordinates do not change over time, and the level of the tariffs is therefore predictable.

Based on its calculations the ERO has set, for the purposes of calculating distances, the resulting physical localities of virtualised delivery points between the transmission system and distribution systems and directly connected customers as follows:

Zone	Locality of the virtual point	
	Latitude N	Longitude E
Pražská plynárenská distribuce (PPD)	50.087039518302°	14.484842544093°
E.ON Distribuce	49.314431417551°	14.744461272616°
GasNet SZČ (NW Bohemia), central zone	50.007230894443°	14.562733670452°
GasNet SZČ (NW Bohemia), western zone	49.69708806575°	13.228898743743°
GasNet SZČ (NW Bohemia), northern zone	50.457659124801°	13.937673980089°
GasNet, VČ (E Bohemia)	49.927875667723°	15.715734061856°
GasNet, JM (S Moravia)	49.126457403323°	16.840044020521°
GasNet, SM (N Moravia)	49.633564509145°	18.078315135179°

Table 16 Localities of virtual points of DSOs + DCCs

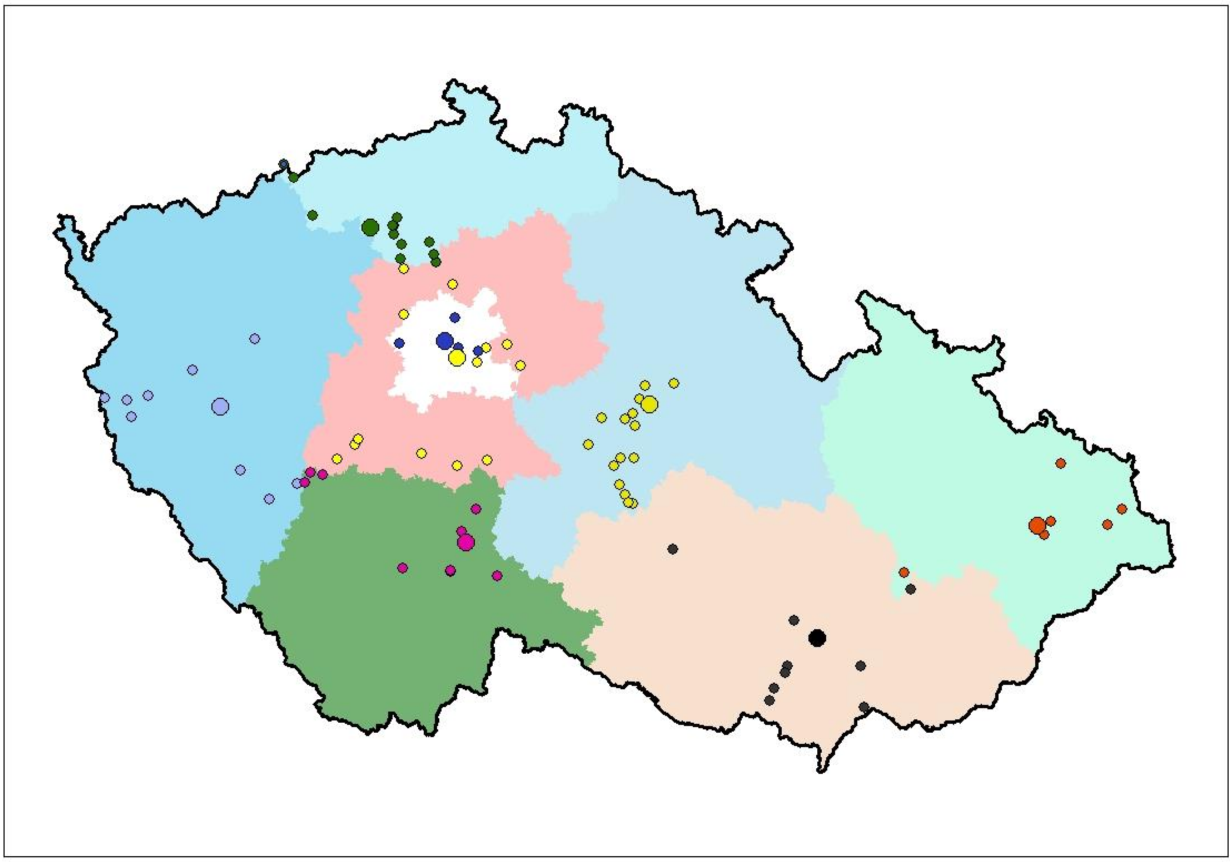


Figure 7 Localities of physical points of DSOs + DCCs in distribution zones and of virtual points

10.1.4. Points of storage facilities

The localities of the physical points of underground storage facilities, whose localities match the eight storage facilities connected to the transmission system, have been aggregated into a single virtual point. The ERO decided to create the coordinate of the aggregated virtual point in two steps:

- In the first step, it created the coordinates of the entry point and the exit point based on aggregating the coordinates of the individual localities of the physical points of storage facilities weighted by their maximum daily withdrawal/injection capacity. Since the maximum daily capacities for withdrawal and injection differ, the result is different coordinates for the virtual entry point of storage facilities and for the virtual exit point of storage facilities.
- In the second step, it used a simple average of these two coordinates to find the coordinate of a single aggregated virtual point of storage facilities.

	Latitude N	Longitude E
Aggregated virtual point of storage facilities	49.335423172241°	17.257684805742°

Table 17 Locality of the aggregated virtual point of the storage facility

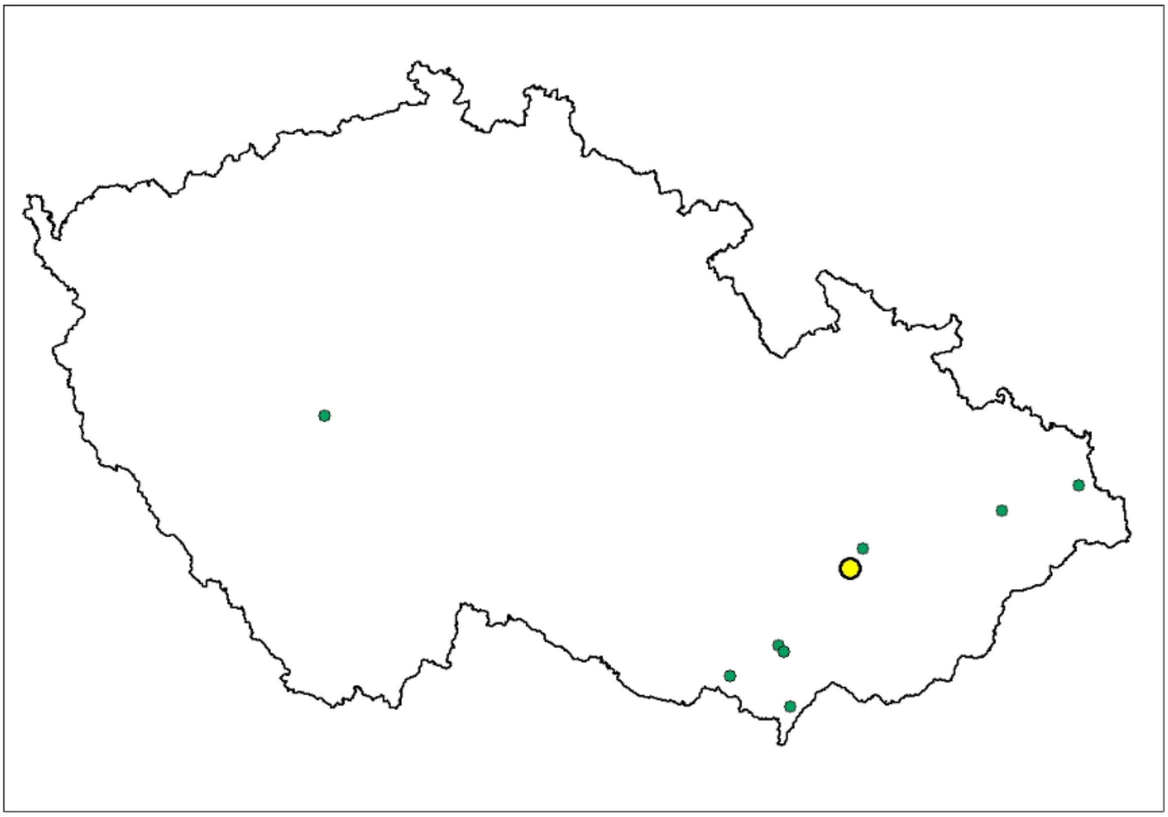


Figure 8 Localities of the physical points of storage facilities and of the virtual point

10.2. Distance between entry and exit points

The distances between the entry and exit points of the transmission network are one of the basic inputs when applying the CWD methodology. The calculation of distances is closely related to the determination of localities in subchapter 10.1.

Complying with Article 8 (1) (c) TAR NC, the shortest distances of the pipeline routes between an entry point or a cluster of entry points and an exit point or a cluster of exit points were taken into consideration. For calculating the matrix of distances, first of all the possible directions of the gas flow in the network, which make sense when the technical parameters of the network are taken into account and which are depicted in Figure 15, were determined.

For each entry point *En* and each exit point *Ex*, just one physical locality, which is exactly defined in 10.1, exists. For localities of the points situated right on the route of a pipeline in the transmission network, the calculation of distances is determined as the distance of the pipeline route (the shortest path that makes sense when the technical constraints are taken into account). For localities of virtual points situated outside the pipeline route the ERO has determined an algorithm for calculating this distance. The algorithm takes into account the following:

- the distance, as the crow flies, from the virtual entry point to the delivery station that is the closest to this point,
- the distance along the pipeline to the exit point (or the delivery station that is the closest to the virtual exit point),
- the distance, as the crow flies, from the delivery station to virtual exit point.

Table 18 lists all the distances.

	Distances [km]	Ex1 Brandov VIP	Ex2 Lanžhot	Ex3 Waidhaus VIP	Ex4 Cieszyn (Český Těšín)	Ex5 Hať	Ex6 PPD aggregation	Ex7 GasNet SZČ, central zone, aggregation	Ex8 E.OND aggregation	Ex9 GasNet SZČ, western zone, aggregation	Ex10 GasNet SZČ, northern zone, aggregation	Ex11 GasNet VČ aggregation	Ex12 GasNet JM aggregation	Ex13 GasNet SM aggregation	Ex14 Underground storage facility
En1	Brandov VIP	0	380.40	168.31	591.28	575.29	162.39	161.20	249.00	142.19	112.18	254.67	383.44	538.58	423.22
En2	Lanžhot	380.40	0	402.02	226.93	210.94	266.57	265.38	239.71	446.42	332.14	207.81	83.21	174,23	98.15
En3	Waidhaus VIP	168.31	402.02	0	610.08	594.01	236.27	235.08	217.74	66.46	186.09	328.55	402.24	557.38	459.50
En4	Cieszyn (Český Těšín)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
En5	Hať	NA	NA	NA	107.41	NA	NA	NA	NA	NA	NA	NA	NA	54.66	122.61
En6	UGS	423.22	98.15	459.50	139.78	122.61	327.41	326.75	297.19	477.66	380.63	258.49	149.84	87.04	0

Table 18 Matrix of distances between entry and exit points of the transmission system; NA = Not possible

10.3. Forecasted contracted capacity at entry and exit points

Another cost driver entering the calculation of the resulting tariffs using the reference price methodology under Article 8 TAR NC is the forecasted contracted capacities at entry and exit points. Technical capacities at entry and exit points do not influence the resulting reference price and therefore only the forecasted contracted capacity is used in compliance with Article 4 (1) (a) TAR NC.

Forecasted contracted capacities have been derived based on the successful auction of yearly capacities in 2017 until the gas year 2038, while the capacities for national transmission have been estimated based on the country's normal off-take and the historical injection and withdrawal curves of storage facilities. Going forward, a slight increase in gas consumption in the Czech Republic and injection-withdrawal balanced storage facilities during the gas year are being envisaged.

For calculating the yearly values, the ERO has developed an algorithm for each of the four types of points:

- for virtual interconnection points (VIP),
- for interconnection points (IP),
- for delivery points between the transmission system and distribution systems and directly connected customers (DSOs + DCCs), and
- for points of storage facilities (UGS).

The yearly values of forecasted contracted capacity

- are based on the usage of capacities during a given calendar year; they therefore also include the size of the proposed multipliers;
- take into account the existing contracts, historical situation, and forecasted evolution;
- represent the sum of capacities related to national transmission and to international transmission if relevant for a given point.

10.3.1. Virtual interconnection points (VIP)

For the Brandov entry VIP, the fact that this point is composed of the following physical cross-border entry points is taken into account:

- Hora Svaté Kateřiny (Sayda)
- Hora Svaté Kateřiny – Olbernhau
- BRANDOV–OPAL
- BRANDOV–EUGAL

For the Brandov exit VIP, the fact that this point is composed of the following physical cross-border exit points is taken into account:

- Hora Svaté Kateřiny (Sayda)
- BRANDOV–STEGAL (formerly Hora Svaté Kateřiny – Olbernhau)
- BRANDOV–OPAL
- BRANDOV–EUGAL

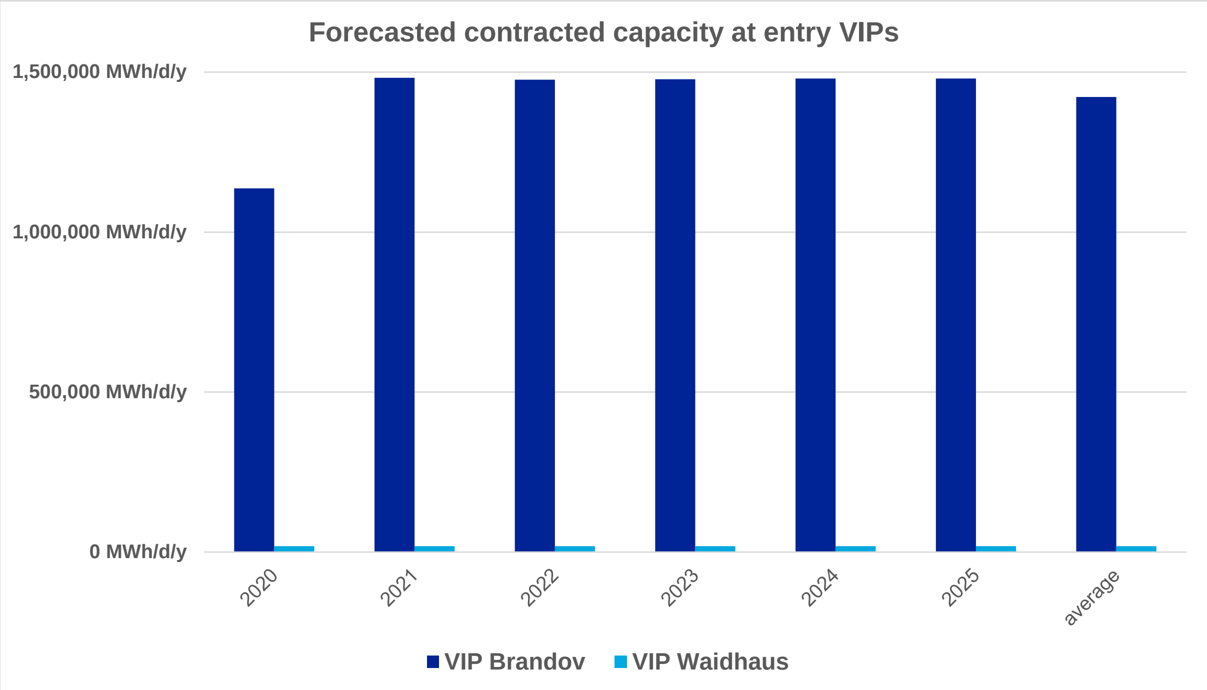


Figure 9 Forecasted contracted capacity at entry VIPs

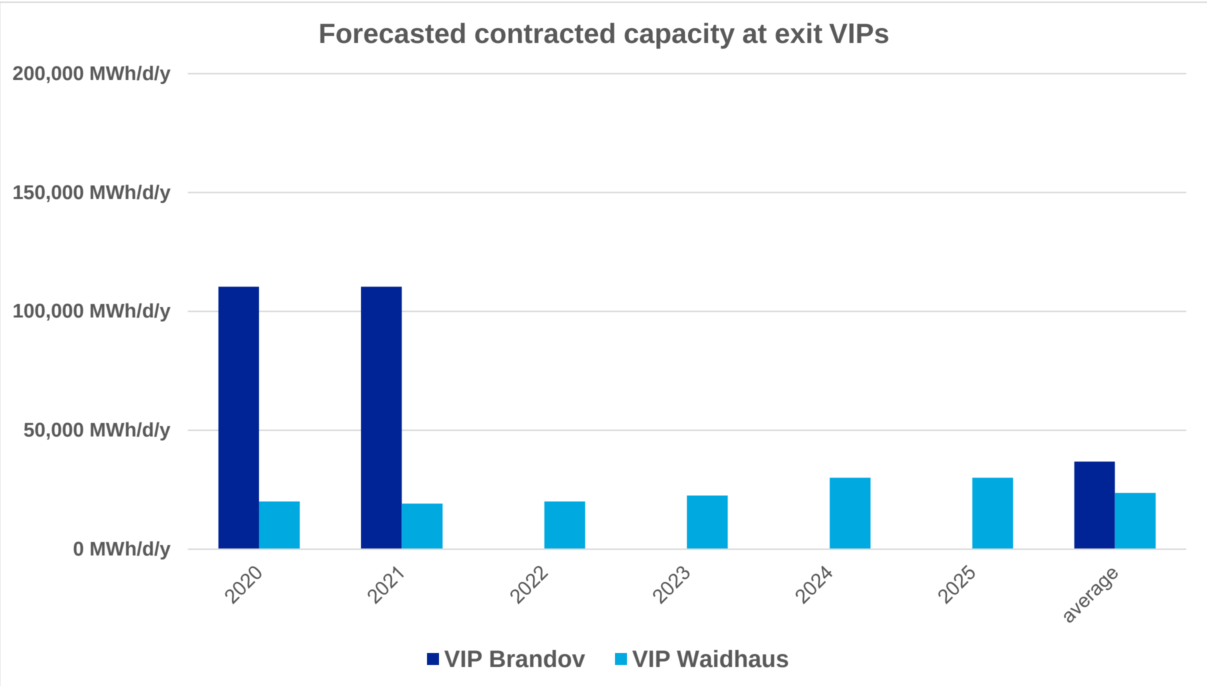


Figure 10 Forecasted contracted capacity at exit VIPs

10.3.2. Interconnection points (IP)

In respect of the forecasted contracted capacity of the Lanžhot point, the ERO has decided, for the purpose of applying the reference price methodology, that it is formed by the sum of

- the forecasted contracted capacity of the Lanžhot border point, and
- the forecasted contracted capacity of the Mokrý Háj border point.

The forecasted contracted capacity at the Mokrý Háj point equals zero and therefore does not influence the tariffs at the Lanžhot point. The reason for subsuming the Mokrý Háj point under the Lanžhot point is the fact that no point in the transmission network, even if its capacity is zero, can be omitted or subjected to a tariff converging to a limit of zero.

The forecasted contracted capacity at the Hať point is based on a joint investment request of NET4GAS, s.r.o. and GAZ-SYSTEM S.A. and the expected commissioning on 1 January 2023.

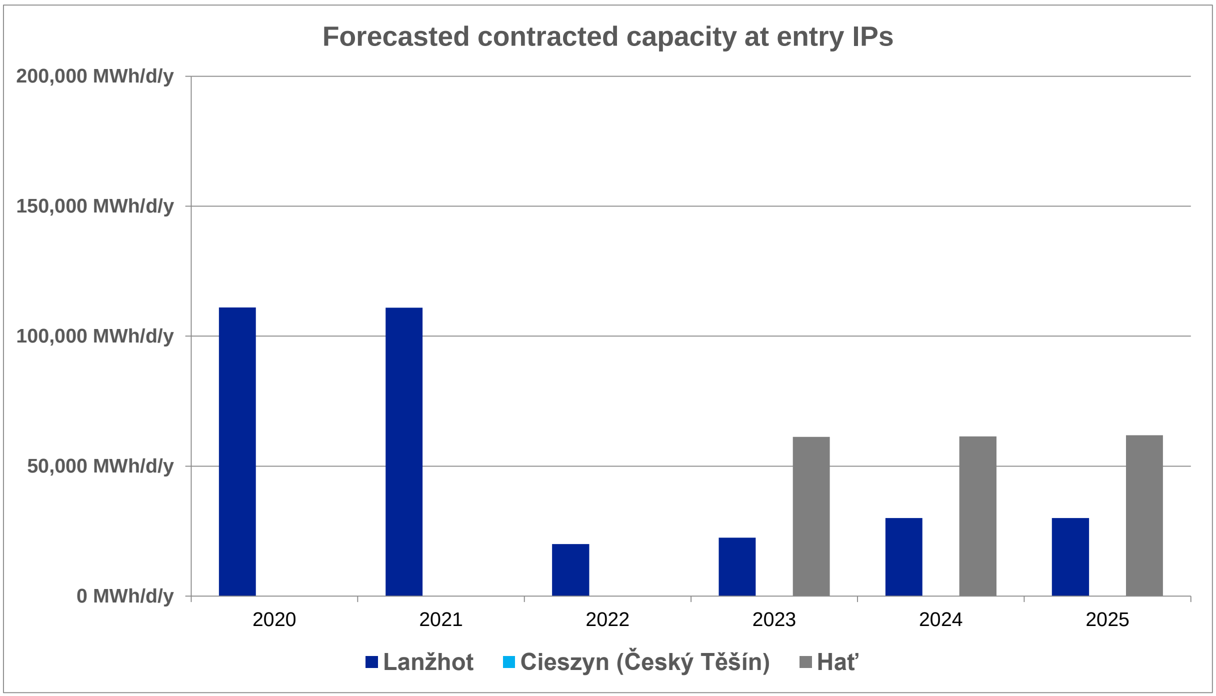


Figure 11 Forecasted contracted capacity at the entry IPs

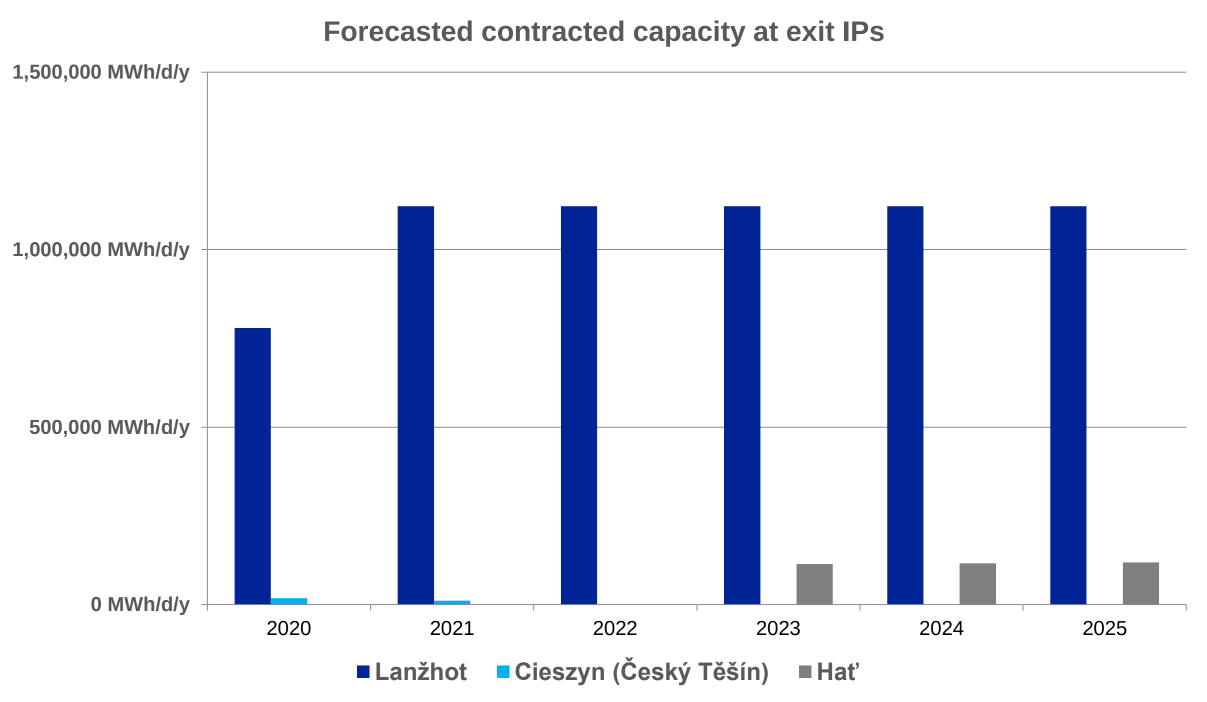


Figure 12 Forecasted contracted capacity at the exit IPs

10.3.3. Delivery points between the transmission system and distribution systems and directly connected customers (DSOs + DCCs)

The forecasted contracted capacity at delivery points between the transmission system and distribution systems has been determined as the sum of the forecasted contracted capacities in each of the zones for

- the forecasted contracted capacities between the transmission system and a distribution system, and
- the forecasted contracted capacities between the transmission system and directly connected customers.

Since directly connected customers are always situated in one of the eight distribution zones in which distribution companies have historically been operating, their forecasted contracted capacities are added to the forecasted contracted capacity of the particular zone. The sum of forecasted contracted capacities of all eight zones does not change over time and its amount is shown in Table 19 and in Figure 13. This value is based on the maximum daily consumption of all distribution systems, in cubic metres[15] over the last three years, and on the forecasted contracted capacities of directly connected customers.

[15] Assuming a GCV of 10.6 kWh/m^3

	MWh/d
The forecasted contracted capacity between the transmission system and distribution systems and directly connected customers	583,078

Table 19 The forecasted contracted capacity between the transmission network and distribution systems and directly connected customers

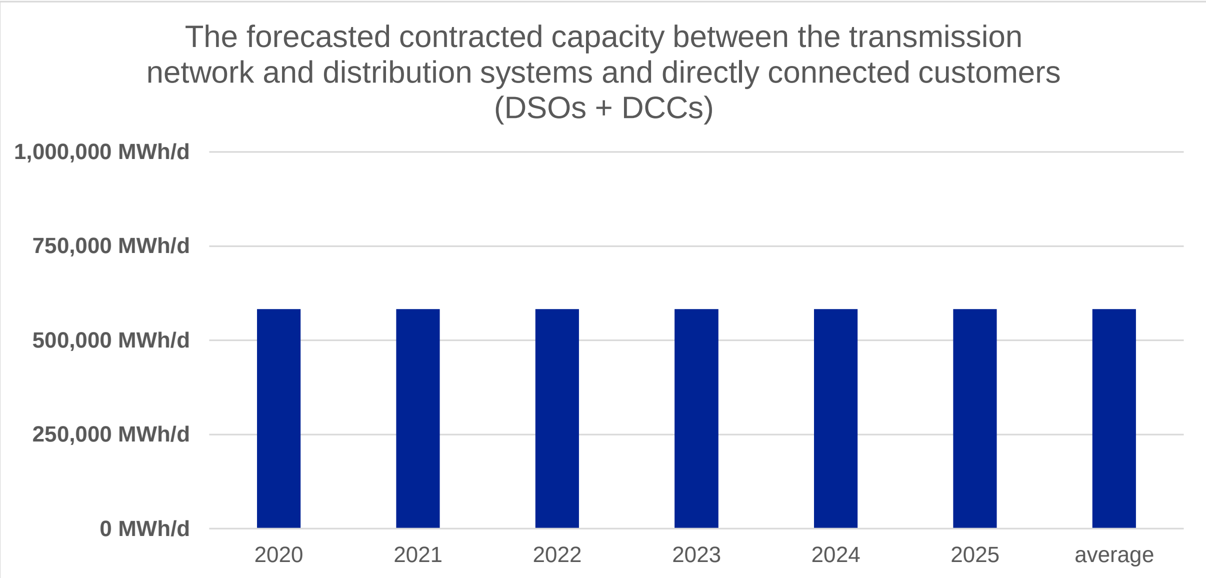


Figure 13 The forecasted contracted capacity between the transmission network and distribution systems and directly connected customers (DSOs + DCCs)

10.3.4. Points of storage facilities

The forecasted contracted capacity of the points of storage facilities has been aggregated for all storage facilities and determined with regard to the expected usage of the capacities, including the predominating short-term bookings. Its amount can be seen in Figure 14.

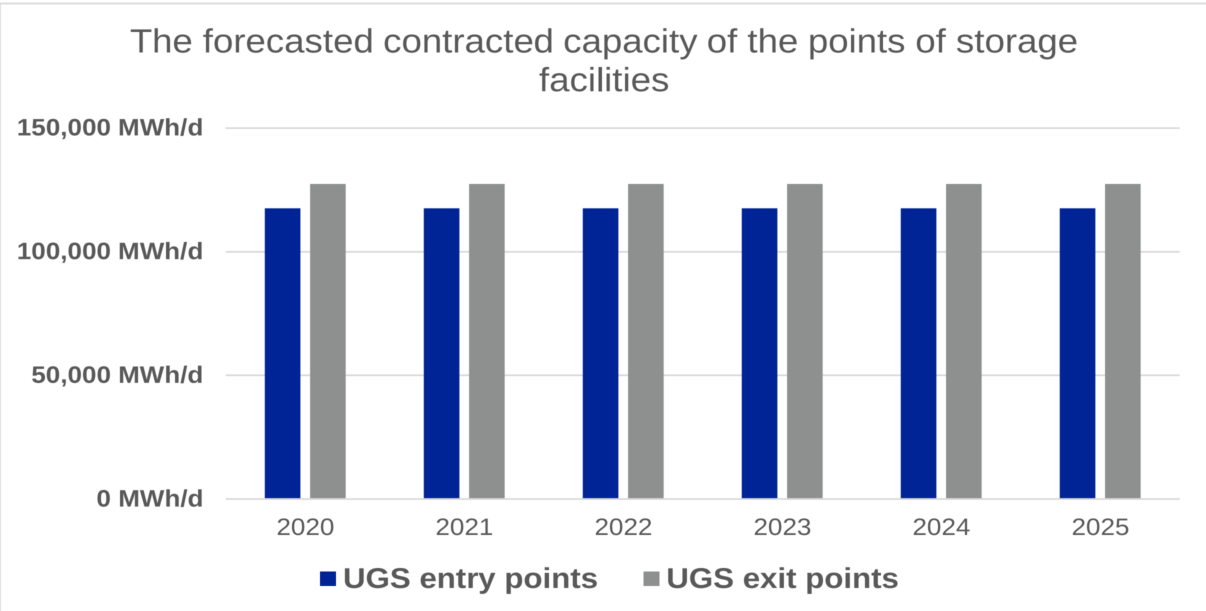


Figure 14 The forecasted contracted capacity of the points of storage facilities

10.4. Quantity and direction of gas flows for entry and exit points

The quantity and the direction of the gas flow for entry and exit points are the basis for determining commodity-based transmission tariffs. The technically feasible directions of gas flows are depicted in Figure 15. At all entry and exit cross-border points, bidirectional gas flow is feasible, with the exception of the Cieszyn (Český Těšín) point, where only exit from the transmission network is possible. Virtual delivery points between the transmission system and distribution systems and directly connected customers enable only exit from the transmission system. The aggregated virtual point of storage facilities enables entry and exit into/from the transmission system. This is also reflected in the distances for clusters of individual points as listed in Table 18.

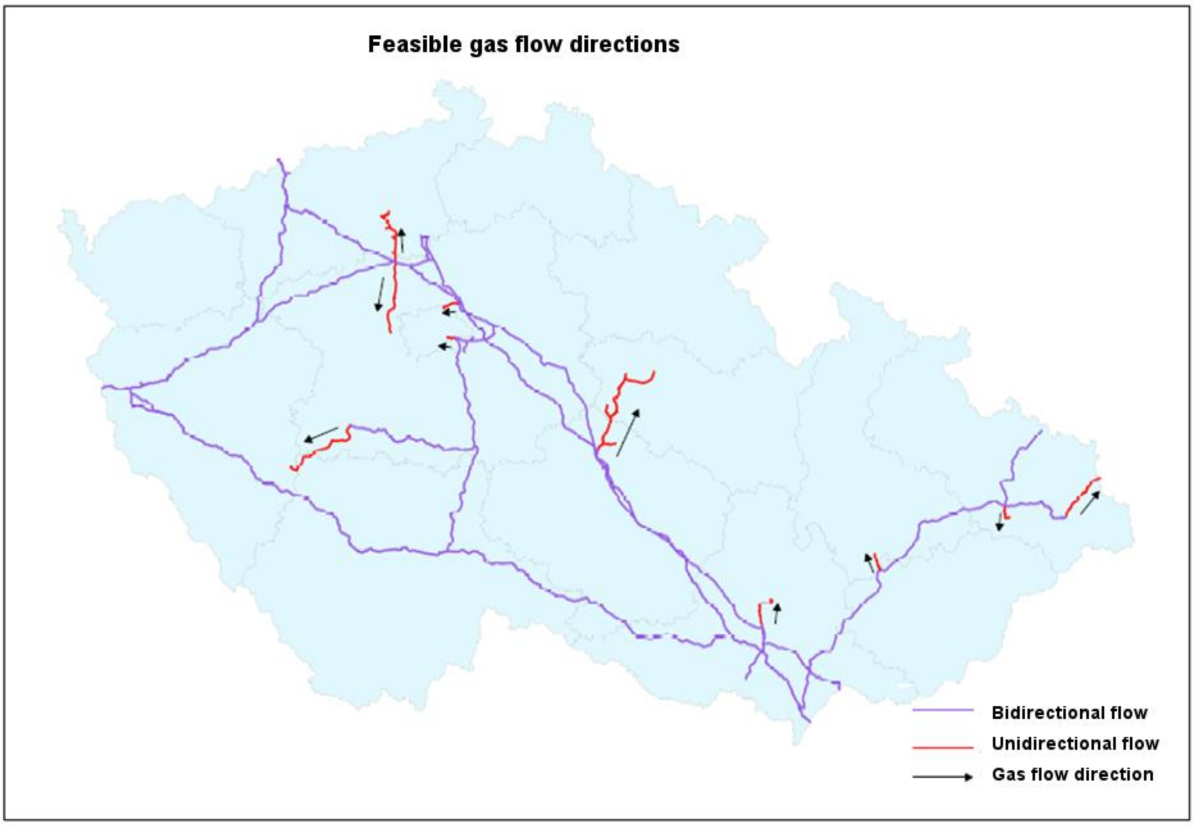


Figure 15 Feasible gas flow directions

For calculating flows in each calendar year, the following is taken into account:

- The number of days in the calendar year;
- The forecasted contracted capacity of the given point; and
- The forecasted usage of the given point.

10.4.1. Forecasted usage at entry and exit points

The basis for determining the expected flows is the expected usage of forecasted contracted capacities for a given point and period.

In respect of usage at exit points for intra-system network use, i.e. for domestic consumption and storage facilities, the basis can be the stable usage of storage facilities, while in respect of domestic consumption, the basis is its gradual increase at a rate of approximately 2% per year. It is much more complicated to determine usage of exit points for cross-system network use, i.e. cross-border exit points, because of its dependence on many external variables (gas-to-gas competition in the EU, weather, etc.). The key point for capacity usage is the Lanžhot cross-border exit point, primarily in relation to the gradual reinforcement of its capacity once the Capacity4Gas project is launched. For the purpose of this document, the ERO has used the usage of contracted exit capacity of the Lanžhot cross-border point at 80% for 2020 and 2021 and at 90% for 2022-2025 as the basis.

Usage at the Hať entry point is based on the assumption that this point will be put into operation on 1 January 2023, and therefore its usage is zero in the years until then.

Usage of entry capacities is then the result of the intra-system and cross-system use of entry points, and for the exit points of the storage facility the same flows at entry and exit are assumed.

10.4.2. Forecasted flows at entry points

The resulting forecasted flows at entry points for the period 2020-2025 are shown in Chart 7. The chart clearly indicates the dominant role of the Brandov VIP, which contributes some 95% to gas imports into the Czech Republic.

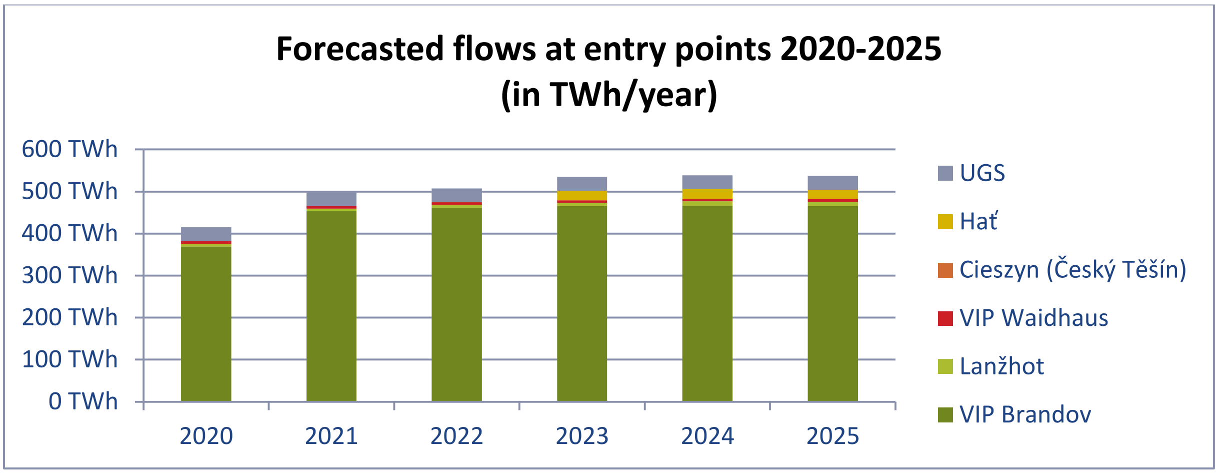


Chart 7 Forecasted flows at entry points 2020-2025 (in TWh/year)

10.4.3. Forecasted flows and exit points

The resulting forecasted flows at exit points for the period 2020-2025 are shown in Charts 8 and 9. The charts clearly indicate that cross-system usage of exit points predominates over intra-system usage, with the dominant role of the Lanžhot cross-border exit point.

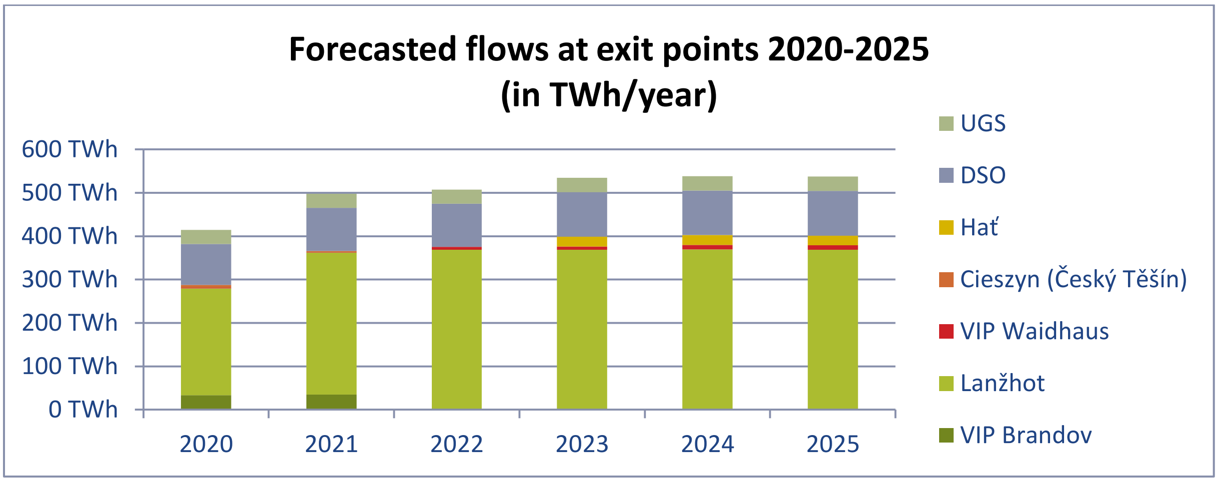


Chart 8 Forecasted flows at exit points 2020-2025 (in TWh/year)

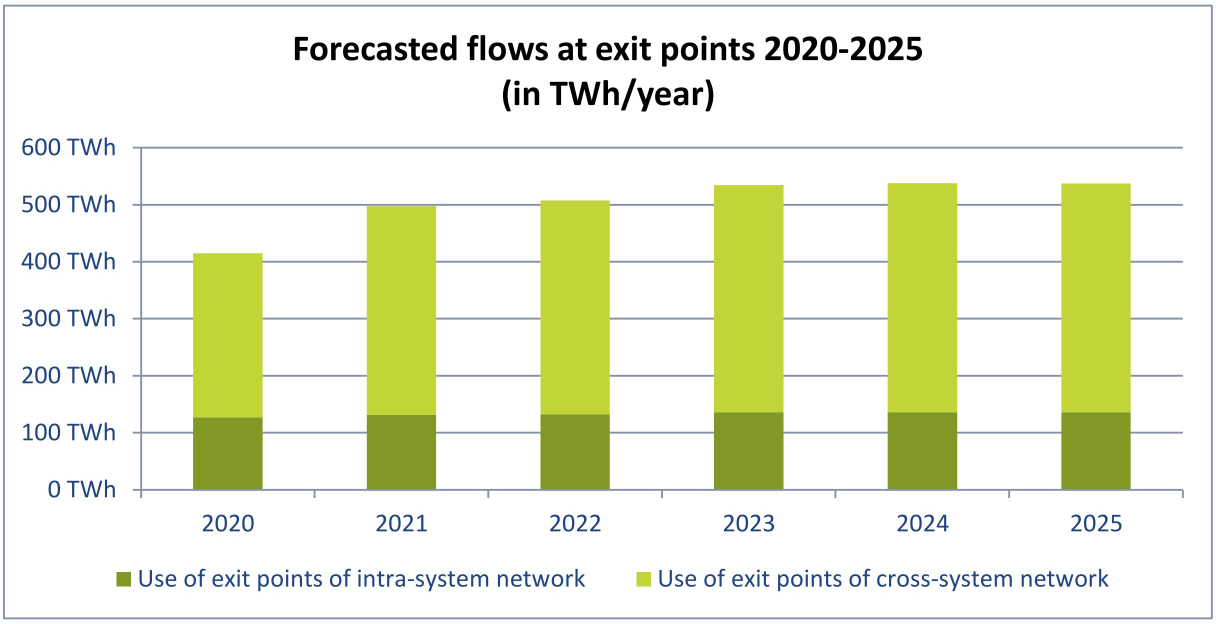


Chart 9 Forecasted flows at exit points 2020-2025 (in TWh/year)

10.5. The structural representation of the transmission network with an appropriate level of detail

See Annex 2.

10.6. Additional technical information about the transmission network, such as the length and the diameter of pipelines and the power of compressor stations

See point 6.1.7 above.

11. Information published under Article 26 (1) (a) (ii)

See subchapter 8.3 above.

12. Information published under Article 26 (1) (a) (iii)

See point 9.1.6.2 above.

13. Information published under Article 26 (1) (a) (iv)

The results, the components and the details of these components for the cost allocation assessments set out in Article 5 are described in the following subchapters.

13.1. Cost allocation assessments under Article 5 (1) (a)

For a cost allocation assessment relating to the transmission service revenue to be recovered by capacity-based transmission tariffs, the values of the comparison index under Article 5 (1) (a) (iv) have been calculated, i.e. only on the basis of the forecasted contracted capacity and distance.

The resulting values of the index assessing the allocation of costs related to the transmission service revenue to be recovered by capacity-based transmission tariffs are listed in Table 23.

The ERO regards revenue net of the risk premium as comparable between national and transit transmission, because the risk premium expresses the extra costs that are incurred by the risk of flows between systems and that are not assignable to the costs of intra-system customers. These values meet the requirement in Article 5 (6), where a threshold of 10 percent is stated for this comparison index.

13.2. Cost allocation assessment under Article 5 (1) (b)

For a cost allocation assessment relating to commodity-based transmission tariffs ('CAA com'), the values of the comparison index have been calculated under:

- Article 5 (1) (b) (i), i.e. only based on the amount of gas flows,
- Article 5 (1) (b) (ii), i.e. only based on the amount of gas flows and distance, while for this calculation simplifications concerning flows and distances set out in point 17.1.2 below were considered.

The resulting values are listed in the following table:

CAA com	2020	2021	2022	2023	2024	2025
Based on flows, i)	66%	66%	66%	65%	65%	65%
Based on distance and flows, ii)	0%	0%	0%	0%	0%	0%

Table 20 Resulting values of the index assessing the allocation of the costs related to commodity-based transmission tariffs

The results of the comparison index based only on the amount of gas flows express the degree of inaccuracy that would emerge when setting prices under Article 4 (3) (ii) at the same level for all exit points. For this reason, this method was found to be non-cost-reflective and the ERO has opted for the methodology described in point 17.1.2.

14. Information published under Article 26 (1) (a) (v)

Article 7 TAR NC and Article 13 of Regulation 715/2009/EC set out the elementary requirements (see Table 4 in chapter 7 above) for tariffs related to access to the transmission network. The ERO is convinced that these requirements must be met while taking into account the national specificities.

The Czech transmission network is characterised by the dominant role of gas transmission for neighbouring countries' needs. National customers must therefore be sheltered from risks arising from changes of bookings for the purpose of international gas transmission.

The ERO is convinced that the proposed model takes into account the above specificity and respects legislative requirements. At the end of the day, it provides for a fair allocation of costs to different network users. The applied methodology takes into account all the key allocation factors as well as distances between the relevant points, and the capacities at those points. It is therefore a comprehensive model that

- minimises the possibility of a dramatic change in tariffs at the affected interconnection points in case of the absence of long-term transmission capacity bookings,
- promotes the efficient utilisation of the transmission network,
- prevents cross-subsidisation between network users, and
- encourages cross-border trade.

On the strength of the information set out in this consultation document the ERO considers that the proposed methodology is based on a transparent and non-discriminatory approach, which is in compliance with the principles set out in Article 7 TAR NC in all respects.

15. Information published under Article 26 (1) (a) (vi)

As noted in subchapter 9.1 above, although the ERO relies on the primary division of revenue into two categories, allowed and target, it subsequently uses their sum as an input to determine reference prices based on applying the capacity weighted distance reference price methodology (CWD), with the only exception: it directly allocates a part of the target revenue generated by the price cap risk premium to the cross-border exit interconnection points.

Another important aspect of pricing was subsequently to find the optimum entry-exit split of revenue.

The following table shows the differences in tariffs when the CWD methodology is applied with a 50/50 split versus the same methodology proposing the optimum entry-exit split of revenue at 20.35/79.65:

CWD, differences between 50/50 and 20.35/79.65 splits		2020	2021	2022	2023	2024	2025
ENTRY, Brandov VIP	CZK	1159.0	1185.3	1212.3	1239.9	1268.1	1297.0
ENTRY, Lanžhot	CZK	701.4	717.3	733.7	750.4	767.4	784.9
ENTRY, Waidhaus VIP	CZK	1240.8	1269.0	1297.8	1327.4	1357.6	1388.5
ENTRY, Cieszyn (Český Těšín)	CZK	303.7	310.6	317.7	324.9	332.3	339.9
ENTRY, Hať	CZK	303.7	310.6	317.7	324.9	332.3	339.9
ENTRY, storage facilities	CZK	264.5	270.5	276.6	282.9	289.4	296.0
EXIT, Brandov VIP	CZK	-1136.3	-1155.6	-1175.2	-1195.0	-1215.1	-1235.4
EXIT, Lanžhot	CZK	-1058.2	-1076.1	-1094.3	-1112.8	-1131.5	-1150.5
EXIT, Waidhaus VIP	CZK	-582.2	-592.0	-602.1	-612.2	-622.5	-632.9
EXIT, Cieszyn (Český Těšín)	CZK	-1584.6	-1611.5	-1638.7	-1666.4	-1694.4	-1722.8
EXIT, Hať	CZK	-1561.5	-1588.0	-1614.8	-1642.0	-1669.7	-1697.7
EXIT, DSOs and DCCs	CZK	-680.1	-708.3	-737.4	-767.6	-798.8	-831.1
EXIT, storage facilities	CZK	-570.7	-583.6	-596.9	-610.5	-624.4	-638.6

Table 21 Differences in prices between the CWD model 50/50 and the CWD model 20.35/79.65

The differences in revenue between these two CWD variants are shown in the following table:

CWD, differences between 50/50 and 20.35/79.65 splits		2020	2021	2022	2023	2024	2025
TOTAL REVENUE AT ENTRY POINTS	CZK t	1,749,923	1,789,706	1,830,413	1,872,064	1,914,682	1,958,289
TOTAL REVENUE AT EXITS	CZK t	-1,749,923	-1,789,706	-1,830,413	-1,872,064	-1,914,682	-1,958,289
TOTAL REVENUE	**CZK t**	**0**	**0**	**0**	**0**	**0**	**0**
Revenue for intra-system use	***CZK t***	***-57,713***	***-66,417***	***-75,521***	***-85,037***	***-94,980***	***-105,368***
Revenue for cross-system use	***CZK t***	***57,713***	***66,417***	***75,521***	***85,037***	***94,980***	***105,368***

Table 22 Differences in revenue between the CWD model 50/50 and the CWD model 20.35/79.65

And equally importantly, the differences between capacity cost allocation comparison indexes with different entry-exit splits of revenue are listed in Table 23:

Comparison indexes for 50/50 and 20.35/79.65 splits	2020	2021	2022	2023	2024	2025
50/50 comparison index, incl. risk premium	18.9%	18.9%	18.8%	18.8%	18.8%	18.8%
20.35/79.65 comparison index, incl. risk premium	14.1%	13.5%	12.9%	12.3%	11.7%	11.1%
Difference	**4.8%**	**5.4%**	**6.0%**	**6.5%**	**7.1%**	**7.7%**
50/50 comparison index, w/o risk premium	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
20.35/79.65 comparison index, w/o risk premium	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
Difference	**6.3%**	**6.3%**	**6.3%**	**6.3%**	**6.3%**	**6.3%**

Table 23 Comparison of the CAA index variants: CWD model 50/50 and CWD model 20.35/79.65

16. Information published under Article (26) (1) (b)

16.1. Indicative information referred to in Article 30 (1) (b) (i), (iv) and (v)

16.1.1. The allowed and target revenue of the transmission system operator

CZK	2020	2021	2022	2023	2024	2025
Allowed revenue	1,635,158,030	1,679,732,926	1,725,538,300	1,772,608,457	1,820,978,669	1,870,685,199
Target revenue	4,743,676,062	4,843,293,260	4,945,002,418	5,048,847,469	5,154,873,266	5,263,125,604

Table 24 Allowed and target revenue

16.1.2. The transmission services revenue

CZK	2020	2021	2022	2023	2024	2025
Capacity portion of revenue from transmission services	6,378,834,092	6,523,026,186	6,670,540,718	6,821,455,926	6,975,851,935	7,133,810,803
Commodity portion of revenue from transmission services	461,214,914	1,065,783,655	1,621,780,043	1,621,780,043	1,621,780,043	1,621,780,043
Revenue from transmission services	6,840,049,006	7,588,809,841	8,292,320,761	8,443,235,969	8,597,631,978	8,755,590,846

Table 25 Transmission services revenue

16.1.3. The ratios for the revenue referred to in point (iv)

Capacity-commodity split

The breakdown between the revenue from capacity-based transmission tariffs and the revenue from commodity-based transmission tariffs is shown in Table 26.

	2020	2021	2022	2023	2024	2025
Capacity-commodity split	93.26% / 6.74%	85.96% / 14.04%	80.44% / 19.56%	80.79% / 19.21%	81.14% / 18.86%	81.48% / 18.52%

Table 26 The capacity-commodity split

Entry-exit split

The breakdown between the revenue from capacity-based transmission tariffs at all entry points and the revenue from capacity-based transmission tariffs at all exit points is shown in Table 27.

	2020	2021	2022	2023	2024	2025
Entry-exit split	20.35% / 79.65%	20.35% / 79.65%	20.35% / 79.65%	20.35% / 79.65%	20.35% / 79.65%	20.35% / 79.65%

Table 27 The entry-exit split

The intra-system/cross-system split

The breakdown between the revenue from intra-system network use at both entry and exit points and the revenue from cross-system network use at both entry and exit points, calculated as set out in Article 5, is shown in Table 28.

	2020	2021	2022	2023	2024	2025
Intra-system/cross-system split	25.63% / 74.37%	25.75% / 74.25%	25.87% / 74.13%	25.99% / 74.01%	26.10% / 73.90%	26.22% / 73.78%

Table 28 The intra-system/cross-system split

17. Information published under Article 26 (1) (c)

17.1. The commodity-based transmission tariffs (flow-based charge)

17.1.1. Costs entering the calculation

For recouping the costs incurred in the operation of compressor stations, cost allocation to the commodity component of the price at the exit points of the transmission network has been used in the Czech Republic for a long time. As part of TAR NC implementation, there are plans to preserve the recouping of these costs in the commodity component of the price at the exit points of the transmission network.

The costs of operating compressor stations are comprised of the following items:

- Cost of gas and electricity bought for running compressor stations
  - This cost item is based on the assumption of gas/electricity for their running bought on the basis of daily prices; the cost of electricity (for running one new compressor station) also includes all the other components of the price (distribution, aid for renewable sources, system services, ancillary services, charge for the market operator, electricity tax). For the purposes of the model, gas price is considered at EUR 20/MWh and the rate of exchange at CZK 25/EUR.
- Cost of the tax on the gas for fuelling compressor stations [fuel gas]
  - This cost item is an input based on the actual consumption of gas and a tariff of CZK 30.6/MWh.
- Cost of emission allowances
  - At present, this cost item is not included in the calculation of variable costs because of the current level of fuel gas consumption and a sufficient free allocation of allowances. In view of the major increase in fuel gas consumption and the not yet known rules for the allocation of the free quantity of allowances in the Czech Republic, this chapter sets out the potential maximum amount of the costs on the assumption that the entire required quantity of allowances will be bought additionally for current market prices. For the purposes of the model, the price of allowances is considered at EUR 20/EUA. When determining the parameters for the fifth regulatory period the ERO will analyse the cost neutrality of the transmission system operator and lay down the rules for the potential inclusion of the EUA costs in the variable component.

In view of the expected dramatic increase in the flows from the Brandov VIP to the Lanžhot cross-border point, caused by the C4G project, we expect a growth, by an order of magnitude, of the costs of compressor station operation. The resulting level of the costs (and thus also the proposed tariff) will considerably depend on the usage of the transmission capacity at the Lanžhot cross-border exit point. Chart 10 for 2020-2021 and Chart 11 for 2022-2025 show the forecasted levels of costs (in CZK million) depending on the usage of that cross-border exit point in two versions: without and including the EUA costs.

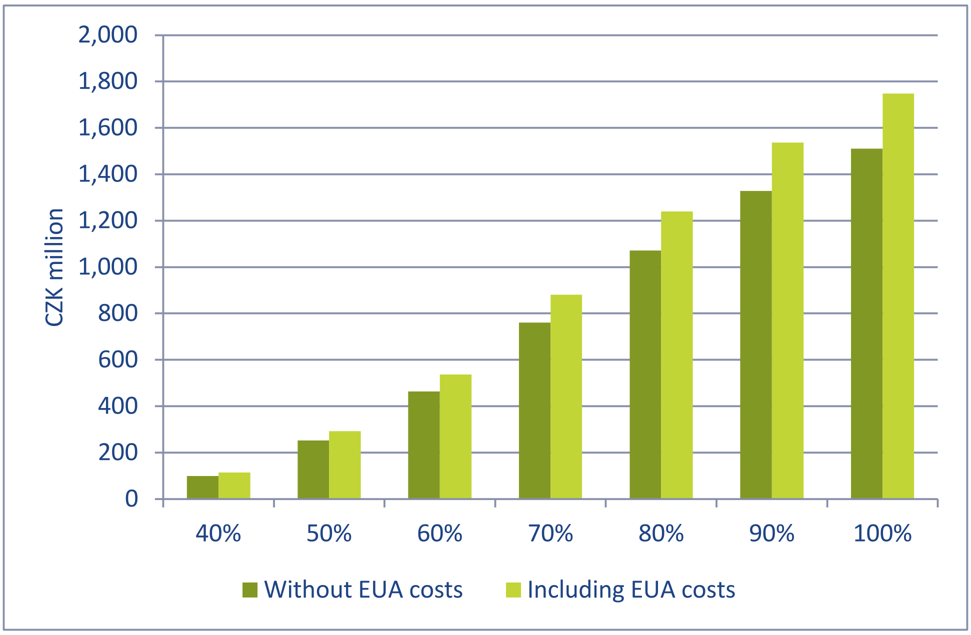


Chart 10 Forecasted variable costs depending on the usage of the contracted capacity at the Lanžhot exit point, in CZK million, 2020-2021

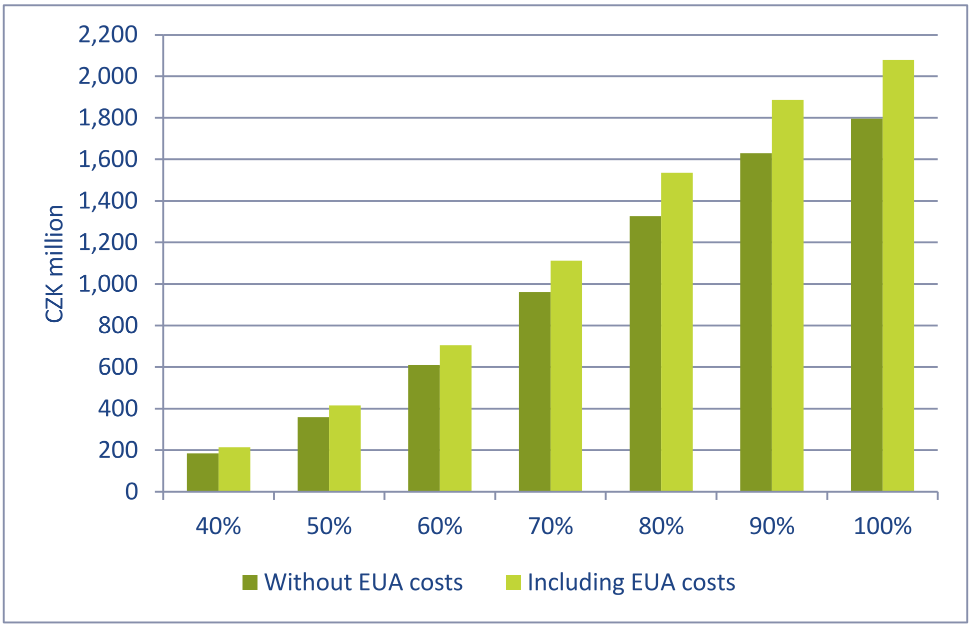


Chart 11 Forecasted variable costs depending on the usage of the contracted capacity at the Lanžhot exit point, in CZK million, 2022-2025

Based on information received from the transmission system operator and the relatively high expected usage of contracted transmission capacity, the ERO has used the usage of contracted transmission capacity at 80% for 2020 and 2021 and 90% between 2022 and 2025 as the basis of cost calculation.

Because of the considerable dependence of the costs on the usage of contracted transmission capacity at the Lanžhot point and on the volatility of the gas price and, if relevant, the EUA price, the actual amount of costs will be adjusted at specified intervals, including for the cross-system use, so that actually occasioned costs are assigned to the transmission network users. The exact mechanism will be developed as part of determining the parameters for the fifth regulatory period.

17.1.2. The manner in which the flow-based charge is set

When preparing the consultation document, the ERO examined the cost-reflectivity of each of the exit points in terms of the consumption of compression work, and thus also from the perspective of the costs of compression. It has found a considerable dependence on the transmission distance (and also, to some extent, on the required output pressure at a given point) and that these distances differ profoundly. Applying a single tariff to all exit points under Article 4 (3) (a) (ii) TAR NC would result in considerable cross-subsidisation between the various types of users and would be contrary to the objectives of cost allocation required by the TAR NC. Evidence of this is the fact that the requirement for cost allocation assessment under Article 5 (1) (b) (ii) sets out distance as a potential cost driver. It is therefore logical that for different distances, such test cannot come out under 10% with the same level of tariffs. The ERO has therefore decided to prefer the requirement for cost allocation and cost allocation assessments as opposed to the requirement in Article 4 (3) (a) (ii).

For setting the commodity-based transmission tariffs, the ERO has used the forecasted flow weighted distance price methodology, which is analogical to the methodology described in Article 8 TAR NC. This methodology was adjusted as follows for the purposes of calculating the commodity-based tariffs:

- The model is strictly geared towards actually incurred costs on the basis of actually expected flows. Unlike the CWD model for capacity-based transmission tariffs, the model does not consider, for cost allocation, all the theoretical combinations of entry and exit points, which are realistic only in theory and will never happen. Our objective is the simplest possible cost-reflective model.
- For the purpose of determining the costs, the model has been simplified to four main points representing the predominating flows in the system:
    - The Brandov VIP as the point at which gas enters the Czech Republic;
    - The Lanžhot cross-border point expressing gas exit from the Czech Republic;
    - The virtual point representing gas consumption in the Czech Republic;
    - The virtual entry/exit point of the storage facility.
- For the purpose of calculating commodity-based transmission tariffs the ERO has therefore decided to deem that all forecasted flows entering the network enter it at the Brandov VIP entry point. This simplification is acceptable because flows at this entry point otherwise account for approximately 92-96% of all forecasted flows entering the network at border points.
- For the purpose of calculating commodity-based transmission tariffs the ERO has therefore decided to deem that all forecasted flows for using the exit points of the cross-system network exit at the Lanžhot physical point. This simplification is

acceptable because flows at the exit point otherwise account for approximately 90% of all forecasted flows exiting the network for the purposes of cross-system gas transfer.

- For the purpose of calculating commodity-based transmission tariffs the ERO has therefore decided to deem that all forecasted flows for using exit points of the intra-system network exit at the virtual exit point, the coordinate of which has been determined by aggregating the coordinates of all delivery stations weighted by their technical capacity.

	Latitude N	Longitude E
Virtual exit point for using intra-system network	49.7512333°	15.6343731°

Table 29 The GPS coordinate of the virtual exit point

- The virtual entry/exit point of the storage facility is identical with the point for calculating capacity-based tariffs in the CWD model in point 10.1.4 above.
- The table shows the forecasted flows:

Flows (TWh/year)	2020	2021	2022	2023	2024	2025
ENTRY points (Brandov VIP)	415	498	507	534	538	537
EXIT intra-system, DSO	94	99	99	103	103	103
EXIT intra-system, UGS	33	33	33	33	33	33
EXIT cross-system (Lanžhot)	288	366	375	399	402	401

Table 30 Forecasted gas flows broken down by points

- In the simplified system, the transmission distance considered is the distance based on Figure 16, and therefore based on the shortest distance of the pipeline routes between the entry point and exit point in compliance with the requirements of Article 8 (1) (c) TAR NC, specifically for the direction from the Brandov VIP to Lanžhot and for the direction from the Brandov VIP to the DSOs+DCCs virtual point.
- For the purposes of the practical cost-reflectivity of storage facilities, we have considered a situation with the non-existence of storage facilities and a situation with storage facilities. The consideration was that the extra costs are not associated with the whole route into/from storage facilities, but only with the distance expressing the branching off to inject gas, and the returning back to the Brandov VIP – Lanžhot route when gas has been withdrawn (in practice, when gas is injected into a storage facility the distance equals the distance between the Brandov VIP and the virtual point of the storage facility, but when gas is withdrawn from a storage facility, the corresponding quantity of gas may not be transported over this route, which leads to savings of costs along most of the route between the Brandov VIP and the virtual point of the storage facility).

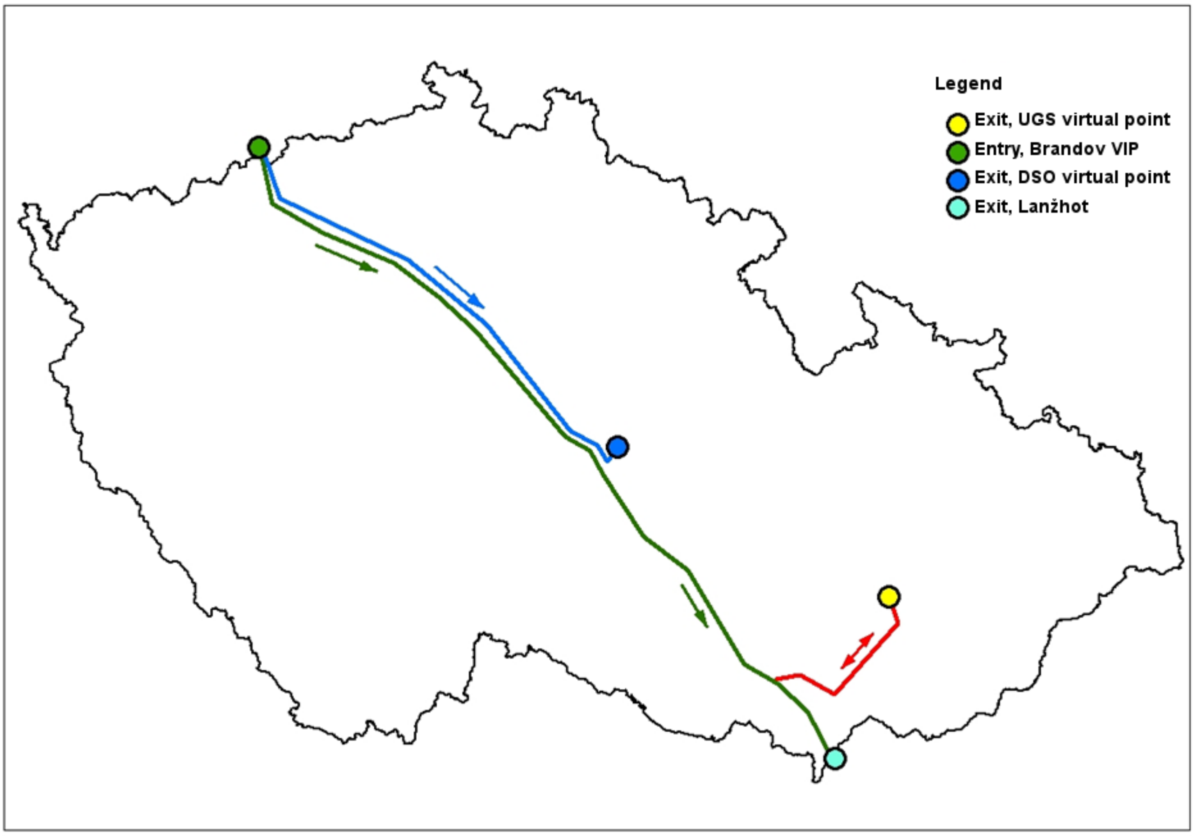


Figure 16 Flows for calculating the flow-based charge

- Based on the above, distances for each of the routes have been calculated:

Distances (km)	
ENTRY (Brandov VIP) - EXIT intra-system (DSO)	228
ENTRY (Brandov VIP) - EXIT intra-system (UGS)	89
ENTRY (Brandov VIP) - EXIT cross-system (Lanžhot)	383

Table 31 Distances for calculating the flow-based charge

- The entry-exit commodity split has been set at 0/100, in line with the practice in the Czech Republic up to now, whereby the commodity component of the tariff has been set at the exit points only, and has been zero at the entry points.
- The transmission tariffs have been derived in sequential steps, analogically to the capacity weighted distance reference price methodology described in Article 8 TAR NC. Thus, the weight of the costs of a given exit point is determined depending on the amount of the flow and distance.
- For calculating commodity-based transmission tariffs at exit points, the quotient of the portion of revenue attributable to that point and the forecasted flows at that exit point is considered.

17.1.3. The share of the allowed or target revenue forecasted to be recovered from such tariffs

In the Czech Republic, the transmission services revenue is composed of a capacity component and a commodity component. The capacity component of the transmission services revenue is comprised of the allowed revenue and the target revenue. The commodity component of the transmission services revenue is comprised of commodity-based transmission tariffs. For this reason, it is not possible to forecast the share of the allowed or target revenue to be recovered from commodity-based tariffs.

17.1.4. Indicative flow-based charge

The proposed charges are set out in four variants:

- The levels of the flow-based charge in CZK/MWh, without costs of emission allowances, are listed in the following table:

Commodity-based tariffs (in CZK/MWh)	2020	2021	2022	2023	2024	2025
For entry point	0.00	0.00	0.00	0.00	0.00	0.00
For exit point for intra-system network use (DSO)	0.78	1.47	2.19	2.07	2.05	2.06
For exit point for intra-system network use (UGS)	0.30	0.57	0.85	0.80	0.80	0.80
For exit point for cross-system network use	1.31	2.46	3.67	3.47	3.44	3.45

Table 32 The flow-based charge without costs of emission allowances

- The levels of the flow-based charge set as a flat rate (to be multiplied by the gas price on a given day), without costs of emission allowances, are listed in Table 33:

Commodity-based tariffs (rate*C_{NCG}/MWh)	2020	2021	2022	2023	2024	2025
For entry point	0.00	0.00	0.00	0.00	0.00	0.00
For exit point for intra-system network use (DSO)	0.0016	0.0029	0.0044	0.0041	0.0041	0.0041
For exit point for intra-system network use (UGS)	0.0006	0.0011	0.0017	0.0016	0.0016	0.0016
For exit point for cross-system network use	0.0026	0.0049	0.0073	0.0069	0.0069	0.0069

Table 33 The flow-based charge without costs of emission allowances (set as a flat rate)

- The levels of the flow-based charge in CZK/MWh, including costs of emission allowances, are listed in Table 34:

Commodity-based tariffs (in CZK/MWh)	2020	2021	2022	2023	2024	2025
For entry point	0.00	0.00	0.00	0.00	0.00	0.00
For exit point for intra-system network use (DSO)	0.91	1.70	2.53	2.39	2.38	2.38
For exit point for intra-system network use (UGS)	0.35	0.66	0.99	0.93	0.92	0.93
For exit point for cross-system network use	1.52	2.85	4.25	4.02	3.98	3.99

Table 34 The flow-based charge including costs of emission allowances

- The levels of the flow-based charge set as a flat rate (to be multiplied by the gas price on a given day), including costs of emission allowances, are listed in Table 35:

Commodity-based tariffs (rate*C_{NCG}/MWh)	2020	2021	2022	2023	2024	2025
For entry point	0.00	0.00	0.00	0.00	0.00	0.00
For exit point for intra-system network use (DSO)	0.0018	0.0034	0.0051	0.0048	0.0048	0.0048
For exit point for intra-system network use (UGS)	0.0007	0.0013	0.0020	0.0019	0.0018	0.0019
For exit point for cross-system network use	0.0030	0.0057	0.0085	0.0080	0.0080	0.0080

Table 35 The flow-based charge without costs of emission allowances (set as a flat rate)

One of the variants, the variant of flow-based charges in CZK/MWh or the variant of flow-rate charges set as a flat rate (multiplied by the gas price on a given day), will be selected based on the outcomes from the consultation process during which the issue of the usage of contracted capacities and the approach to the EUA costs will be analysed.

18. Non-transmission services

Non-transmission services provided to network users are not being proposed.

19. Indicative information about transmission tariffs referred to in Article 30 (2)

The difference in the level of transmission tariffs for the same type of transmission service applicable for the prevailing tariff period and for the tariff period for which the information is published is discussed in the following subchapters.

19.1. Explanation of the difference in the level of transmission tariffs until the end of the regulatory period

19.1.1. Level of reference prices at entry points

Different changes in capacity-based transmission tariffs for each of the entry points, shown in Table 36, are caused by the introduction of the capacity weighted distance reference price methodology in compliance with the TAR NC, and thus the introduction of the cost drivers of forecasted contracted capacity and distance. Since no equalisation under Article 6 (4) (b) takes place at these points, the differences between changes at each of the points are different.

Point name	Price in the current period (CZK/MWh/day/year)	Proposed reference price methodology for 2020 (CZK/MWh/day/year)	Difference
ENTRY			
Brandov VIP	765.01	795.45	4%
Lanžhot	765.01	481.40	-37%
Waidhaus VIP	765.01	851.59	11%
Cieszyn (Český Těšín)	765.01	208.45	-73%
Hať	765.01	208.45	-73%
UGS	442.96	181.51	-59%

Table 36 Differences in levels of transmission tariffs at entry points

19.1.2. Level of reference prices at exit points

Different changes in capacity-based transmission tariffs for each of the exit points, shown in Table 37, are caused by the introduction of the capacity weighted distance reference price methodology in compliance with the TAR NC, and thus the introduction of the cost drivers of forecasted contracted capacity and distance.

Point name	Price in the current period (CZK/MWh/day/year)	Proposed reference price methodology for 2020 (CZK/MWh/day/year)	Difference
EXIT			
Brandov VIP	2,991.43	3,394.13	13%
Lanžhot	2,991.43	3,160.71	6%
Waidhaus VIP	2,991.43	1,738.88	-42%
Cieszyn (Český Těšín)	2,991.43	4,733.08	58%
Hať	2,991.43	4,663.97	56%
DSOs + DCCs	1,840.11	1,985.94	8%
UGS	95.60	1,527.98	1498%

Table 37 Differences in levels of transmission tariffs at exit points

19.1.3. Level of flow-based charges at entry points

In the period under review, the commodity-based transmission tariffs for each of the entry points do not change, as indicated in Table 38.

Commodity-based tariffs	Price in the current period (CZK/MWh)	Proposed reference price methodology for 2020 (CZK/MWh)	Difference
For entry point	0.00	0.00	0%

Table 38 Difference in the level of the flow-based charge at entry points

19.1.4. Level of flow-based charges at exit points

In the period under review, the commodity-based transmission tariffs for individual exit points are changing; the change is primarily due to the introduction of the methodology for setting flow-based charges under Article 4 (3) (a) TAR NC, and therefore the introduction of the cost drivers of forecasted flows and distance, which have not been applied so far. Another factor is the fact that beginning in 2020, major changes will take place in the usage of the transmission network, and the increase in the commodity portion of the transmission services revenue compared with 2019 is related to that. As regards the tariff for national consumption and storage facilities, the currently existing variable part of the tariff, amounting to approximately CZK 0.05/MWh, is heavily influenced by the negative adjustments made in the past years due to a lower gas consumption and lower purchasing prices of fuel gas for compressor stations, and it therefore does not express the impact of the increase compared with the costs allocated to these customers on a long-term basis (on average around CZK 0.4 to 0.5/MWh).

These prices do not include costs of emission allowances.

Commodity-based tariffs	Price in the current period (CZK/MWh)	Proposed reference price methodology for 2020 (CZK/MWh)	Difference
For exit point for intra-system network use (DSO)	0.05	0.78	1465%
For exit point for intra-system network use (UGS)	0.05	0.30	509%
For exit point for cross-system network use	$0.003 \cdot C_{NCG}$	$0.0026 \cdot C_{NCG}$	-13%

Table 39 The difference in the level of the flow-based charge at exit points

19.2. Explanation of the difference in the level of transmission tariffs for the next regulatory period

The estimated difference in the level of transmission tariffs for the same type of transmission service applicable for the tariff period for which the information is published and for each tariff period within the remainder of the regulatory period is discussed in the following subchapters. Since 2020 is the last year of the regulatory period, we present the outlook and estimated differences in the level of the transmission tariffs for the next subsequent period that will end in 2025.

19.2.1. Estimated level of tariffs at entry points between 2020 and 2025

The estimated level of the tariffs at entry points for the period 2020-2025 is shown in absolute terms in Table 40.

ENTRY (CZK/MWh/day/year)	2020	2021	2022	2023	2024	2025
Brandov VIP	795.4	813.5	832.0	851.0	870.3	890.2
Lanžhot	481.4	492.3	503.5	515.0	526.7	538.7
Waidhaus VIP	851.6	870.9	890.8	911.0	931.8	953.0
Cieszyn (Český Těšín)	208.5	213.2	218.0	223.0	228.1	233.3
Hať	208.5	213.2	218.0	223.0	228.1	233.3
UGS	181.5	185.6	189.9	194.2	198.6	203.1

Table 40 Estimated level of tariffs at entry points

The estimated relative year-on-year difference in the level of tariffs at entry points for the period 2020-2025 is shown in Table 41.

ENTRY	2020	2021	2022	2023	2024	2025
Brandov VIP		2.3%	2.3%	2.3%	2.3%	2.3%
Lanžhot		2.3%	2.3%	2.3%	2.3%	2.3%
Waidhaus VIP		2.3%	2.3%	2.3%	2.3%	2.3%
Cieszyn (Český Těšín)		2.3%	2.3%	2.3%	2.3%	2.3%
Hať		2.3%	2.3%	2.3%	2.3%	2.3%
UGS		2.3%	2.3%	2.3%	2.3%	2.3%

Table 41 Estimated relative difference in the level of tariffs at entry points

19.2.2. Estimated level of tariffs at exit points between 2020 and 2025

The estimated level of the tariffs at exit points for the period 2020-2025 is shown in absolute terms in Table 42.

EXIT (CZK/MWh/day/year)	2020	2021	2022	2023	2024	2025
Brandov VIP	3,394.1	3,464.0	3,535.3	3,608.0	3,682.3	3,758.0
Lanžhot	3,160.7	3,225.8	3,292.2	3,359.9	3,429.0	3,499.6
Waidhaus VIP	1,738.9	1,774.7	1,811.2	1,848.5	1,886.5	1,925.3
Cieszyn (Český Těšín)	4,733.1	4,830.5	4,929.9	5,031.4	5,134.9	5,240.5
Hať	4,664.0	4,760.0	4,857.9	4,957.9	5,059.9	5,164.0
DSOs + DCCs	1,985.9	2,043.8	2,103.3	2,164.5	2,227.6	2,292.4
UGS	1,528.0	1,562.7	1,598.3	1,634.7	1,671.9	1,710.0

Table 42 Estimated level of tariffs at exit points

The estimated relative year-on-year difference in the level of tariffs at exit points for the period 2020-2025 is shown in Table 43.

EXIT	2020	2021	2022	2023	2024	2025
Brandov VIP		2.1%	2.1%	2.1%	2.1%	2.1%
Lanžhot		2.1%	2.1%	2.1%	2.1%	2.1%
Waidhaus VIP		2.1%	2.1%	2.1%	2.1%	2.1%
Cieszyn (Český Těšín)		2.1%	2.1%	2.1%	2.1%	2.1%
Hať		2.1%	2.1%	2.1%	2.1%	2.1%
DSOs + DCCs		2.9%	2.9%	2.9%	2.9%	2.9%
UGS		2.3%	2.3%	2.3%	2.3%	2.3%

Table 43 Estimated relative difference in the level of tariffs at exit points

The differences are mainly due to the selected price setting methodology and the different evolution of target revenue and allowed revenue.

19.2.3. Estimated level of flow-based charges between 2020 and 2025

Since the flow-based charge in absolute terms can be expressed in CZK/MWh or by a flat rate (multiplied by the gas price on a given day), we present the flow-based charge in absolute terms, set in CZK/MWh, in Table 44 and as a flat rate in Table 45. This level is without the costs of emission allowances.

Commodity-based tariffs (CZK/MWh)	2020	2021	2022	2023	2024	2025
For entry point	0.00	0.00	0.00	0.00	0.00	0.00
For exit point for intra-system network use (DSO)	0.78	1.47	2.19	2.07	2.05	2.06
For exit point for intra-system network use (UGS)	0.30	0.57	0.85	0.80	0.80	0.80
For exit point for cross-system network use	1.31	2.46	3.67	3.47	3.44	3.45

Table 44 Estimated level of flow-based charge between 2020 and 2025 (in CZK/MWh)

Commodity-based tariffs (rate*C_{NCG}/MWh)	2020	2021	2022	2023	2024	2025
For entry point	0.00	0.00	0.00	0.00	0.00	0.00
For exit point for intra-system network use (DSO)	0.0016	0.0029	0.0044	0.0041	0.0041	0.0041
For exit point for intra-system network use (UGS)	0.0006	0.0011	0.0017	0.0016	0.0016	0.0016
For exit point for cross-system network use	0.0026	0.0049	0.0073	0.0069	0.0069	0.0069

Table 45 Estimated level of flow-based charge between 2020 and 2025 (as a flat rate)

The estimated relative year-on-year difference in the level of the flow-based charge between 2020 and 2025 is shown in Table 46 and is mainly attributable to the forecasted changes in the magnitude of network usage and the related amounts of flows, including the evolution of the cost parameters that may influence the size of the commodity component of the transmission revenue.

Commodity-based tariffs	2020	2021	2022	2023	2024	2025
For entry point		0.0%	0.0%	0.0%	0.0%	0.0%
For exit point for intra-system network use (DSO)		87.7%	48.9%	-5.5%	-0.8%	0.2%
For exit point for intra-system network use (UGS)		87.7%	48.9%	-5.5%	-0.8%	0.2%
For exit point for cross-system network use		87.7%	48.9%	-5.5%	-0.8%	0.2%

Table 46 Estimated relative difference in the level of flow-based charge between 2020 and 2025

19.3. The simplified tariff model

The simplified tariff model, updated regularly, accompanied by the explanation of how to use it, enabling network users to calculate the transmission tariffs applicable for the prevailing tariff period and to estimate their possible evolution beyond such tariff period, is published on the ERO's website.

20. Information published under Article 26 (1) (e) TAR NC

At the gas market participant's request, the fixed [as per the Price Act] fixed payable [as per the TAR NC] price for booked standard firm transmission capacity (CZK/MWh/year/day) can be applied subject to the following conditions:

In an auction, the gas market participant has been allocated:

- yearly standard firm transmission capacity at the relevant cross-border point for a period of at least 10 consecutive years and at the same time the condition is satisfied for the booked firm transmission capacity for that period for every gas year that the amount of the auction-allocated booked firm transmission capacity is not more than 50% higher or more than 50% lower than the average amount of the booked standard firm transmission capacity of this gas market participant for the whole of this period, or
- the yearly standard firm transmission capacity for which, in connection with the yearly standard firm transmission capacities allocated to this gas market participant in auctions held in preceding years, the condition of booking for a period of at least 10 consecutive years is satisfied and at the same time the condition is satisfied for the newly booked firm daily transmission capacity for each gas year that the amount of the auction-allocated booked firm daily transmission capacity is not more than 50% higher than the average amount of the daily booked standard firm transmission capacity of this gas market participant for a period of 10 years immediately preceding the last year for which yearly firm transmission capacity was booked.

The fixed payable price for booked standard firm transmission capacity is calculated, for yearly standard firm capacity for calendar year **i,** using the formula

$$C_{Fi} = \left(C_{r0} \times \prod_{t=j}^{i} \frac{I_{t-1}}{100}\right) + AP + RP\,,$$

where

C_{Fi} is the fixed payable price for booked standard firm transmission capacity

C_{ro} is the fixed annual price for booked standard firm transmission capacity, which for year i=j equals the price applicable for calendar year j, and in years i=j+1 and following years it equals the price applicable for calendar year j+1,

i is the calendar year for which the fixed payable price for booked standard firm transmission capacity is being determined

j is the calendar year in which the agreement on the provision of the gas transmission service was concluded,

I_{t-1} is the value of the price escalation factor, which for years t=j and t=j+1 equals 100% and for year t=j+2 and following years is determined by the relevant escalation factor described in the Price Regulation Principles,

AP is, in respect of auctions of standard bundled transmission capacity, the share attributable to the transmission system operator of the auction premium achieved in an auction on an auction booking platform,

RP is a risk premium of CZK 0/MWh/d.

A risk premium amounting to zero has also been selected because of the fact that the calculation of tariffs in the period 2020-2025 is based on the planned evolution of investment and costs, the amount of which will be significantly influenced by progress in the implementation of the crucial C4G project, and they therefore entail a considerable degree of uncertainty for any participants interested in a guaranteed fixed payable price. At this moment, the ERO therefore does not see any reasons for using an additional risk premium, an adequate quantification of which would be very complicated and virtually impracticable. Thus, no revenue from risk premiums is envisaged for the time being.

21. Characteristics of the transmission tariffs used

21.1. Types of transit tariffs

The ERO expects the preservation of the current range of transmission tariff products as described in Article 9 CAM NC at the entry and exit cross-border points of the transmission network. The following capacity products will be offered with a floating price within the meaning of Article 24 TAR NC:

- yearly standard firm capacity
- quarterly standard firm capacity
- monthly standard firm capacity
- daily standard firm capacity
- within-day standard firm capacity

With a fixed payable price within the meaning of Article 24 TAR NC, the following capacity product will be offered:

- yearly standard firm capacity

21.1.1. Floating price

The floating price for booked standard firm transmission capacity is a price applicable at the time when the transmission capacity can be used. Floating prices will be applied subject to the following conditions:

If standard firm transmission capacity at the relevant cross-border point is allocated to a gas market participant in an auction for a period shorter than 10 consecutive years, the reserve price for standard firm capacity for these consecutive years is the floating price for booked standard firm transmission capacity.

For yearly standard firm capacity, quarterly standard firm capacity, and monthly standard firm capacity, the floating price for booked standard firm transmission capacity is calculated as

$$C_S = C_r \times F_c + AP$$

where

C_s is the resulting floating price for booked standard firm transmission capacity,

C_r is the reference price,

AP is the auction premium,

F_c is the factor of the duration of booked standard firm transmission capacity, calculated as follows:

for yearly standard firm capacity using the formula

$$F_c = 1,$$

for quarterly standard firm capacity using the formula

$$F_c = \frac{3}{12} \times M,$$

for monthly standard firm capacity using the formula

$$F_c = \frac{1}{12} \times M,$$

where

M is the multiplier that takes into account the different duration of capacity booking

The floating price for booked standard firm transmission is calculated for daily and within-day standard firm capacity using the formula

$$C_v = \frac{1}{365} \times M \times C_r.$$

21.1.2. Fixed payable price

See chapter 19.

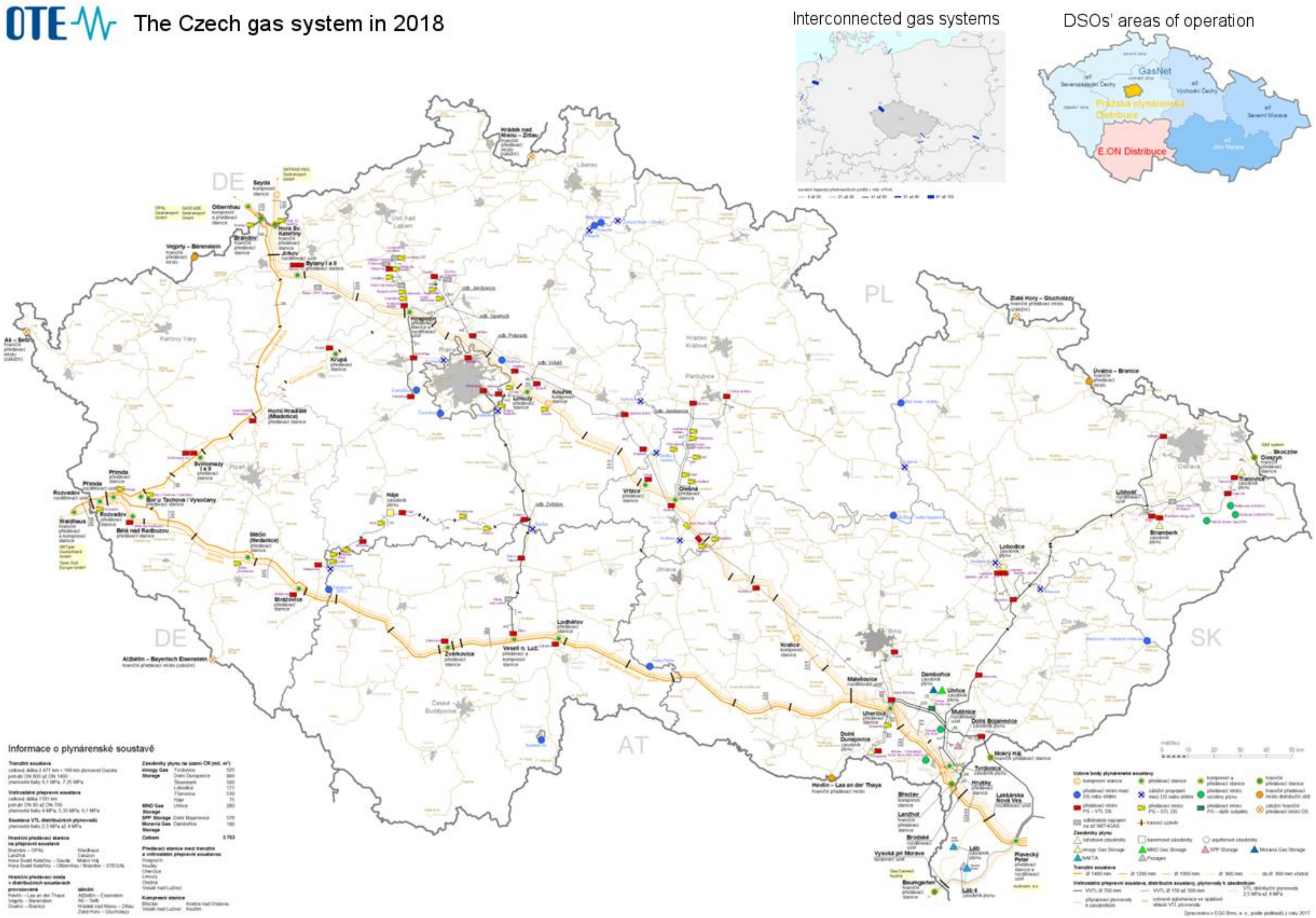
21.2. Types of domestic tariffs

In the case of transmission tariffs for exit or entry points for domestic users of the transmission network the ERO envisages the preservation of the structure that is being used at present.

Annex 1 Overview of the required particulars of consultation under Article 26 and the corresponding chapters hereof

Content	Requirements set under TAR NC	Corresponding chapter/subchapter
Description of the proposed methodology	Article 26 (1) (a)	9.1
Information about parameters	Article 26 (1) (a) (i)	10
Values of the proposed adjustments for transmission tariffs	Article 26 (1) (a) (ii)	11
Indicative reference prices	Article 26 (1) (a) (iii)	12
Cost allocation assessments	Article 26 (1) (a) (iv)	13
Assessment of the methodology	Article 26 (1) (a) (v)	14
Counterfactual	Article 26 (1) (a) (vi)	15
Amount of revenue, changes and ratios	Article 26 (1) (b)	16
Commodity-based transmission tariffs	Article 26 (1) (c) (i)	17
Non-transmission services	Article 26 (1) (c) (ii)	18
Difference in the level of transmission tariffs	Article 26 (1) (d)	19.1, 19.2
Simplified tariff model	Article 26 (1) (d)	19.3
Fixed payable price	Article 26 (1) (e)	20

Annex 2 Map of the Czech gas system



Source: OTE, a.s.
(http://www.ote-cr.cz/statistika/dlouhodoba-rovnovaha-plyn/mapy-ke-stazeni/files_ddr_g_mapy_ke_stazeni/plynarenska-soustava-cr.png)

OTE The Czech gas system in 2018 - Legend

Under the small map, on the left-hand side top

Total capacity of cross-border interconnection points, in bcm/year

0 to 20 21 to 40 41 to 60 61 to 80 81 to 100

Items inside the large map

hraniční předávací stanice	cross-border transfer stations
předávací stanice	delivery stations
hraniční předávací místo	cross-border transfer point
rozdělovací uzel	junction point
kompresní stanice	compressor station
odb.	branch-off
hraniční předávací místo (záložní)	back-up cross-border transfer point
zásobník plynu	storage facility
předávací stanice a rozdělovací uzel	delivery station and junction point

Legend for the large map, right-hand side bottom

Scale: 0……….50 km

Uzlové body plynárenské soustavy = Nodal points in the gas system			
kompresní stanice = Compressor station	předávací stanice = Delivery station	kompresní a předávací stanice = Compressor and delivery station	hraniční předávací stanice = Cross-border transfer station
předávací místo mezi DS nebo sítěmi = Delivery point between distribution systems or networks	záložní propojení mezi DS nebo sítěmi = Back-up interconnection between distribution systems or networks	předávací stanice výrobny plynu = production facility delivery station	hraniční předávací místo distribuční sítě = Cross-border delivery point of a distribution network
předávací místo PS – VTL DS = Delivery point between the transmission network and a high-pressure distribution network	předávací místo PS – STL DS = Delivery point between the transmission network and an intermediate-pressure distribution network	předávací místo PS – další subjekty = Delivery point between the transmission network and other entities	záložní hraniční předávací místo DS = Back-up cross-border delivery point of a distribution network
Odběratelé napojení na síť NET4GAS = Customers connected to the NET4GAS network	trasový uzávěr = Closing valve in the pipeline route		

Zásobníky plynu = Storage facilities			
ložiskové zásobníky = UGS in depleted fields	kavernové zásobníky = a UGS in an excavated cavern	aquiferové zásobníky = UGS in aquifers	

Tranzitní soustava = The transit system					
ND 1400	ND 1200	ND 1000	ND 900	Up to ND 800, inclusive	
The national transmission system, distribution systems, and pipelines to storage facilities					
VHP ND 700	VHP ND 150 to 500	HP distribution pipelines, 2.5 MPs to 4 MPa			
UGS interconnection pipelines		Selected agglomerations in the catchment area of HP pipelines			

Prepared by EGÚ Brno, a.s., based on materials from 2017

Legend for the large map, left-hand side bottom; this text is only written in the map at

http://www.ote-cr.cz/statistika/dlouhodoba-rovnovaha-plyn/mapy-ke-stazeni/files_ddr_g_mapy_ke_stazeni/plynarenska-soustava-cr.png

Information about the gas system			
Total length 2,471 km + 166 km the Gazelle pipeline DN 800 to DN 1400 pipes Rated pressures 6.1 MPs and 7.35 MPs			
The national transmission system Total length 1,181 km DN 80 to DN 700 pipes Rated pressures 4 MPs, 5.35 MPs and 6.1 MPs			
High-pressure distribution pipelines Rated pressures from 2.5 MPa to 4 MPa			
Cross-border transfer stations in the transmission network Brandov-OPAL Lanžhot Hora Svaté Kateřiny – Sayda Hora Svaté Kateřiny – Olbernhau/Brandov – STEGAL Waidhaus Cieszyn Mokrý Háj			
Cross-border transfer stations in distribution systems			
Operated Hevlín – Laa an der Thaya Vejprty – Barenstein Úvalno – Branice			**Back-up** Alžbětín – Eisenstein Aš – Selb Hrádek na Nisou – Zittau Zlaté Hory – Glucholazy
Storage facilities in the Czech Republic (in million m3)			
innogy Gas Storage	Tvrdonice	525	
	Dolní Dunajovice	900	
	Štramberk	500	
	Lobodice	177	
	Třanovice	530	

	Háje	75	
MND Gas Storage	Uhřice	280	
SPP Storage	Dolní Bojanovice	576	
Moravia Gas Storage	Dambořice	190	
Total		**3,763**	
Delivery stations between the international transit system and the national transmission system Hospozín Hrušky Uherčice Limuzy Olešná Veselí nad Lužnicí			
Compressor stations Břeclav Veselí nad Lužnicí Kralice nad Oslavou Kouřim			

Annex 3 List of Figures

Annex 4 List of Tables

Annex 5 List of Charts