Gasgrid Finland Oy

Consultation on the prices of Gasgrid Finland in 2022 and the information in accordance with the article 30 of Tariff Network Code

Based on Article 30 of Commission Regulation (EU) 2017/460 of 16 March 2017 establishing a network code on harmonized transmission tariff structures for gas (TAR NC)

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Abbreviations

ACER	Agency for the Cooperation of Energy Regulators
BC	Balticconnector
CEF	Connecting Europe Facility
CWD	Capacity Weighted Distance
LNG	Liquified Natural Gas
LTIP	Long-Term Investment Plan
NRA	National Regulatory Authority
RPM	Reference Price Methodology
TAR NC	Tariff Network Code
TSO	Transmission System Operator
UMM	Urgent Market Message

List of definitions

Available capacity means the part of the technical capacity that is not allocated and is still available to the system at that moment.

Firm capacity means gas transmission capacity contractually guaranteed as uninterruptible by the transmission system operator.

Implicit capacity allocation method means a capacity allocation method where, possibly by means of an auction, both transmission capacity and a corresponding quantity of gas are allocated at the same time.

Interruptible capacity means gas transmission capacity that may be interrupted by the transmission system operator in accordance with the conditions stipulated in the transport contract.

LNG entry point means the virtual point where gasified LNG is injected from the LNG processing plant to the Finnish gas system. *Multiplier* means the factor applied to the respective proportion of the reference price in order to calculate the reserve price for a non-yearly standard capacity product.

Physical congestion means a situation where the level of demand for actual deliveries exceeds the technical capacity at some point in time.

Reference price means the price for a capacity product for firm capacity with a duration of one year, which is applicable at entry and exit points and which is used to set capacity-based transmission tariffs.

Reference price methodology means the methodology applied to the part of the transmission services revenue to be recovered from capacity-based transmission tariffs with the aim of deriving reference prices.

Technical capacity means the maximum firm capacity that the transmission system operator can offer to the network users, taking account of system integrity and the operational requirements of the transmission network.

Transmission capacity means the maximum capacity which can technically be transported with design pressure.

Transmission services means regulated services provided by the transmission system operator for transmission within the entry-exit system.

1 Introduction

Gasgrid Finland Oy, the Finnish gas transmission system operator (TSO) with system responsibility, publishes the new gas transmission tariffs which will be applied in Finland 1.1.2022 – 31.12.2022 by 30th of November 2021. Before publishing the final tariffs, Gasgrid organizes the public consultation on the tariffs including the information according to the Article 30 of Commission Regulation (EU) 2017/460 of 16 March 2017 establishing a network code on harmonized transmission tariff structures for gas (Tariff Network Code, TAR NC).

Based on Natural Gas Market Act, the rights and obligations to set transmission tariffs for 2022 are set for the transmission system operator with system responsibility. Due to the Inter TSO Compensation (ITC) agreement concluded by the Transmission System Operators of Finland, Estonia and Latvia, there is no tariff at Balticconnector entry and exit points.

Gasgrid Finland will be pleased to receive written opinions about the tariffs and charges presented in this document. Parties providing comments must separately notify whether their comment or part of it is confidential information that may not be published on the Gasgrid website. The TSO also has the right to submit opinions given to the regulatory authority, i.e. to the Energy Authority. **The opinions shall be submitted by Tuesday 9th of November 23:59 EET. Please submit your opinion to the following e-mails: commercial@gasgrid.fi and mika.myotyri@gasgrid.fi (cc).**

Note that the Finnish Energy Authority organizes a consultation concerning the tariff multipliers, seasonal factors and discounts according to the article 28 of Tariff Network Code. The Consultation organized by the Energy Authority is open until 5th of November.

The final tariffs for 2022 will be published by 30th of November 2021.

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2 Information on parameters used in the applied reference price methodology that are related to the technical characteristics of the transmission system

In this chapter, the information according to TAR NC article 30 (a) is published.

2.1 Technical Capacity at entry and exit points and associated assumptions

Regulation (EC) No 715/2009 defines Technical Capacity as follows: *Technical Capacity* means the maximum firm capacity that the transmission system operator can offer to the network users, taking account of system integrity and the operational requirements of the transmission network.

At Balticconnector entry and exit point, capacity is allocated implicitly based on confirmed nominations according to the nomination submission schedule. Once the TSO has confirmed, the corresponding amount of capacity is allocated for a shipper. Due to the nomination based implicit capacity allocation, only firm

capacity is offered for shippers. After nomination submission window is closed, shippers may submit renominations. Day-ahead capacity not sold during nomination submission period shall be offered as a within-day capacity during renomination submission period. Capacity not sold during nomination submission period is called *Available Capacity.*

Because the transport capability to the Finnish exit zone is high, market participants can book exit zone capacity without limitations. Thus, Gasgrid Finland has not set certain Technical Capacity offered for the market participants for the exit zone. Gasgrid accepts the received capacity booking requests as such if they are correctly submitted.

Gasgrid Finland has capability to receive biogas and LNG fulfilling the quality requirements from the biogas and LNG entry points without limitations. Thus, Technical Capacity has not been set to biogas virtual entry point and LNG virtual entry point. At Imatra point, the Technical Capacity is 220 GWh/day except in cases of maintenance works in Finnish or Russian transmission systems or interruptions. Gasgrid Finland offers capacity for the market participants as much as possible taking into account security of supply and operational capabilities. With the exception of Balticconnector, the capacity is allocated using First-Come-First-Served (FCFS) principle.

2.1.1 Technical Capacity – Entry points

Balticconnector is the only interconnection point in the Finnish gas system. Balticconnector is a bidirectional pipeline. Balticconnector transmission capacity is the maximum transport capacity in a design pressure which is 81 400 MWh/day.

The Technical Capacity offered for market participants is agreed with Estonian and Latvian TSOs, Elering AS and Conexus Baltic Grid. The Technical Capacities of Balticconnector for the year 2022 can be found on the tables 1 and 2 below (based on the situation on 13th of October 2021). If the TSOs must change the Technical Capacity values offered for the market participants, the TSOs shall publish the Urgent Market Message (UMM) through GET Baltic UMM platform. Also, the Technical Capacities will be updated to the ENTSOG Transparency Platform accordingly. Gasgrid publishes the Technical Capacities for the upcoming 10 years at the ENTOSG Transparency Platform. You can find the Urgent Market Messages published by Gasgrid Finland and the Baltic TSOs here: https://umm.getbaltic.com/public-umm

Table 1. Technical entry capacity of Balticconnector.

SUUNTA/DIRECTION EE-FI			*Note! For instance, 3.-9.5. means that the action starts 3.5. at 7:00 and ends 10.5. at 7:00.*
	GWh/day	kWh/h	Huomiot/Remarks
1/2022	54,600	2 275 000	
2/2022	54,600	2 275 000	
3/2022	54,600	2 275 000	
4/2022	43,200	1 800 000	
5/2022	65,4/57,96/65,4	2 725 000 / 2 415 000 / 2 725 000	Inkoon kompressoriaseman vuosihuolto; 57,96 GWh/päivä ajanjaksolla 16.-22.5.2022/Yearly maintenance of Inkoo compressor station; 57,96 GWh/day during the period of 16.-22.5.2022 https://umm.getbaltic.com/organisation-umm-list/1607
6/2022	65,400	2 725 000	
7/2022	65,400	2 725 000	
8/2022	65,400	2 725 000	
9/2022	65,400	2 725 000	
10/2022	54,600	2 275 000	
11/2022	54,600	2 275 000	
12/2022	54,600	2 275 000	

At Imatra entry point, Technical Capacity will be 220 000 MWh/day throughout the year 2022 except during the periods when there are planned or unplanned maintenance works or interruption impacting on the Technical Capacity.

Table 2. Technical entry capacity of Imatra point.

IMATRA ENTRY			*Note! For instance, 3.-9.5. means that the action starts 3.5. at 7:00 and ends 10.5. at 7:00.*
	GWh/day	**kWh/h**	**Remarks (please add information on the reason for the change in technical capacity value (according to the UMM)**
1/2022	220,0	9 166 667	
2/2022	220,0	9 166 667	
3/2022	220,0	9 166 667	
4/2022	220,0	9 166 667	
5/2022	124,8 / 220,0	9 166 667 / 5 200 000	Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 124,8 GWh/day during the period of 9.5.-28.10.2022; UMM: https://umm.getbaltic.com/organisation-umm-list/1578
6/2022	124,8	5 200 000	Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 124,8 GWh/day during the period of 9.5.-28.10.2022; UMM: https://umm.getbaltic.com/organisation-umm-list/1579
7/2022	124,8	5 200 000	Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 124,8 GWh/day during the period of 9.5.-28.10.2022; UMM: https://umm.getbaltic.com/organisation-umm-list/1580
8/2022	124,8	5 200 000	Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 124,8 GWh/day during the period of 9.5.-28.10.2022; UMM: https://umm.getbaltic.com/organisation-umm-list/1581
9/2022	124,8	5 200 000	Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 124,8 GWh/day during the period of 9.5.-28.10.2022; UMM: https://umm.getbaltic.com/organisation-umm-list/1582
10/2022	124,8 / 220,0	5 200 000 / 9 166 667	Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 124,8 GWh/day during the period of 9.5.-28.10.2022; UMM: https://umm.getbaltic.com/organisation-umm-list/1583
11/2022	220,0	9 166 667	
12/2022	220,0	9 166 667	

Hamina LNG will be the new entry point to the Finnish gas system likely during 2022. According to the press release of the Hamina LNG, the commissioning date of the terminal is not yet known. At the time of starting the commercial activity, the maximum capacity of Hamina LNG Terminal will be 9 600 MWh/day including both the connection to the transmission network and distribution network. The physical LNG entry points form the LNG virtual entry point to where TSO offers standard entry capacity products for shippers intending to inject gas from the LNG Terminal to the Finnish gas system.

There are 7 biogas injection points physically connected to Finnish gas system. They are located in Lohja, Espoo, Kouvola, Lahti, Riihimäki, Mäntsälä and Hamina. The physical biogas injection points form a virtual biogas entry point. Gasgrid Finland has not set the Technical Capacity for the biogas virtual entry point, because Gasgrid Finland has capability to receive biogas to the Finnish gas system without restrictions.

2.1.2 Technical Capacity – Exit points

Balticconnector is the only exit point to the neighboring Estonian-Latvian gas market. The transmission capacity is 81 400 MWh/day. The Technical Capacity for 2022 to exit direction is coordinated with Estonian and Latvian TSOs.

Table 3. Technical exit capacity of Balticconnector.

SUUNTA/DIRECTION FI-EE			*Note! For instance, 3.-9.5. means that the action starts 3.5. at 7:00 and ends 10.5. at 7:00.*
	GWh/day	**kWh/h**	**Huomiot/Remarks**
1/2022	46,872	1 953 000	
2/2022	46,872	1 953 000	
3/2022	46,872	1 953 000	
4/2022	45,000	1 875 000	
5/2022	67,2/56,1/54,0/56,1	2 800 000 / 2 337 500 / 2 250 000 / 2 337 500	Imatran, Kouvolan ja Mäntsälän kompressoriasemien huolto- ja kunnossapito-ohjelma; 56,1 GWh/päivä aikavälillä 9.5.-28.10.2022. Lisäksi Inkoon kompressoriaseman vuosihuolto; 54 GWh/päivä ajanjaksolla 16.-22.5.2022/Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 56,1 GWh/day during the period of 9.5.-28.10.2022; In addition, yearly maintenance of Inkoo compressor station; 54 GWh/day during the period of 16.-22.5.2022 UMM: https://umm.getbaltic.com/organisation-umm-list/1606 and https://umm.getbaltic.com/organisation-umm-list/1573
6/2022	56,100	2 337 500	Imatran, Kouvolan ja Mäntsälän kompressoriasemien huolto- ja kunnossapito-ohjelma; 56,1 GWh/päivä aikavälillä 9.5.-28.10.2022/Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 56,1 GWh/day during the period of 9.5.-28.10.2022
7/2022	56,100	2 337 500	Imatran, Kouvolan ja Mäntsälän kompressoriasemien huolto- ja kunnossapito-ohjelma; 56,1 GWh/päivä aikavälillä 9.5.-28.10.2022/Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 56,1 GWh/day during the period of 9.5.-28.10.2022
8/2022	56,100	2 337 500	Imatran, Kouvolan ja Mäntsälän kompressoriasemien huolto- ja kunnossapito-ohjelma; 56,1 GWh/päivä aikavälillä 9.5.-28.10.2022/Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 56,1 GWh/day during the period of 9.5.-28.10.2022
9/2022	56,100	2 337 500	Imatran, Kouvolan ja Mäntsälän kompressoriasemien huolto- ja kunnossapito-ohjelma; 56,1 GWh/päivä aikavälillä 9.5.-28.10.2022/Maintenance program for Imatra, Kouvola and Mäntsälä compressor stations; 56,1 GWh/day during the period of 9.5.-28.10.2022
10/2022	46,872	1 953 000	
11/2022	46,872	1 953 000	
12/2022	46,872	1 953 000	

Finnish exit zone consist of approximately 200 exit points out of which about 50 % are end consumers directly connected to transmission system and 50 % exit points to distribution network ('city-gates'). Exit points to consumption sites form the Finnish exit zone. Shippers may book capacity without restrictions, because the infrastructure is able to transport much higher gas quantities than currently used by Finnish end consumers. By booking capacity for exit zone, shippers are entitled to offtake gas from Finnish gas system whichever exit point except Balticconnector exit point.

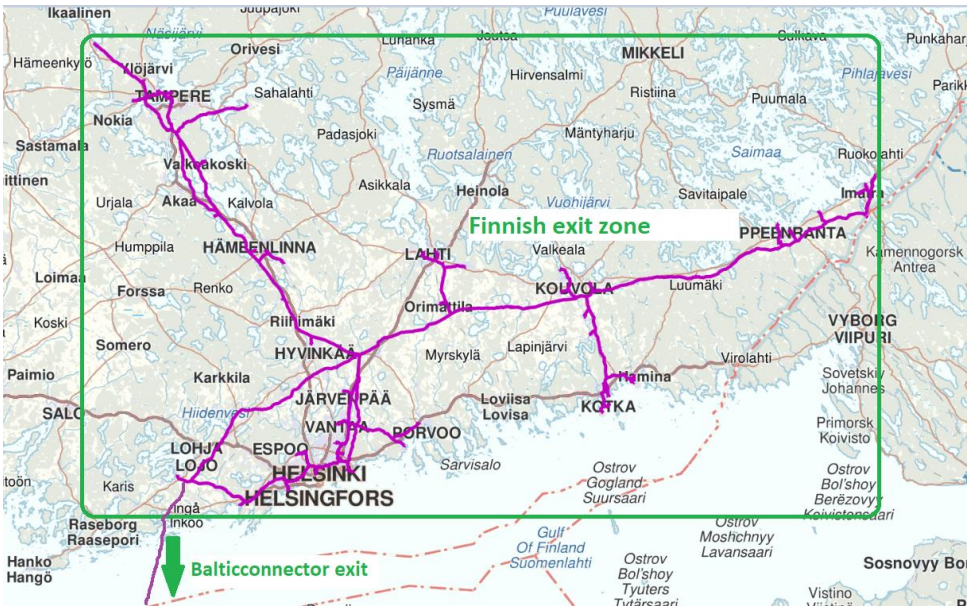

Figure 1. Finnish gas system exit points – Balticconnector exit point and the Finnish exit zone.

2.2 Forecasted contracted capacity at entry and exit points and associated assumptions

Balticconnector commissioning was 1st of January 2020. Physical gas flow has been from Estonia to Finland since the Finnish gas market opening. Relatively small quantities have commercially flown to opposite direction from Finnish gas system to Estonian system. In Finland, the weather conditions (e.g. warm vs cold winter) have a significant impact on the gas consumption. In addition, the competitiveness of gas compared to alternative fuels has an impact on annual gas consumption. Also, gas consumption is affected by the price of electricity, which is further affected by e.g. rainfall in the Nordic region.

With regard to the tariff setting, Gasgrid's estimate of annual consumption is 24,8 TWh based on the gross calorific value (GCV). For comparison, the tariff setting for 2021 was based on the annual consumption of 23 TWh. In early 2021, great quantity of gas was used, and the share of short-capacity products was quite high. In terms of gas use, after a strong first quarter, the price level of gas commodity has started to rise, and the price level has been continuously increasing towards the end of the year. This has also been reflected in a reduction in gas consumption. During the summer, annual maintenance works of gas consumers have contributed to the use of gas. Due to the strong start to the year, despite the decreased gas use towards the end of the year, the estimate of gas use (23 TWh) used in the tariff setting is likely to be met.

The forecasted contracted capacity in Finland is estimated in chapter 4 of this consultation document. According to the postage stamp reference price methodology, the same entry and exit tariffs will be applied at all entry and exit points. Thus, the capacity which will be used in defining the reference prices is based on

the estimated annual gas consumption and annualized capacity bookings which takes into account the estimated capacity product mix and annual consumption.

In the tariff setting for 2022, the annual consumption of 24,8 TWh has been used. The value used has been set higher due to the fact that the actual gas consumption for 2020 exceeded the value used in the tariff setting, and for 2021 it may be that the input data used in the tariff setting may be exceeded. During 2021, the price of gas energy has risen sharply. At the beginning of the year 2021, significantly more gas was used than in 2020, but after the first quarter, the situation has reversed compared to the previous year. For the fourth quarter of 2021, significantly less quarterly capacity was booked than in the previous year which indicates that gas consumption may be smaller than in Q4 last year. However, the development of gas energy prices and temperature will affect remarkably on gas consumption in 2022.

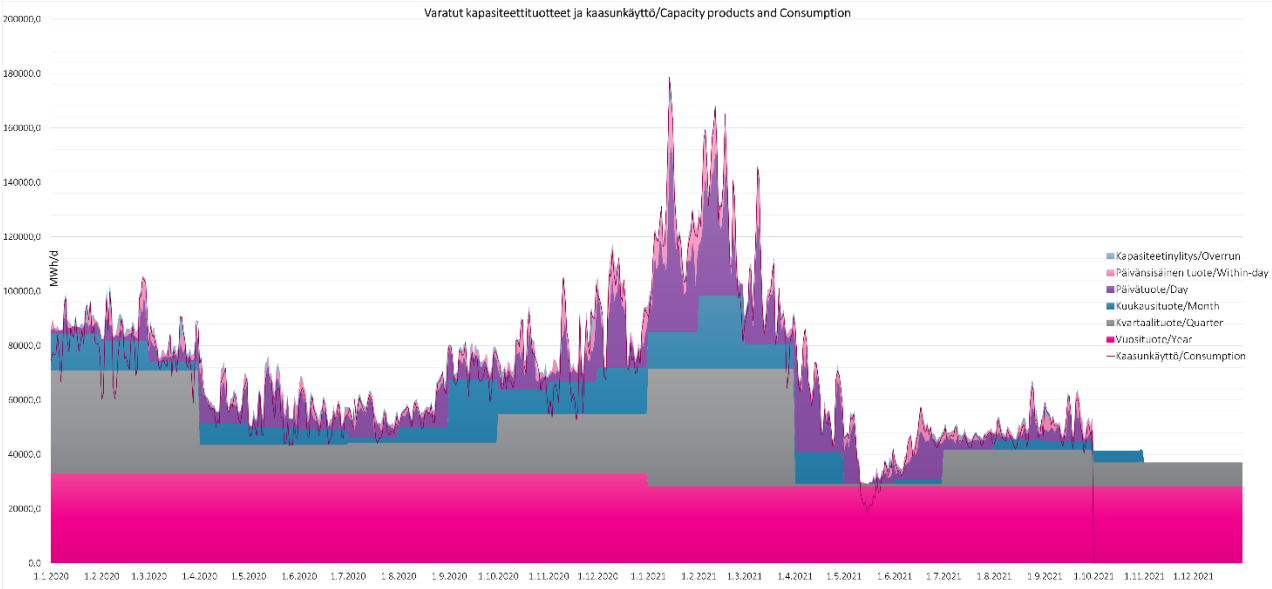

Figure 2. Booked capacity products and gas consumption in Finnish market area 1.1.2020-30.9.2021.

At Balticconnector entry and exit point, implicit capacity allocation mechanism based on confirmed nominations is applied which means only day-ahead and within-day capacity products are offered. The gas quantities transported through Balticconnector depends highly on the gas commodity market price development. As Balticconnector is a bi-directional pipeline, the price development of gas commodity from difference sources of gas has impact on the flow direction. Balticconnector utilization rate has been very high from the beginning of the commercial operations of the pipeline. Congestion at Balticconnector has eased while the technical capacity offered for the market participants has increased due to commissioning of Puiatu and Paldiski compressor stations in Estonia.

In the first half of 2021, the Puiatu and Paldiski compressor station projects were completed, which had the effect of increasing Balticconnector's capacity. The commercial commissioning of Puiatu took place on April 29, 2021 and in Paldiski on June 19, 2021. Compressor stations improved security of supply, as the gas transported through Balticconenctor is less dependent on the availability of the Inkoo compressor station. After completion of the compressor station projects in Estonia, the technical entry capacity of Balticconenctor is affected by the capability of adjacent gas systems to move gas from south to north.

2.3 The quantity and the direction of the gas flow for entry and exit points and associated assumptions, such as demand and supply scenarios for the gas flow under peak conditions

Typically, the peak conditions in gas demand are reached on the coldest days in winter. By now, on the peak consumption date of 2021 in mid-January, gas consumption was almost 180 GWh/day, while in 2020 the peak settled to the level of 115 GWh/day in mid-December. The estimated gas flow during peak conditions in 2021 is approximately 180 GWh/day (see figure 2 above) which is on the same level than in 2021. This estimation includes the assumption that there is not transit flow from Finland to Estonian-Latvian market area.

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

As of 2021 the Finnish gas system will consist of 4 entry points where capacity is allocated:

- Balticconnector entry point
- Imatra entry point
- a biogas virtual entry point consisting of six biogas injection points connected to Finnish gas system
- a Liquified Natural Gas ('LNG') entry point consisting of LNG terminals connected to the Finnish gas system.

There are two exit points where exit capacity is allocated:

- Balticconnector exit point
- Finnish exit zone which covers all exit points for domestic end consumption.

In the figure 3 below, the Finnish transmission system is described.

Figure 3. Transmission system and the compressor stations in Finland.

1) Imatra compressor station
    - 3 gas powered compressor units;
        - the shaft power of 2 compressor units is 5 MW each, one unit 10 MW
        - transport capability: 2 compressor units 250 000 m3/h each, one unit 500 000 m3/h
2) Kouvola compressor station
    - 3 gas powered compressor units;
        - the shaft power of 2 compressor units is 5 MW each, one unit 10 MW.
        - transport capability: 2 compressor units 350 000 m3/h each, one unit 700 000 m3/h
3) Mäntsälä compressor station
    - 2 gas powered compressor units;
        - the shaft power of these 2 units is 6,4 MW each.
        - transport capability 300 000 m3/h each
4) Inkoo compressor station
    - Inkoo compressor unit is driven by an electric motor. The shaft power is 6,4 MW and transport capability 300 000 m3/h.

The length of Finnish gas transmission pipelines is approximately 1254 km. Most of the pipelines are onshore pipelines, but approximately 39 km is offshore pipeline (Balticconnector). The lengths of the pipelines with different diameters are presented in the Table 4 below:

Table 4. Pipeline lengths in the Finnish gas transmission system.

DN	Total length [km]
≤200	219
250 - 400	359
500	386
700	167
900 - 1000	123
Total	**app. 1254**

Most of the pipes are made of steel, most of which are coated with polyethylene plastic. In addition to high-pressure pipelines, the transmission network also features 60 km of low-pressure pipelines. The protection against corrosion provided by the gas pipeline coating is supplemented by a cathodic protection system. The oldest sections of the pipelines were taken into use in 1974. 80 % of the pipelines can be inspected internally.

The transmission pipeline network also includes offshore steel pipeline from Paldiski, Estonia, to Inkoo, Finland, which is jointly owned with the Estonian transmission system operator for electricity and gas, Elering AS. The interconnector pipeline can be operated in both directions.

There are valve stations installed at intervals of 8-32 km along the transmission pipeline network. Their safety cut-off devices can be used to cut off gas transmission and distribution and release gas from a pipeline section using a measure called blowdown. The total number of valve stations is 166, and 40 of these are remotely controlled.

Gasgrid Finland has its own data transporting system with link stations through which the network's operating, monitoring and alert data is submitted to the Kouvola Central Control Room that is staffed 24/7.

Pressure reduction stations form part of the transmission pipeline system. The stations are located at the customer interface close to customers' distribution pipelines or processes. The pressure reduction stations are used to regulate gas pressure to a level suitable for the customer. The volume measurement of gas transmitted takes place at pressure reduction stations.

Gas is odourised before delivery to customers. In special cases, gas can also be delivered unodourised, but this requires a permit from the Finnish Safety and Chemicals Agency (TUKES).

In addition to natural gas, renewable biogas from four different Finnish biogas plants is injected into the gas transmission network. The biogas plants are located in Espoo, Kouvola, Lahti and Riihimäki. In Lahti biogas entry point, there is possibility to inject biogas into the transmission system from biogas containers in addition to the biogas plant.

In addition, two biogas plants are connected to the distribution network: one located in Hamina and another located in Mäntsälä.

In 2017 one of the two parallel pipelines from Imatra to Pajari was decommissioned to increase cost-efficiency of the transmission system. The remaining capacity satisfies well the needs of the Finnish gas market.

Future development

Gasgrid Finland maintains a long-term investment plan ("LTIP") for gas grid development in Finland. The LTIP is a roadmap for future grid investments and maintenance planning. By updating and following the LTIP, Gasgrid Finland is able manage its costs and ensure proper life cycle management of the transmission network assets.

The LTIP ensures continuous upkeep of aging assets. All necessary maintenance investments are carefully planned and updated to LTIP and scheduled to following years. The current gas transmission network has been operated since 1974. Over four decades no significant incidents have incurred on the gas transmission network due well-planned preventive maintenance.

Gasgrid Finland, together with Baltic TSOs have created a common maintenance plan for the period 1.10.2021-1.1.2023. Following maintenance works with effect on cross-border capacities will be executed in the Finnish system:

- The maintenance program for the Imatra, Kouvola and Mäntsälä compressor stations, which has the effect of limiting the capacity of the Imatra entry point and the Balticconnector exit point:
    - The capacity of the Imatra entry point in the period of 9 May to 29 October 2022 is 124.8 GWh/day (= 5,200 MW).

- The capacity of the Balticconnector exit point in the period of 9 May to 29 October 2022 is 56.1 GWh/day (≈ 2,338 MW). Note that there is maintenance works of Inkoo compressor station on May 2022 (see bullet below).

- Annual maintenance work at the Inkoo compressor station from 16 to 22 May 2022, during which the exit capacity of Balticconnector is limited. The capacity of the Balticconnector exit point in the period of 16 May to 22 May 2022 is 54.0 GWh/day (= 2,250 MW).

- Annual maintenance of the Inkoo compressor station from 16 May to 22 May 2022, during which the entry capacity of Balticconnector is limited. The capacity of the Balticconnector entry point in the period of 16 May to 22 May 2022 is 57.96 GWh/day (= 2,415 MW).

Gasgrid Finland and all Baltic TSOs are publishing the Urgent Market Messages through GET Baltic UMM Platform. Please follow the UMM Platform which will be used as a primary channel to publish any information having impact on the technical capacities due to planned or unplanned maintenance works in Gasgrid Finland's network.

Finnish gas use has decreased from over 50 TWh (GCV) to the current level of 22-28 TWh per annum in the past ten years. As the Finnish gas transmission network is in a good condition, it fulfils the current transmission needs and as no significant increase in future gas consumption is expected, no major investments are currently planned to the network. The connection project of Hamina LNG terminal is the biggest infrastructure expansion project increasing the length of transmission network by app. 6 kilometers. However, the current focus on network planning is the maintenance of existing assets. Safe, reliable and cost-efficient gas transmission are the key drivers of network development.

As part of Gasgrid's strategy, we have driven up research, development and innovation activity. As part of the study of the future potential of diverse gases, we have participated in the European Hydrogen Backbone initiative together with 22 gas TSOs and outlined a vision for the future development of the trans-European hydrogen network. We have also launched a partnership with Fingrid to identify opportunities for hydrogen economy and sector integration and future energy infrastructure development needs. We will also explore more broadly the future potential of diverse gases and the development needs of existing and potential new networks.

3 Financial parameters

In this chapter, revenues, asset values and other relevant financial values are explained.

3.1 Allowed revenue of Gasgrid Finland in 2022

3.1.1 Allowed revenue for the transmission services

In Finland the regulatory period is four years. The ongoing period takes place 2020-2023. A non-price cap regime is applied meaning that the cap is set for the allowed revenue. The allowed revenue means the profit TSO is entitled to collect by its regulated business. The tariff period is a calendar year.

The reasonable rate of return (%) is calculated by Finnish Energy Authority (NRA) based on the weighted average cost of capital (WACC model). The allowed revenue of Gasgrid Finland is calculated as follows:

$$R_{k,pre-tax} = WACC_{pre-tax} \times (E + D)$$

, where

$R_{k,pre-tax}$ = reasonable return before corporate taxes, €

$WACC_{pre-tax}$ = reasonable rate of return, %

E = adjusted equity employed in network operations, €

D = adjusted interest-bearing debt employed in network operations, €

$E + D$ = adjusted capital employed in network operations, €

Finnish Energy Authority has defined the reasonable rate of return ($WACC_{pre-tax}$) for 2022. Regulated Asset Base is another key component as determinig the Allowed Revenue for 2022. The key financial components for determining the Allowed revenue are presented in the table 5:

Table 5. The Allowed Revenue of Gasgrid Finland and the key parameters used for determining the Allowed revenue.

	2020	2021	2022
WACC-%, pre-tax	6,48 %	6,10 %	5,71 %
Regulated Asset Base [M€]	744,3	733,9	715,4
Allowed revenue [M€]	48,2	44,8	40,8

3.1.2 Allowed revenue for the centralized data exchange service for retail market

From the beginning of July 2020, the new regulation method for determining the revenue from the services of centralized data exchange[1] (datahub) was introduced. Thus, Gasgrid differentiate the costs allocated to the datahub operations and covers the cost of the datahub operations through datahub charges. Gasgrid is entitled to profit from datahub service according to the regulation method defined by NRA.

The cost of capital for the datahub system is accepted as such as the basis for the replacement value. The current value in use is determined on the basis of the total acquisition cost of the underlying non-depreciable replacement cost, the technical life of which is determined to be 10 years after the introduction of the datahub system. A remarkable share of datahub's operational costs arise from system licensing and maintenance costs. Other operating expenses include staff and other administrative expenses. The operational costs of the datahub operation are accepted at this stage of the operation as such. The

[1]https://energiavirasto.fi/documents/11120570/22786719/P%C3%A4%C3%A4t%C3%B6s+Gasgrid+Finland+Oyn+maakaasukaupan+keskitetyn+tiedonvaihdon+palvelun+hinnoittelun+valvontamenetelmist%C3%A4+2020-2027.pdf/711d7145-7951-ff8e-c4ce-52a9b52199ac/P%C3%A4%C3%A4t%C3%B6s+Gasgrid+Finland+Oyn+maakaasukaupan+keskitetyn+tiedonvaihdon+palvelun+hinnoittelun+valvontamenetelmist%C3%A4+2020-2027.pdf?version=1.0&t=1593500097117

calculation of the adjusted result for operating expenses includes materials and services, personnel expenses and other operating expenses.

In calculating the reasonable rate of return on Datahub operations, the Finnish Energy Authority uses the same capital structure and calculation parameters as for natural gas transmission network operations. However, the calculation of a reasonable rate of return for Datahub operations does not take into account the additional risk premium related to natural gas transmission network operations. The WACC-% of the centralized data exchange service for retail market will be 4,44 % in 2022. The datahub charge is calculated in the chapter 4.4. of this document.

3.1.3 Consideration of balancing services in Gasgrid Finland's operations

The Finnish Energy Authority has set Gasgrid Finland in system responsibility, as a result of which Gasgrid is responsible for balancing in the Finnish gas market. Balancing services are a separate set of tasks, and the income and costs are treated separately from the rest of the network business. The TSO shall not make profit or loss from daily imbalance charges, intraday imbalance charges and payments related to balance management activities. The TSO shall transfer to the balance responsible parties the following costs and income through neutrality charges:

a) all costs and revenues resulting from daily and intraday imbalance charges;
b) all costs and revenues resulting from the balance management activities carried out; and
c) all other costs and revenues related to balance management activities performed by the TSO.

Each balance responsible party shall pay to the TSO or the TSO shall reimburse to the balance responsible party for the neutrality charges for each gas month.

The following revenue and expenses of the TSO shall be taken into account as payment components in defining the neutrality charge on a monthly basis:

- paid and credited imbalance charges,
- costs and revenues related to the implemented balance management activities,
- costs related to existing balancing service agreements,
- development, investment and maintenance costs related to balance management activities,
- personnel costs related to balance management activities; and
- financial expenses related to balance management activities.

The development, investment and maintenance costs of the balance management functions include the system operator's IT system purchases and maintenance costs, which include the energy management system and the web portal. Staff costs incurred by persons carrying out balance management activities shall be passed on as part of the cost of balance management activities.

Gasgrid publishes balance management neutrality charges on its website on a monthly basis and performs invoicing of the charges on a quarterly basis.

3.2 Parameters and methodologies according to TAR NC Article 30 (1)(b)(iii)

3.2.1 Types of assets included in the regulated asset base and their aggregated value

The natural gas network is the largest individual part of Gasgrid Finland's assets consisting of several different components. It is recognized in fixed assets on the balance sheet. According to the Natural Gas Market Act, natural gas network refers to a system intended for the transmission of natural gas, consisting of interconnected - natural gas pipes and pipelines - all associated devices and equipment containing natural gas. Network components and unit prices are presented in Appendix 1.

3.2.2 Cost of capital and its calculation methodology;

Energy Authority defines the cost of capital by the weighted average cost of capital model (WACC model) determined by the acceptable rate of return on network-adjusted capital. The WACC model expresses the average cost of capital employed by a firm, where weight is the relative values of equity and debt.

The parameters of the WACC model are fixed for the regulatory period 2020-2023, except for the risk-free interest rate, which is updated annually. The detailed description of the calculation method for WACC-% is described here (in Finnish):

Link: Calculation method for WACC-%

The WACC-% for transmission network operations for 2022 is 5,71 %. The values used in the calculation are presented here (document in Finnish):

Link: WACC-% calculation for 2022

Starting from the beginning of July 2020, the regulatory method for centralized data exchange service entered into force for the period of 2020-2027. According to section 32 b of the Natural Gas Market Act, the TSO with system responsibility is responsible for the centralized data exchange and management required by the market processes of natural gas trade used in distribution networks in the natural gas system. As Gasgrid is the only gas datahub service provider, the allowed revenue for this service is determined by Energy Authority. **The WACC-% for datahub service is 4,44 % in 2022**. The regulation method for centralized data exchange service for retail market is described in the following document (in Finnish):

Link: The Regulation method for centralized data exchange service for retail market

3.2.3 Capital expenditures

In this section, the following information is provided: methodologies to determine the initial value of the assets and depreciation periods and amounts per asset type.

3.2.3.1 Methodologies to determine the initial value of the assets and re-evaluate them

The value of the natural gas network is adjusted in regulation methods to correspond with its actual replacement cost. The adjustment is made so that the value pertaining to the unbundled balance sheet is

not used in the calculation of reasonable return. Instead, the regulated asset value of the natural gas network calculated from its replacement value is used.

Unit prices for network components are used to calculate the replacement value of network assets. The replacement value is calculated using average network component-specific unit prices. Network components and unit prices are presented in Appendix 1. No inflation adjustment is made to unit prices over different years, as inflation is considered in the reasonable rate of return. Unit prices listed in Appendix 1 will be used during the fourth regulatory period in 2020-2023.

When delivering regulatory information, Gasgrid Finland must provide an account of these components and their balance sheet values pertaining to unbundled financial statements to allow them to be considered by NRA.

Lifetimes are used to calculate the regulated asset value of the transmission system assets and adjusted straight-line depreciation. The possible lifetimes of different network components are also presented in Appendix 1. Gasgrid Finland must select the lifetimes of network components to correspond with their actual average technical and financial lifetimes within the scope of these lifetime intervals. This refers to the average time over which network components are in use before their replacement. The selected lifetimes take the TSO's maintenance and investment strategy into account.

Average ages are used to calculate the regulated asset value of transmission system assets. TSO must identify the actual age of each network component at the end of each regulatory year. Gasgrid has taken the responsibility to submit the necessary data for NRA from the start of 2020. Gasgrid calculates the average age of each available network component and report them for NRA in the regulatory information system. Actual age refers to the lifetime of a component, i.e. age calculated from the first commissioning date or the year of manufacture. In the calculation of the average age, the age of each component is limited to the lifetime of the specific component. This means that if a component is older than its lifetime, the lifetime selected by the TSO will be taken into account in the calculation of the average age. When reporting a new component in regulatory information for the first time, its age is basically its actual age, i.e. the age calculated from the first commissioning date.

Components and property items not included in network operations are not included in adjusted assets employed in network operations. These include land areas that are not used in network operations. These items do not accumulate Gasgrid Finland's reasonable returns, as they are not included in network operations. Network operations do not include:

- Components which are not controlled by the TSO, but are used by the TSO through an arrangement under the law of assets where the right to control the network is not transferred from the TSO
- Components which are not within the scope of the TSO's development obligation
- Do not comprise network operations pertaining to the TSO's network license
- Components which are not necessary for the operation of the network.

Components that are not included in network operations cannot be included in natural gas network assets. In addition, adjusted natural gas network assets do not include components that are not connected to the network, are not in actual use and/or have not caused acquisition costs to the TSO.

Components funded by subsidies or compensation obtained for building a network are not included in the regulated asset value of natural gas network assets, i.e. they do not produce a reasonable return. Thus, as 75 % of Balticconnector project was 75 % co-financed by European Commission, only 25 % of the asset value is included to the reasonable return calculation. However, components funded by subsidies or compensation are considered in the replacement value of natural gas network assets when adjusted straight-line depreciation on natural gas network assets is calculated in the investment incentive.

3.2.3.2 Depreciation periods and amounts per asset type.

In the table 4 the depreciations of network components for 2022 are described. Finnish part of Balticconnector pipeline and Inkoo compressor station have been included.

Table 6. Depreciation periods and lifetimes of the network components in 2022.

Network component	**Depreciation (€)**	**Lifetime (years)**
Gas pipes	14 900 000	65
Pressure reduction stations	1 900 000	65
Quality management equipment	100 000	20
Compressor stations and stations' pipelines/equipment	3 200 000	60
Data transfer and management systems	600 000	20
Total	**20 700 000**	

3.2.4 Operational expenditures

Operational expenditures consist of Gasgrid Finland's fixed and variable costs in order to meet its responsibilities and obligations. Operating costs are estimated for 2021 and 2022. Operating expenditures are estimated to be in line with Table 75.

Table 7. Operational expenditures in 2020, 2021 and 2022.

	2020	2021	2022
Estimated operational expenditures [M€]	24,0	27,7	26,5

Strengthening Gasgrid's organization through recruitments will increase operating expenses somewhat in 2021 compared to the previous year. On the other hand, working mainly remotely has contributed to reducing costs in 2021, although this is also reflected in 2020. With the terms and conditions of connection conditions approved by the Energy Authority, the costs of the commodities for the use of pressure reduction stations (electricity, gas, district heating) belong to the transmission system operator. The transmission system operator shall cover the costs incurred through a commodity charge. The cost of commodities used by the pressure reduction stations are based on the estimate at the time of this consultation. During the upcoming months, Gasgrid will have better information on the costs when the first invoicing of the commodities will be performed.

3.2.5 Incentive mechanisms and efficiency targets

The regulation method includes an incentive mechanism, which consist of the following elements:

- The investment incentive which purpose is to encourage network holders to make cost-efficient investments and to enable replacement investments.

- The quality incentive which purpose is to encourage network holders to develop the quality of the natural gas transmission system.
- The efficiency incentive which purpose is to encourage network holders to be cost efficient.
- The innovation incentive which purpose is to encourage network holders to develop and use innovative technical and functional solutions in network operations.

More detailed criteria for defining and calculating incentives are described in chapter 6 of the Energy Authority's Regulation method document.

Link: Regulation method for regulating the reasonableness of the pricing of natural gas transmission network

3.2.6 Inflation indices

The inflation index is not needed in Finland, because a nominal WACC is used. The nominal interest rate is nominal. If the effect of inflation is removed from the nominal interest rate, a real interest rate is obtained, which defines the return after inflation. Due to the use of nominal WACC, there has been no need to determine the inflation index separately.

4 Relevant information related to derivation of final tariffs

4.1 Reference price methodology

The Reference Price Methodology ('RPM') applied in Finland is a Postage stamp methodology. The postage stamp methodology foresees the same reference price at all entry points and the same reference price at all exit points. The key parameters in calculating the reference prices are the targeted revenue collected by capacity tariffs and the assumptions on capacity bookings. The reference price for each category of points is given by the targeted revenue for entry (respectively exit) divided by the total booked capacity, which is assumed for entry points (respectively exit points). Thus, the postage stamp methodology does not provide locational signal, because the tariff is the same at each entry and each exit points.

$$Reference\ price\ entry\ (exit) = \frac{Revenue\ to\ be\ collected\ from\ entry\ (respectively\ exit) points}{Booked\ entry\ (respectively\ exit)\ capacity}$$

4.2 Entry and exit capacity tariff derivation

The Finnish, Estonian and Latvian TSOs established common entry tariff zone from 1st of January 2020. The target of the entry tariff zone is to facilitate the cross-border trading and deepen the market integration. The common entry tariff zone consists of two balancing zones – Finnish balancing zone and Estonian-Latvian balancing zone. In the common entry tariff zone, the reference price for entry capacity and the entry tariff multipliers for short-term capacity products are harmonized. Also, the tariffs from the internal borders (Latvia-Estonia border and Finland-Estonia border) have been removed. This is enabled by Inter-TSO-Compensation ('ITC') agreement between TSOs.

The transmission service revenue collected from the market participants consists of entry tariffs, exit tariffs and commodity tariff charged at the Finnish exit zone.

The reference price for entry capacity is defined according to the principle set by the ITC agreement. In determining the level of entry tariff, the EU entry tariff benchmarking result was used. As determining the

entry tariff, the objective was to set the reference price and the multipliers so that entry tariffs would remain the same for several tariff years to ensure predictable pricing.

Instead, the reference price of exit capacity is determined by estimating the exit capacity needs of the Finnish national market during 2022. The key factors in the estimate are the estimated gas consumption and the estimated booking pattern of capacity products, which is used to calculate the reference price for entry capacity using the calculated annualization factor. Annualization is described in more detail in Chapter 4.2.1.

4.2.1 Annualization of capacity bookings

According to the exit-exit model, standard capacity products according to Commission Regulation (EU) 2017/459 (Capacity Network Code) are offered for shippers. In determining the reference prices, the impact of the multipliers of short-term capacity products shall be considered, because shippers do not only book yearly capacity product. Thus, the capacity product booking pattern is considered in deriving the reference prices. The expected annual gas consumption used in pricing is used as a key input for annualization. In tariff setting, the annual consumption of 24,8 TWh is used as an input value for 2022.

In order to calculate the annualization factor, the booking patterns of entry and exit capacity are needed. Due to the regional entry tariff zone, the booking pattern for entry capacity is determined on a regional basis according to the principles of ITC mechanism which defines all entry capacity booking revenue is collected to the common basket and the revenue is shared between TSOs based on the share out of total consumption in the region. Thus, for example, the product mix of capacity products booked at the Imatra point is not in itself relevant in assessing the product mix of entry capacity products, but is examined at regional level, taking into account also the other entry points covered by the ITC agreement.

Instead the booking pattern for exit capacity is defined on a national basis. Thus, for 2022, the booking patterns have been separately estimated for entry and exit capacity bookings:

1) Finnish national booking pattern for exit capacity booking pattern – one shipper

2) Regional booking pattern consisting of Finnish and Estonian-Latvian market areas for entry capacity → used in determining the entry capacity revenue collected by Gasgrid Finland according to the principles of ITC agreement.

The estimations of the booking patterns for 2022 are presented in the table 8 below.

Table 8. Estimated capacity booking patterns for entry and exit capacity in 2022.

Capacity product	Share entry (FINESTLAT) (%)	Share exit (FIN) (%)	Multiplier
Year	11,2	42,6	1
Quarter	28,3	27,2	1,1
Month	39,0	12,3	1,25
Day	17,2	13,4	1,5
Within-day	4,3	4,5	1,7

The estimated booking patterns have been used for the annualization of estimated capacity bookings. As regards to capacity bookings, it is estimated that before annualization of capacity bookings, the entry and exit capacity is booked based on the assumed annual consumption used in tariff setting (24,8 TWh).

The annualization factor is calculated as follows:

$$Annualization\ factor = \sum(share\ of\ each\ capacity\ product \times multiplier\ of\ each\ capacity\ product)$$

The annualization factors for entry and exit capacities are the following:

1) The annualization multiplier for the exit capacity reference price derivation: 1,156.

2) The annualization multiplier for the entry capacity revenue calculation: 1,242.

The difference in the entry and exit annualization factors is caused by the higher share of short-term capacity products in the regional context in the model.

4.2.2 Short-term capacity product multipliers in tariff year 2022

At the same time with this consultation, the Energy Authority organizes the public consultation on the short-term capacity product multipliers, seasonal factors and discounts. The public consultation of the Energy Authority is open until 5th of November. Regarding these components, Gasgrid has proposed the following:

- The following short-term capacity product multipliers will be applied:

Capacity product	Multiplier
Year (reference price)	1
Quarter	1,1
Month	1,25
Day	1,5
Within-day	1,7

- The seasonal factor will be one (1), which means there will not be seasonal differences in tariffs.

- Article 9 of TAR NC defines the possibility to set discount on tariffs at entry points from LNG facilities and infrastructure ending isolation. No discounts will be applied.

The grounds for the multipliers are the following:

- Finnish gas market is characterized by industry's and energy production's fast start-up needs. If high multipliers were used the competitiveness of gas would be reduced which would put gas in difficult position in rapidly evolving needs and could lead to the use of alternative fuels.

- Capacity bookings of the market participants serve as input data for TSO's operative planning. To achieve a high security of supply and a cost-efficient operation of the network it is important for TSO to know one day prior with appropriate precision what kind of transfer volumes it should be

prepared for. Thus, Gasgrid Finland has proposed a price step among short term products, which is hoped to guide capacity booking to rather daily products than within-day products.

- The same multipliers are proposed to be used in tariff year 2022 than in 2021. Gasgrid Finland does not see justification for changing the multipliers for capacity products, as the applicable multipliers have worked well in the current market situation, and no change is seen to occur during the forthcoming tariff period. With regard to entry capacities, the price multipliers have been jointly agreed and harmonized between the transmission system operators belonging to the regional entry tariff zone, and there is no need to change the price multipliers for the coming year. Harmonization allows gas to be imported into the regional tariff zone from where it is cheapest.

4.2.3 Discounts for interruptible capacity

Interruptible yearly, quarterly and monthly capacity is offered only if all yearly, quarterly and monthly firm capacity is sold out. Interruptible daily capacity is offered only if daily firm capacity is sold out. At Imatra point, interruptible capacity has not been offered during 2021, as firm capacity has been sufficient to fulfil the market needs. Gasgrid Finland estimates that firm capacity will cover the market needs also in 2022 and the probability for offering interruptible capacity is low. Gasgrid proposes that at the Imatra point, the discount for interruptible capacity compared to the corresponding price for the firm product is 5 %, which is the same than in 2021.

At Balticconnector, capacity is allocated according to the confirmed nominations. Thus, only firm capacity is allocated. At LNG entry point no discount is proposed to be applied for interruptible capacity in tariff year 2022.

4.2.4 Expected revenue to be collected by transmission services

Expected revenue to be collected by transmission services consists of revenue collected by entry and exit capacity tariffs and commodity charge.

For 2021, transmission services revenue is presented in Table 9.

Table 9. Transmission services revenue in 2022.

	Entry revenue [M€]	Exit revenue [M€]	Commodity revenue [M€]	**Total [M€]**
Transmission service revenue 2022 [M€]	12,0	54,7	5,9	**83,6**

4.2.5 The reference price of entry and exit capacity in tariff year 2022

In the tariff derivation, the following parameters are used:

- Annual consumption used in tariff setting: 24,8 TWh (reasoning in chapter 2.2.)
- Annualization factor for entry capacity: 1,242 (reasoning in chapter 4.2.1.)
- Annualization factor for exit capacity: 1,156 (reasoning in chapter 4.2.1.)
- Expected transmission service revenue to be collected by capacity tariffs: 77,7 M€

- **Reference price for entry capacity: 0,14277 €/kWh/day/year** (≈ 0,391 €/MWh) (except Balticconnector where no tariff is set for entry capacity)
- **Reference price for exit capacity: 0,83592 €/kWh/day/year** (≈ 2,290 €/MWh) (except Balticconnector where no tariff is set for exit capacity).

Gasgrid Finland's goal in tariff setting is a predictability of transmission tariffs. The tariffs for entry capacity will be the same next year than 2021 due to regional entry tariff zone. The reference price for exit capacity is proposed to decrease in the tariff year 2022, because Gasgrid has accumulated a surplus during the first half of the regulatory period 2020-2023. The reason for surplus is related to the higher-than-expected demand for gas transmission services and the emphasis on the short-term capacity products having bigger unit price.

4.3 Commodity tariff

Commodity tariff is a flow-based tariff which is collected from the exit zone. The revenue collected by commodity charge is included into the transmission revenue basket. Hence, the transmission service revenue consists of revenue collected by capacity charges and commodity charges.

Due to the ITC agreement, compressor costs caused by regional flow (exit through Balticconnector), are compensated through the principles described in the ITC agreement. About a half of the flow-based costs is caused by the compressor stations – more specifically the compressor units' gas and electricity which is used for the own use. The cost caused by the compressor stations is estimated to be approximately 3,1 M€. The cost of Inkoo compressor unit's electricity is estimated to be approximately 1,5 million € per year. The fuel gas costs of the Imatra, Kouvola and Mäntsälä compressor units are estimated to total approximately 1,6 million €, so that Imatra's share of the costs is estimated at 20%, Kouvola's share at 75% and Mäntsälä's share at approximately 5%.

The second half of the costs is caused by the commodity costs of pressure reduction stations. Energy Authority has approved the Terms and Conditions of Connection Services to the Transmission Network. According to these terms and conditions, Gasgrid is responsible for the procurement of consumables for the delivery stations. This means the cost of heating the gas as well as the electrical costs of the pressure reduction stations have impact on the commodity charging. The costs caused by pressure reduction stations are estimated to be approximately 2,8 million € per year.

The commodity-based tariff shall be set so that it covers the flow-based costs of domestic gas consumption. For the year 2021, the target revenue to be collected by commodity tariff is 5,9 M€ in 2022. The costs to be covered by commodity charge includes some level of uncertainty, because the pressure level from Russia and Estonia as well as the gas consumption and flow profile (temperature, competitiveness of gas energy) have a significant impact on the annual self-consumption of electricity and gas in compressor units. The price of electricity and gas has been rising, which is also reflected in the cost of gas and electricity purchased by Gasgrid to run the compressor units and for the purpose of pressure reduction stations. The price level is estimated to be higher also in the next year which will have the impact on raising the commodity charge. On the other hand, the commissioning of Estonian compressor stations has led to a reduction in the electricity demand of the Inkoo compressor unit, which alleviates the need to increase the commodity charge due to high electricity and gas prices.

With the estimate that domestic gas consumption is 24,8 TWh, the commodity tariff is 0,00023650 €/kWh (= 0,23650 €/MWh) in 2022.

Compared to year 2021 (0,0001957 €/kWh), the commodity tariff is higher for two reasons: 1) The increased costs foreseen arising from the consumables of the pressure reduction stations (gas heating costs and electricity acquisition costs). 2) Increase in Gasgrid's consumption of electricity and gas purchase costs due to higher price level than in the previous year.

4.4 Centralized data exchange charge (= datahub charge)

From the beginning of 2020, centralized data exchange system, datahub, was introduced in the retail market. Retailers and distribution system operators are carrying out their retail market processes through the datahub. The datahub is operated by Gasgrid Finland. Since the system has a legal monopoly in the provision of its services, the regulation method for pricing of the services was established 1st of July 2020. Supervision of datahub's operation are entrusted to the Energy Authority.

The DSO is charged with regard to the consumption sites in distribution networks owned or operated by the DSO for which information is maintained in the register of centralized data exchange system (= all daily or non-daily read metering sites in the distribution network except small-scale individual non-daily read sites using gas only for cooking purposes).

According to the principles of regulation method for datahub service, the target revenue to be collected by datahub charge is 125 000 € in 2022. Gasgrid Finland is entitled to collect regulated profit from datahub service. The Energy Authority has set the WACC-% for datahub service which is 4,44 % in 2022. There are approximately 6 900 consumption sites which are subject to invoicing of the datahub charge. The datahub charge for 2022 is 1,51 €/month/metering point.

The decrease in the datahub charge for 2022 (2,15 €/metering point/month in 2021) is caused by the new regulatory method and the estimation of the costs in tariff setting process last year. This year, the components in accordance with the regulatory model and the number of metering points have been specified. These factors have led to a reduction in the datahub charge. In addition, in the coming years, the datahub charge is not expected to change as significantly as it has seen in the first couple of years. Gasgrid foresees that in the coming years the changes in the datahub charge will be more moderate when the operation according to the new regulatory model is set up and the number of metering points is known in more detail.

4.5 Balticconnector underutilization fee

Underutilization fee is applicable in the Balticconnector entry and exit points and it is applied only during days, when Balticconnector is congested. Shippers may renominate downward in the Balticconnector free of charge a maximum of tolerance set by the TSO. At the beginning of the consultation, the TSO will propose in the terms and conditions of Balticconnector capacity allocation that the TSO may change the tolerance limit between 10,000 and 50,000 kWh/h, taking into account the operational operating limits of the Finnish natural gas system. At the time of starting this consultation, the Finnish Energy Authority has not confirmed the terms and conditions of Balticconnector for 2022, so the tolerance setting principle is not yet confirmed.

The tolerance is set to the absolute value so that the tolerance gives flexibility for shippers, but it does not endanger operational capabilities to operate the transmission system cost-effectively with high security of supply. The tolerance is absolute, i.e. the tolerance is the same for all shippers regardless of the amount of

the highest confirmed nomination. The absolute value instead of relative value (%-based tolerance for downward renomination) is set, because Balticconnector capacity is an absolute value and small absolute change in the transported gas quantities does not have significant impact on the physical network operations.

Underutilization fee is set so that the fee sets incentive for shippers to submit nominations close to their actual needs. Upward nominations can be submitted freely in line with Balticconnector rules. On the other hand, defining the value for the fee it is considered that the fee is reasonable and does not cause undue precautions in shippers' operations. Tolerance and the underutilization fee are only relevant on gas days when Balticconnector is congested. The underutilization fee of 0.002 €/kWh is charged to the shipper for the amount exceeding the tolerance limit.

4.6 The ratios for the transmission service revenue (TAR NC Article 30(1)(b)(v))

Capacity-commodity split, meaning the breakdown between the revenue from capacity-based transmission tariffs and the revenue from commodity-based transmission tariffs:

$$Capacity\ share = \frac{Capacity\ revenue}{Total\ transmission\ service\ revenue} \times 100\%$$

$$Commodity\ share = \frac{Commodity\ revenue}{Total\ transmission\ service\ revenue} \times 100\%$$

Capacity-commodity split: 93%/7%

Entry-exit split, meaning 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:

$$Entry\ share = \frac{Entry\ revenue}{Total\ revenue\ collected\ by\ capacity\ tariffs} \times 100\%$$

$$Exit\ share = \frac{Exit\ revenue}{Total\ revenue\ ollected\ by\ capacity\ tariffs} \times 100\%$$

Entry-exit split: 16%/84%

Intra-system-cross-system split, meaning the breakdown between the revenue from intra-system network use at both entry points and exit points and the revenue from cross-system network use at both entry points and exit:

Due to the regional entry tariff zone, revenue collected from cross-system use is re-distributed so that Gasgrid Finland does not collect any revenue from cross-system flows.

Intra-system-cross-system split: 100%/0%

4.7 Estimated difference between transmission tariffs applicable to the same type of transmission service during the tariff period for which the data are published and transmission tariffs applicable during other tariff periods of the regulatory period

Table 10. The estimated tariffs of the ongoing regulatory period 2020-2023.

	2020	2021	**2022**	2023
Entry reference price [€/kWh/day/year]	0,14277	0,14277	**0,14277**	0,14277
Exit reference price [€/kWh/day/year]	1,00567	1,00567	**0,83592**	0,795

The estimated reference prices for 2023 include the following uncertainties: 1) Capacity bookings in the coming year will affect 2023 pricing 2) Regional market development (such as a possible four-country regional tariff zone) may have an impact on capacity reference prices due to changes in the entry-exit split.

5 The price list of Gasgrid Finland

The price list of Gasgrid Finland consists of transmission service charges, balance management charges and centralized data exchange charges.

5.1 Transmission service charges

The postage stamp methodology is applied as the reference price methodology in the Finnish entry-exit system. In the postage stamp methodology, the distance between entry and exit points or the technical transmission capacity does not affect the unit price of transmission capacity. The postage stamp methodology is applied to capacity tariffs. A capacity charge is applied both to entry and exit capacity.

The price of a capacity product depends on the duration of the product – the longer the duration of the capacity product, the lower the price. Gasgrid offers annual, quarterly, monthly, daily and within-day capacity products. In addition to the capacity-based tariff, Gasgrid levies a commodity charge in the exit zone that is lower than the capacity tariff to cover variable costs arising from gas transmission.

Firm capacity tariff for yearly product (reference prices)	
Entry capacity	
Imatra	0,14277 €/kWh/day/year
Balticconnector	-
Biogas virtual entry point	0,14277 €/kWh/day/year
LNG virtual entry point	0,14277 €/kWh/day/year
Exit capacity	
Balticconnector	-
Finland's domestic exit zone	0,83592 €/kWh/day/year

Short-term capacity product multipliers for entry and exit capacity	
Capacity product	**Multiplier**
Year	1
Quarter	1,1
Month	1,25
Day	1,5
Within-day	1,7
Capacity overrun	1,5 x 1,7 = 2,55

Interruptible capacity	
Interruptible capacity discount (%) on the corresponding price for the firm product	
Entry capacity	**Discount**
Imatra	5 %
Biogas virtual entry point	- %
LNG entry point	- %

Commodity charge (energy charge)	
Based on the quantity of gas transferred	0,00023650 €/kWh
Commodity charge will be charged at the Finnish exit zone	

Capacity overrun charge
One and a half (1,5) times the unit price based on within-day firm capacity will be charged for the quantity exceeding the allocated capacity. A Capacity overrun charge is paid in Finland's exit zone and biogas virtual entry point.

Capacity overrun charge

A Capacity overrun charge is paid in Finland's exit zone and at the biogas virtual entry point.

Finland's exit zone: Should, based on the results of the final balance settlement, offtake from the shipper's system in Finland's exit zone exceed the shipper's total capacity for each gas day in the exit zone, the shipper must pay capacity overrun charge.

Biogas virtual entry point: Should, based on the results of the final balance settlement, injection into the shipper's system at the biogas virtual entry point exceed the shipper's total capacity for each gas day at the biogas virtual entry point, the shipper must pay capacity overrun charge.

Capacity overrun charge pricing: One and a half (1,5) times the unit price based on intraday firm capacity will be charged for the quantity exceeding the booked capacity.

5.2 Other charges

Underutilization fee

Underutilization fee is applicable in the Balticconnector interconnection point and it is applied only during days, when Balticconnector is congested.

A Shipper may renominate downward in the Balticconnector free of charge a maximum of tolerance compared to the Shipper's highest Confirmed Nomination for the Gas Day. For amounts exceeding the tolerance limit, the Shipper shall pay an underutilization fee.

Tolerance: 10 000 - 50 000 kWh/h
Pricing: 0,002 €/kWh

The underutilization fee is set so that it encourages shippers to nominate according to their actual needs, because the TSO uses the nomination information to operate the system. Rapid changes during the ongoing gas day may cause operational challenges. The tolerance is set so that the tolerance gives some flexibility for shippers to adjust their nominations in changing market circumstances but ensures that TSO can operate the gas system effectively by avoiding rapid and significant changes in nominations.

Pricing for connections

TSO has an obligation to connect new infrastructure to its grid as long as connecting infrastructure fulfills technical requirements set by the TSO. Connecting infrastructure may consist of natural gas usage or storage facilities as well as LNG or biogas infrastructure. TSO is justified to collect all reasonable costs which have been generated because of the new connection.

Pricing: Price of the connection is evaluated case by case

Nomination imbalance charge

A nomination imbalance charge may be applied in Finnish exit zone.

Pricing: 0 €/kWh

Daily imbalance charge

Buy and sell prices of balance gas

The transmission system operator with system responsibility's definition for neutral gas price: *Neutral gas price is the weighted average price of intraday products on the Gas Exchange in €/kWh during the gas day.*

Balance gas buy price of the transmission system operator with system responsibility equals to adjusted neutral gas price: Neutral gas price less 10% of the neutral gas price.

Marginal price of purchase: The lowest price of the following:

1) Trading price (weighted average) of the transmission system operator with system responsibility for intra-day products on the gas day concerned if the imbalance forecast in the system has been in the yellow zone (TSO has participated in trading at gas exchange and/or activated a balancing service agreement) during the gas day or
2) The applicable adjusted neutral gas price.

The balance gas sell price of the transmission system operator with system responsibility equals to the adjusted neutral gas price: Neutral gas price plus 10% of the neutral gas price.

Marginal price of sale: The highest price of the following:

1) Trading price (weighted average) of the transmission system operator with system responsibility for intra-day products on the gas day concerned if the imbalance forecast in the system has been in the yellow zone (TSO has participated in trading at gas exchange and/or activated a balancing service agreement) during the gas day or
2) The applicable adjusted neutral gas price.

Once the competent authority has announced that a crisis level in the supply is in force, the transmission system operator with system responsibility may, authorized by the competent authority, determine the pricing of balance gas in some other way.

Neutrality charge

The TSO shall not gain or lose by the payment and receipt of daily imbalance charges, within-day charges, balancing actions charges and other charges related to its balancing activities. In order to ensure the cost-neutrality of balance management activities, a neutrality charge is introduced.

The price of the gas month-specific neutrality charge shall be determined after each gas month. The price of the neutrality charge [€/MWh] shall be determined on the basis of total sums of revenues minus total costs and by dividing the result by the total amount of offtakes of all of the balance responsible parties for that gas month. Taken into account as offtakes shall be offtakes included in the balancing portfolios of the balance responsible parties in the exit zone, virtual trading point (VTP) and Balticconnector. The balance responsible party's monthly neutrality charge [€/gas month] shall be determined by multiplying the amount of aggregate offtakes included during the gas month in the balance responsible party's balancing portfolio (incl. exit zone, VTP and Balticconnector) by the price of the neutrality charge applicable to that gas month.

Compensation for non-conformity with gas quality and supply requirements

Compensation terms and conditions have been mentioned in the framework agreement of Shipper and Trader.

Charges in a prevailing emergency situation

Compensation is agreed separately case by case between the transmission system operator with system responsibility and the shipper.

Capacity right transfer charge

Pricing: 0 €/transfer notification

Centralized data exchange charge (=Datahub charge)

The charge is applied to cover the investment and development costs of the centralized data exchange. The regulation method for centralized data exchange service pricing was introduced 1st of July 2020. According to the regulation method, NRA has determined the WACC-% which is the input value as determining allowed revenue for the service. The distribution system operator is charged with regard to the consumption sites in distribution networks owned or operated by the distribution system operator for which information is maintained in the register of centralized data exchange system (= all daily or non-daily read metering sites in the distribution network except for individual non-daily read gas cooker sites).

Pricing: 1,51 €/metering site/month

Appendix 1

TRANSMISSION PIPELINE NETWORK			
PIPELINE SIZE, 54 bar(g)			
Network component	Unit	Unit price, EUR	Lifetime, years
DN 80 or lower	km	350,000	50–65
DN 100	km	380,000	50–65
DN 150	km	450,000	50–65
DN 200	km	490,000	50–65
DN 250	km	530,000	50–65
DN 300	km	530,000	50–65
DN 400	km	650,000	50–65
DN 500	km	840,000	50–65
DN 700	km	1,020,000	50–65
DN 800	km	1,400,000	50–65
DN 900	km	1,470,000	50–65
DN 1000	km	3,160,000	50–65
PIPELINE SIZE, 80 bar(g)			
Network component	Unit	Unit price, EUR	Lifetime, years
DN 500	km	820,000	50–65
PIPELINE SIZE, 8 bar(g), LOW PRESSURE PIPELINE, PEH PLASTIC			
Network component	Unit	Unit price, EUR	Lifetime, years
PEH 315	km	320,000	65
PEH 200	km	280,000	65
under PEH 200	km	260,000	65

TRANSMISSION NETWORK STATIONS

PRESSURE REGULATING STATIONS

Network component	Unit	Unit price, EUR	Lifetime, years
Pressure reducing station, 500–1,000 MW	quantity	2,030,000	65
Pressure reducing station, 250–500 MW	quantity	1,530,000	65
Pressure reducing station, 100–250 MW	quantity	1,200,000	65
Pressure reducing station, 50–100 MW	quantity	670,000	65
Pressure reducing station, under 50 MW	quantity	450,000	65
Quality management equipment, station-	quantity	170,000	20
Pressure increasing equipment, more than 4	quantity	1,540,000	50
Pressure increasing equipment, under 4 MW	quantity	1,210,000	50
Processing plant, more than 4 MW	quantity	3,590,000	50
Processing plant, under 4 MW	quantity	2,760,000	50

ACCEPTANCE MEASUREMENT AND COMPRESSOR STATIONS

Network component	Unit	Unit price, EUR	Lifetime, years
Acceptance measurement, Imatra	quantity	8,750,000	60
Compressor station pipelines and equipment	quantity	7,770,000	60
Compressor unit, 4.7 MW	quantity	6,830,000	60
Compressor unit, 5.0 MW	quantity	6,920,000	60
Compressor unit, 6.5 MW	quantity	7,070,000	60
Compressor unit, 10.0 MW	quantity	10,590,000	60
Compressor station automation equipment, station-specific	quantity	4,450,000	20
Compressor facility	m^2	2,808	60

TRANSMISSION NETWORK SYSTEMS AND COMMUNICATIONS

SYSTEMS AND COMMUNICATIONS NETWORKS

Network component	Unit	Unit price, EUR	Lifetime, years
Data transfer system	quantity	3,310,000	20
Operations monitoring system	quantity	3,580,000	20
Measurement and balance management	quantity	4,530,000	20