Gasgrid Finland Oy

Document concerning the prices of Gasgrid Finland 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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Table of Contents

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.

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 1.1.2023 – 31.12.2023. 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) sets the obligation for Gasgrid Finland to publish the service price list at least 30 days before the beginning of the tariff period. The transmission system operator has the right to revise its pricing during the regulatory period so that the revenues and reasonable return of the transmission services collected during the period comply with the principles of the regulation method determined by the Finnish Energy Authority and gas market legislation.

According to the Natural Gas Market Act, the transmission system operator must set transmission tariffs for each entry and exit point of the transmission network except for the entry-exit point to which a connecting pipe is connected to the natural gas network of another country belonging to the European Economic Area, if not setting the entry or exit tariff is based on an international obligation or agreement binding for Finland. Having the ITC (Inter TSO Compensation) agreement signed by the transmission system operators of Finland, Estonia and Latvia, there is no tariff at all at Balticconnector entry and exit points.

Starting from the end of 2021, the price level of gas energy started to rise strongly. During 2022, Russia's invasion on Ukraine has devastated the European energy market and, in addition to the high price level, there has been concern about the sufficiency of gas, when Russian gas purchases decreased sharply and gas deliveries via Nord Stream stopped. These factors have also strongly influenced the use of gas in Finland. Gas consumption has been at an exceptionally low level resulting to a significant decrease in the turnover of the transmission services.

The goal of Gasgrid Finland's transmission pricing is predictability. The unexpected and strong change in the operating environment has led to a volatile market situation and has truly challenged the goal of predictability in pricing. Gasgrid has accumulated a surplus over a period of 2020 and 2021 in relation to the reasonable return determined by the regulation method. Thus, Gasgrid lowered the transmission prices for the current year compared to previous years. In 2022, a strong decrease in the use of transmission services and the increased costs of operating the transmission network due to the significantly increased prices of consumables have led to the need to increase transmission prices as and when to the previous year's level. The increase in prices is aimed at the exit capacity tariffs and the commodity charge. Regarding entry capacity, there will be no change for the coming year due to the regional entry capacity tariff zone.

In this document, Gasgrid Finland describes the relevant information from transmission tariff point of view. Also, this document contains information on non-transmission charges, such as datahub charge.

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.*

The flow dynamics in the Finnish gas system have changed strongly during the ongoing year due to the cessation of gas flows through Imatra entry point in May 2022. In recent months, Finnish gas demand has mainly been covered by gas volumes transferred via the Balticconnector. The commercial commissioning of Hamina LNG Terminal took place in the beginning of October resulting that part of Finnish gas demand was covered by the import from the LNG Terminal. Gas supplies through Inkoo region will increase once the Floating LNG terminal will be moored to Inkoo.

Due to the rapidly changing flow dynamics in the Finnish gas transmission system, Gasgrid Finland has made network modeling and capacity calculations for the new market situation, where gas supplies are to great extent covered by gas flows coming through the Inkoo area. The current maximum capacity to deliver gas for Finnish end-users (Finnish exit zone, Figure 1) from the Inkoo area is approximately 105 GWh/day. Therefore, the transmission capacity to the Finnish exit zone is lower than in previous years when gas flows were covered by flows from Imatra and partially through Balticconnector entry point. Alongside with the entry quantities from the Hamina LNG Terminal, the transmission capacity to Finnish exit zone increases in accordance with the gas volumes injected through the Hamina LNG entry point. Gasgrid Finland is planning and launching a capacity enhancement project at Pölans to increase transmission capacity at the Finnish exit zone. The project is expected to be completed no later than the summer of 2023. After the enhancement project, the transmission capacity of Finnish exit zone from the Inkoo area to the north will increase to 135 GWh/day. Figure 2 below illustrates the exit zone capacity compared to historical gas consumption in Finland.

According to the market model, all domestic consumption sites in Finland form the Finnish exit zone. The exit zone makes it possible for shippers to take gas out from the Finnish gas system from any exit point, with the exception of the Balticconnector exit point, by acquiring capacity for the exit zone.

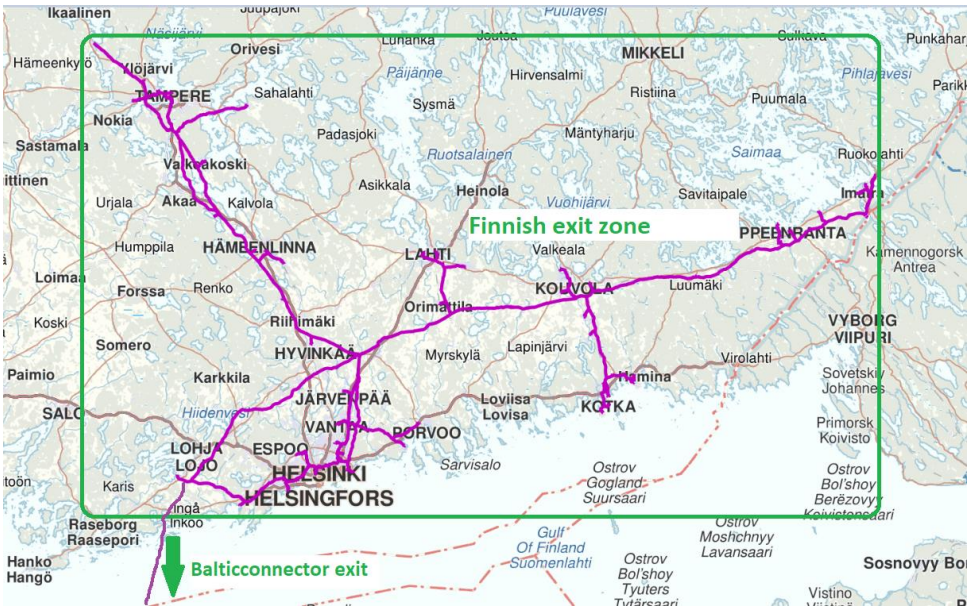

Figure 1. Exit points of the Finnish gas system - Balticconnector exit point and the Finnish exit zone.

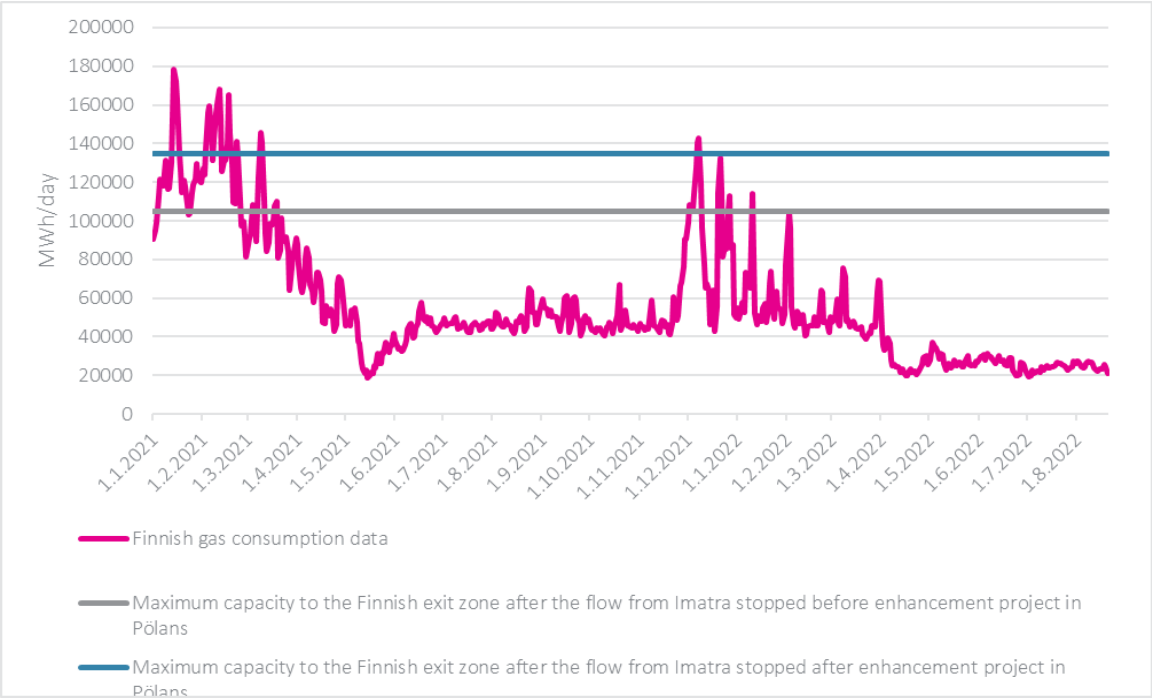

Figure 2. Gas consumption in Finland 2020-2022 and the current transmission capacity of Finnish exit zone and after the Pölans capacity enhancement project.

The shippers can book capacity at the Finnish exit zone without restrictions, which enables flexible capacity booking windows. Thus, Gasgrid Finland does not separately set the technical capacity for the exit zone. Gasgrid accepts received capacity booking requests if the request is duly filled and received on time. However, due to the changed flow dynamics in Finland, there is a risk that the use of gas would have to be

limited at a time of high gas use. However, the TSO has precautionary measures, albeit limited, that can reduce this risk, e.g. by utilizing the flexibility provided by the line-pack, for instance.

Gas flows through Imatra entry point ended on May 21, after which imports into the Finnish gas system have been covered through Balticconnector. From the beginning of October, part of the Finnish gas demand has been covered by the flows from Hamina LNG terminal. Gasgrid Finland can receive biogas and liquefied natural gas that meet the quality requirements into the Finnish gas system without restrictions. Therefore, the technical capacity is not set separately either for the biogas virtual entry point for Hamina LNG entry point. The same principle will be applied also at Inkoo LNG entry point.

On May 20, 2022, Gasgrid Finland and Excelerate Energy signed an agreement to lease a floating LNG terminal vessel (Floating LNG Terminal) for ten years. The LNG terminal will be located in Inkoo according to the schedule in the second half of December. The LNG terminal vessel coming to Finland is 291 meters long and 43 meters wide. It has a volume of about 151,000 cubic meters and corresponds to about 68,000 tonnes of LNG, or liquefied natural gas, when fully loaded. The amount means approximately 1,050 GWh of energy. The LNG terminal vessel offers a new regional import route for market participants, increasing security of supply in Finland and the Baltic region. The terminal vessel will also have an impact on Balticconnector's capacity (figure 3).

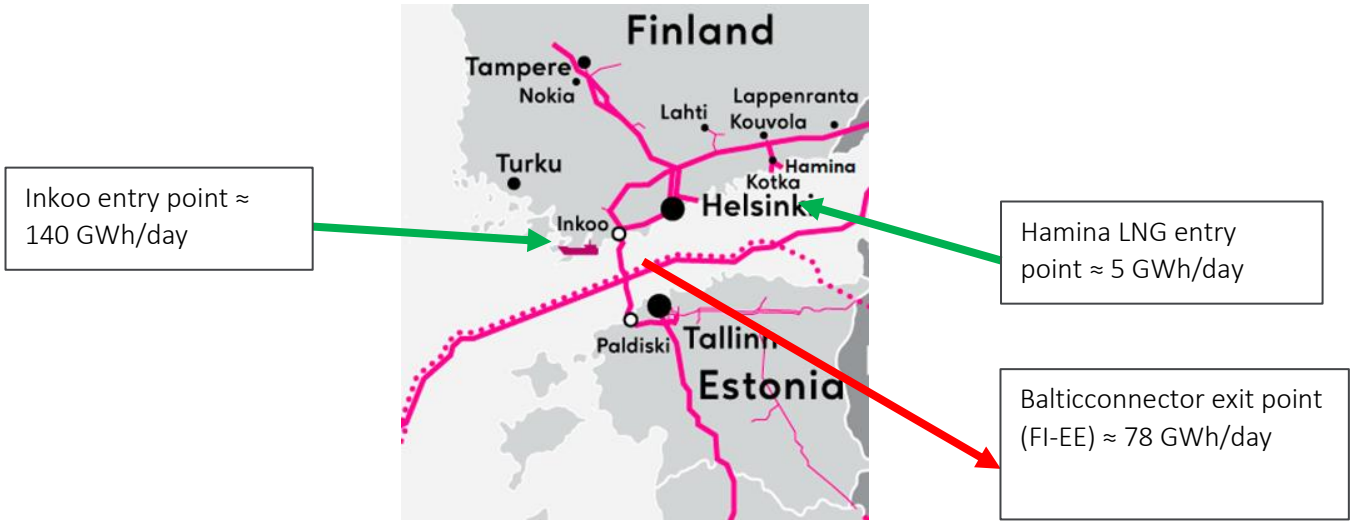

Figure 3. Technical capacities after commercial commissioning of the Floating LNG terminal.

If there are changes to the technical capacities published at ENTSOG's transparency platform, Gasgrid will publish the information as a UMM (Urgent Market Message) simultaneously to all market participants through the UMM platform maintained by GET Baltic. You can find the Urgent Market Messages published by Gasgrid Finland and the Baltic TSOs here: https://umm.getbaltic.com/public-umm Gasgrid Finland offers as much firm capacity as possible, taking into account the security of supply. Gasgrid Finland reserves the right to offer interruptible capacity if the firm capacity is sold out.

Balticconnector is the only interconnection point in the Finnish gas system. Balticconnector is a bidirectional pipeline which maximum transport capacity in a design pressure is 81 400 MWh/day. Balticconnector Technical Capacity offered for market participants is agreed with Estonian and Latvian TSOs, Elering AS and

Conexus Baltic Grid. Gasgrid Finland publishes up-to-date information on Technical Capacities of Balticconnector via ENTSOG's transparency platform.

there are 6 biogas injection points physically connected to Finnish gas system. They are located in Lohja, Espoo, Kouvola, Lahti, Riihimäki and Mäntsälä. 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.

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

Starting from the end of 2021, the price level of gas energy started to rise strongly. During 2022, Russia's attack on Ukraine has devastated the European energy market and, in addition to the high price level, there has been concern about the sufficiency of gas, when Russian gas purchases decreased sharply and gas deliveries via Nord Stream stopped. These factors have also strongly influenced the use of gas in Finland. Gas consumption has been at an exceptionally low level and compared to 2021, the use of gas in January-October has been more than 50% lower in 2022.

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 or raw materials has a major impact on annual gas consumption. Also, gas consumption is affected by the price of electricity, which is further affected by e.g. wind conditions and rainfall in the Nordic region. The high price level has affected the gas use in industrial sector in addition to the energy production. Some industrial gas users have changed gas to alternative solutions. Due to the strong fluctuations in the price level, weather conditions and the challenging predictability of the adequacy of electricity production capacity, the estimation of the gas usage level in the coming winter or during 2023 is challenging. Also, the utilization rate of Floating LNG Terminal will also have impact on the Finnish consumption level, because the terminal provides large-scale additional regional entry point and it may impact on the gas commodity price level in the Finnish-Baltic region.

Gas consumption is estimated to be approximately 12 TWh in 2022, while the previous year gas consumption was around 25.1 TWh (see figure 4). The decreased gas consumption has led to a significantly lower turnover of transmission services than expected in autumn last year. At the same time, increased commodity prices (both electricity and gas) have led to increased operational costs of running the compressor stations. Gasgrid estimates that in the coming year, gas consumption would reach the level of 14-16 TWh based on the gross calorific value (GCV). Due to these factors, Gasgrid has to increase the transmission tariffs to better reflect the strongly changed situation.

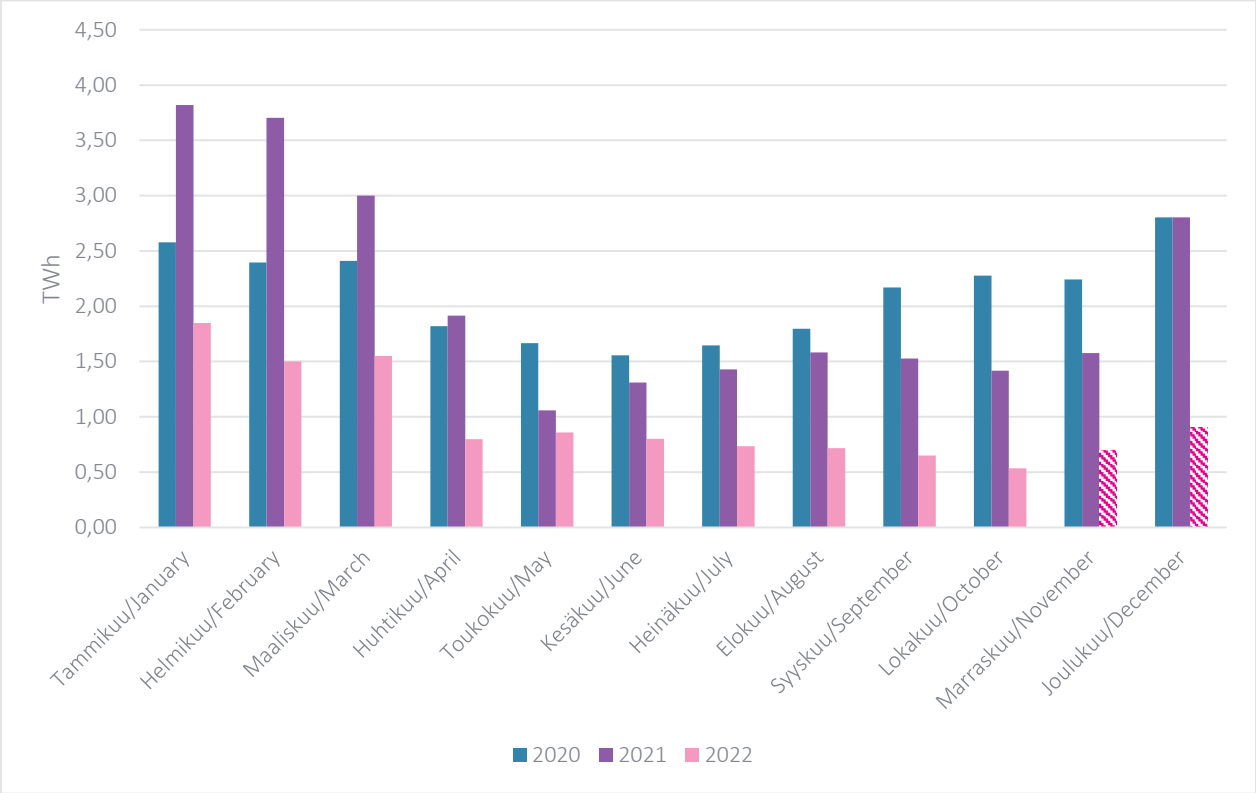

Figure 4. Gas consumption in Finland 2020-2022.

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. The peak consumption day of 2022 (until the end of November 2022) was January 10, 2022, when gas consumption reached the level of 114 GWh/day. After the first quarter, gas consumption has remained < 40 GWh/day until the end of November, with the lowest consumption of < 15 GWh/day.

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

At the time of publication of this document, the Finnish gas system consists of the following entry points where capacity is offered:

- Balticconnector entry point
- Biogas virtual entry point
- Hamina Liquified Natural Gas ('LNG') entry point
- (Inkoo LNG entry point (expected in the 2nd half of 2022)).

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 5 below, the Finnish transmission system is described.

Figure 5. 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 1 below:

Table 1. 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 six different Finnish biogas plants is injected into the Finnish gas system. The biogas plants are located in Espoo, Kouvola, Lahti, Lohja, Mäntsälä and Riihimäki.

Planned maintenance in tariff period 2023

Gasgrid Finland, together with Baltic TSOs have created a common transmission infrastructure maintenance plan. The regionally consolidated maintenance plan can be found here: LINK

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.

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.

Safe, reliable and cost-efficient gas transmission are the key drivers of network development. As part of Gasgrid's strategy, Gasgrid has driven up research, development and innovation activity. As part of the study of the future potential of diverse gases, Gasgrid has participated in the European Hydrogen Backbone initiative and outlined a vision for the future development of the trans-European hydrogen network. In the analysis carried out by the EHB group in the early summer of 2022, five large-scale hydrogen transmission corridors have been envisioned to meet the accelerated goals of the EU's REPowerEU plan. The envisioned transmission corridors are a key part of a cost-effective solution to deliver large quantities of inexpensive hydrogen from production sites to demand sites. The potential transmission corridors initially connect local and regional demand and supply, after which the hydrogen network expands and unites into a Europe-wide network, enabling the import of hydrogen from outside Europe as well. According to the latest EHB analysis, the potential of the region of Finland, Sweden, and the Baltic countries, i.e. Corridor D, is very significant. In the analysis, the size of the region's market is estimated to be 127 TWh per year already in 2030, which corresponds to approx. 20% of REPowerEU 2030's overall goal and approx. 38% of REPowerEU's goal of hydrogen produced within the EU. The hydrogen economy is indeed a very significant opportunity for the countries around the Baltic Sea, which have excellent renewable energy resources, space and leadership in the development of sustainable technology solutions.

Gasgrid has begun to develop Finnish national hydrogen network and the infrastructure enabling the regional hydrogen market on an accelerated schedule to support the development of the hydrogen economy in Finland. Due to recent changes in the operating environment, the tightened energy and security political situation, and the EU's REPower EU plan's goals for improving Europe's energy self-sufficiency, it is necessary to develop both Finland's national and cross-border new energy infrastructure faster than ever. For this reason, the Finnish government has decided to give Gasgrid the task of promoting the development of the national hydrogen network, international infrastructure cooperation and the hydrogen market in the Baltic Sea region as quickly as possible. In addition, Finland's very significant renewable energy resources can enable the generation and development of new industries based on electricity that are competitive on a European scale in Finland, also creating new export and production potential.

Gasgrid has also launched a partnership with Fingrid to identify opportunities for hydrogen economy and sector integration and future energy infrastructure development needs. Gasgrid will also explore more broadly the future potential of diverse gases and the development needs of existing and potential new networks. You can find further information here: LINK

In April 2022, Gasgrid and Nordion Energi organized a press conference on their joint project with the aim of building a hydrogen network in Bothnian Bay region. You can find more information about the project here: LINK

3 Financial parameters

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

3.1 Allowed revenue of Gasgrid Finland in 2023

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.

Gasgrid has considered the transition from a tariff period based on a calendar year to a tariff period based on a gas year. The schedule of the regional entry capacity tariff zone covering four countries (Finland, Estonia, Latvia and Lithuania) has been postponed to a later date (October 1, 2024 at the earliest) due to significant changes on the regional gas market that occurred during the past year. In addition, the significant changes that will take place in the coming year, such as the commissioning of a large-scale LNG terminal and the uncertainties in transmission pricing regarding the usage of transmission services, have led to the decision that possible tariff season transition from calendar-year-based pricing to gas-year-based pricing has been postponed. Therefore, the price list applicable from the beginning of 2023 will be valid until 7:00 a.m. on January 1, 2024.

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 determined the reasonable rate of return ($WACC_{pre-tax}$) for 2023. Regulated Asset Base is another key component as determinig the Allowed Revenue for 2023. The key financial components for determining the Allowed revenue are presented in the table 2:

Table 2. The Allowed Revenue of Gasgrid Finland and the key parameters used for determining the Allowed revenue.

	2020	2021	2022	2023
WACC-%, pre-tax	6,48 %	6,10 %	5,71 %	6,84 %
Regulated Asset Base [M€]	744,3	733,9	745,0	724,6
Allowed revenue [M€]	48,2	44,8	42,7	49,6

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

From the beginning of July 2020, the 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 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 5,57 % in 2023. The datahub charge is calculated in the chapter 4.5. 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:

[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

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): Calculation method for WACC-%

The WACC-% for transmission network operations for 2023 is 6,84 %. The values used in the calculation are presented here (document in Finnish):

Link: WACC-% for 2023

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 5,57 % in 2023. 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 3. Depreciation periods and lifetimes of the network components in 2022.

Network component	**Depreciation (€)**	**Lifetime (years)**
Gas pipes	15 200 000	65
Pressure reduction stations	2 000 000	65
Quality management equipment	100 000	20
Compressor stations and stations' pipelines/equipment	3 300 000	60
Data transfer and management systems	600 000	20
Total	**21 200 000**	

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 4. Operational expenditures in 2020, 2021, 2022 and 2023.

	2020	2021	2022 (estimate)	2023 (forecast)
Estimated operational expenditures [M€]	24,0	26,4	27,9	25,5

Strengthening Gasgrid's organization will increase operating expenses in 2022 compared to the previous year. During 2022, Gasgrid has applied a hybrid model, as a result of which the personnel worked more in office premises than the previous year, taking corona safety into account. 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 TSO shall cover the costs incurred through a commodity charge.

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 nationally. In the transmission pricing, the key factors are the estimated gas consumption and the targeted revenue.

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. Gas consumption in 2022 will be more than 50% lower than the previous year. It is estimated gas consumption in 2023 will also be lower than in 2021. The key factors for determining the transmission tariffs for the year 2023 are exceptional compared to previous years, because the decrease in usage volumes has also led to a significant decrease in the turnover of Gasgrid's transmission business.

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 Hamina LNG entry 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. With regard to exit capacities, at the end of 2021, the market parties had booked more annual capacity than the previous year, because at the end of the year there was no visibility of the events that shook the energy market during 2022 and their effects on the strong decrease in gas consumption. The strong decrease in usage led to the fact that the annual capacity product bookings in relation to the actual gas transmission need were significantly bigger.

The capacity product booking patterns were relatively stable between 2020 and 2021, but for 2022, the distribution between the products changed strongly in relation to the gas consumption and large annual capacity product bookings. For the coming year, the market changes will bring new elements, as the regional market is rapidly changing from the pipeline gas market to the LNG market.

Table 5. The capacity booking patterns for entry and exit capacity in between the period 1.1.2020-31.10.2022.

Capacity product	Share entry (FINESTLAT) (%)	Share exit (FIN) (%)	Multipliers between 2020-2022
Year	13,8	50,4	1
Quarter	33,0	21,9	1,1
Month	27,8	10,4	1,25
Day	20,9	12,9	1,5
Within-day	4,5	5,1	1,7

The estimated booking patterns have been used for the annualization of estimated capacity bookings. Due to the decreased turnover of the transmission business and major changes in capacity reservation behavior, the annualization factor, the target turnover of the transmission business and the usage volumes of the transmission services would lead to too large an increase in the transmission prices. According to the Natural Gas Market Act, the network operator may increase its natural gas transmission fees by a maximum of 15 percent compared to the natural gas transmission fees it collected during the 12 months preceding the increase. Gasgrid raises transmission prices taking into account the obligations of the Natural Gas Market Act and sets the tariffs in such a way that a sharp drop in the use of transmission services leads to a controlled and reasonable increase in transmission pricing.

The annualization factor is calculated as follows:

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

The factor weighted by capacity booking shares is calculated according to the above formula. In the period 1.1.2020-31.10.2022, the annualization factor of the entry capacity determined at the regional level is app 1.24, and the annualization factor of the exit capacity determined at the national level is approx. 1.15. In particular, the

realization of the average annualization factor of exit capacities 2020-2022 has a decreasing effect on the large share of the annual capacity products of the past year. Due to the challenging predictability of the energy market, Gasgrid estimates that the weight of short-term capacity products at the exit zone will increase in upcoming year, although for exit capacities, the exit capacity tariff multipliers for daily capacity will increase from 1.5 to 1.7 and for intraday capacity from 1.7 to 2.0 which may have impact on booking behavior leaning towards longer-term capacity products.

4.2.2 Short-term capacity product multipliers in tariff year 2023

The Energy Authority has approved the short-term capacity product multipliers, seasonal factors and discounts which will be applied in tariff period 2023.

In accordance with Tariff Network Code "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. Article 13 sets the following constraints:

a) for quarterly standard capacity products and for monthly standard capacity products, the level of the respective multiplier shall be no less than 1 and no more than 1,5;

b) for daily standard capacity products and for within-day standard capacity products, the level of the respective multiplier shall be no less than 1 and no more than 3. In duly justified cases, the level of the respective multipliers may be less than 1, but higher than 0, or higher than 3.

<u>The level of multipliers for exit capacity</u>

Gasgrid Finland will apply the following multipliers for standard capacity products in Hamina LNG entry point, Inkoo LNG entry point, Imatra entry point and biogas virtual entry point for the upcoming tariff period:

Table 6. Entry capacity product multipliers for the upcoming tariff period.

Capacity product	Multiplier
Yearly (reference price)	1
Quarterly	1,1
Monthly	1,25
Daily	1,5
Within-day	1,7

If at the Inkoo LNG entry point, the allocation (confirmed nominations) of the shipper exceeds the allocated entry capacity for the gas day, the confirmed nomination quantity exceeding the allocated capacity will be subject to capacity overrun charge, which is one and a half (1.5) times the unit price of the within-day entry capacity (multiplier 1.7). The multiplier for the entry capacity overrun charge is calculated as follows: entry capacity reference price x 1.5 x 1.7 = 2.55.

<u>Reasoning:</u>

The Finnish, Estonian and Latvian TSOs have established a common tariff zone starting from 1st of January 2020. The TSOs have concluded an ITC (Inter-TSO Compensation) agreement in which the same level of entry tariff is set for all entry points at the tariff zone and in which there is no entry or exit tariff set at Balticconnector. The multipliers shown in Table 7 are set in ITC agreement for entry points. The multipliers are harmonized with Estonian and Latvian TSOs.

The level of multipliers for exit capacity

Gasgrid Finland sets the multipliers for capacity products at the exit zone. Gasgrid Finland proposes that the following multipliers shall be applied at the Finnish exit zone for the upcoming tariff period.

Table 7. Exit capacity product multipliers for the upcoming tariff period.

Capacity product	Multiplier
Yearly (reference price)	1
Quarterly	1,1
Monthly	1,25
Daily	1,7
Within-day	2,0

If at the Finnish exit zone, the allocation (metering data of final balance settlement) for the gas day exceeds the allocated exit capacity of the shipper for the gas day, a capacity overrun charge will be charged for the gas quantity exceeding the allocated exit capacity of the shipper. The capacity overrun charge is one and a half (1.5) times the unit price of within-day exit capacity (multiplier 2.0). Thus, the capacity overrun charge = exit capacity reference price x 1.5 x 2.0 = 3.0.

The grounds for the proposal concerning the multipliers of exit capacity:

- The Finnish gas market is characterized by the industry's need to start up quickly in the event of a disruption and the rapidly changing gas consumption needs of energy production. Changes in the market situation have led to the situation that the use of gas in the energy production sector has become more concentrated in the winter season and for shorter periods than before due to, among other things, weather conditions and the price level of gas energy. During such a period, the use of gas can be multiple times the higher compared to the base load (see figure below). The transmission infrastructure is thus to a greater extent a reservoir-like infrastructure for this user group than before, enabling the quick utilization of the energy source with high capacity. It is estimated that the market situation will lead to a similar gas consumption profile in the coming tariff period as well.

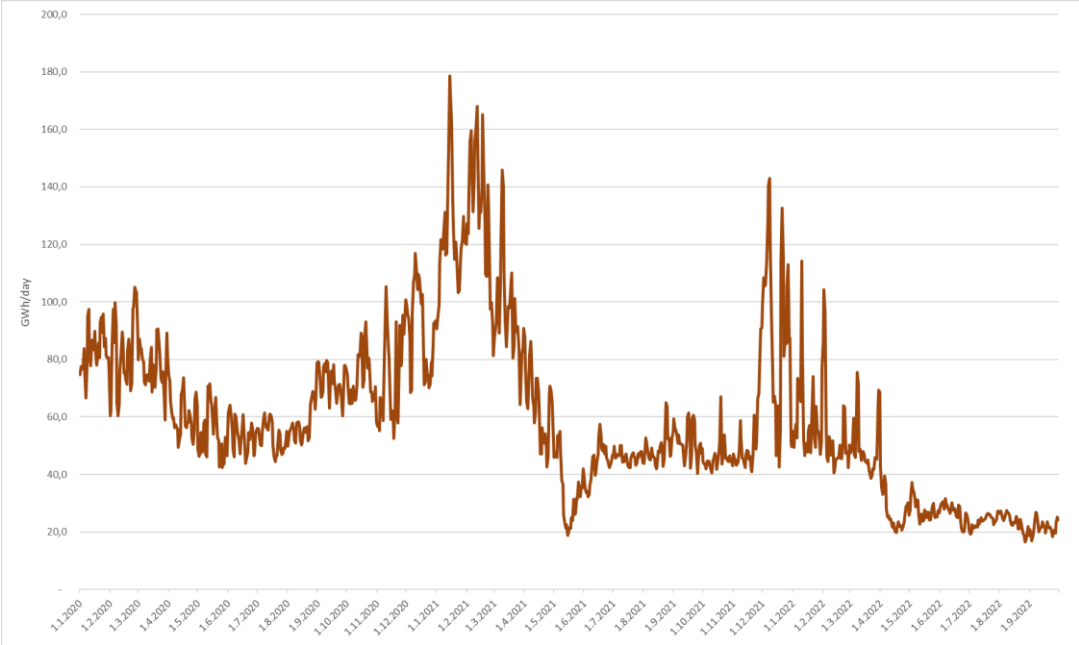

Figure 6. Gas consumption in Finland 1.1.2020-30.9.2022.

- 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 multipliers for short-term exit capacity products (day and within-day capacity products) will be increased in order to cover the costs of using transmission services and infrastructure in a more balanced manner between the industrial and energy production sectors, taking into account the capacity needs and the changed gas consumption profile in the segment of gas end consumers. The daily capacity multiplier will increase from 1.5 to 1.7, and the within-day capacity product multiplier from 1.7 to 2.0.

4.2.3 Discounts for interruptible capacity

In accordance with Article 9 in Tariff Network Code:

1. A discount of at least 50 % shall be applied to capacity-based transmission tariffs at entry points from and exit points to storage facilities, unless and to the extent a storage facility which is connected to more than one transmission or distribution network is used to compete with an interconnection point.

2. At entry points from LNG facilities, and at entry points from and exit points to infrastructure developed with the purpose of ending the isolation of Member States in respect of their gas transmission systems, a discount may be applied to the respective capacity-based transmission tariffs for the purposes of increasing security of supply.

No discounts shall be applied in 2023 in Finland.

Article 16 of the Tariff Network Code sets requirements regarding interruptible capacity products. At biogas virtual entry point, Hamina LNG entry point, Inkoo LNG entry point and at the exit zone, capacity is available

without restrictions. Thus, only firm capacity products are available at aforementioned points. At Balticconnector, capacity is allocated according to confirmed nominations. Consequently, at Balticconnector only firm capacity is offered.

Interruptible capacity would only be offered if there is not enough firm capacity available or if there is no physical firm capacity for a certain entry or exit point. In such a situation, shippers are offered interruptible capacity instead of firm capacity. The price of interruptible capacity at Imatra entry point is 5% lower than corresponding firm capacity product.

4.3 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 2023, transmission services revenue is presented in Table 8.

Table 8. Transmission services revenue in 2023.

	Entry revenue [M€]	Exit revenue [M€]	Commodity revenue [M€]	**Total [M€]**
Transmission service revenue 2023 [M€]	6,9	48,9	4,0	**59,8**

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

Gasgrid Finland's goal in tariff setting is a predictability of transmission tariffs. An unexpected and significant change in the operating environment has led to a volatile market situation. During the years 2020 and 2021 Gasgrid has accumulated a surplus for a reasonable return which is regulated by the regulation method defined by the Finnish Energy Authority. This resulted in the decrease of transmission tariffs for the current tariff period. However, a significant (about 50 %) decrease in gas use and increased costs of operating network operations due to significantly rising prices was not foreseen and this has led to the need to increase the transmission tariffs. The tariffs will be raised approximately to the level they were before the ongoing tariff period. There will be no change in the tariffs of entry capacity products in the upcoming tariff year.

Since gas consumption in 2022 will probably be more than 50% lower than the previous year, and the level of gas usage in 2023 is also estimated to be at a clearly lower level than in 2021, the starting points for determining transmission tariffs for 2023 are different compared to previous years, because a significant decrease in the usage of transmission services would lead in the case where the principle used in previous years to a significant increase. Gasgrid raises transmission prices taking into account the obligations of the Natural Gas Market Act and sets the tariffs in such a way that a sharp drop in the use of transmission services leads to a controlled and reasonable increase in transmission pricing. The prices of annual capacity products during the tariff period are as follows:

- Reference price for entry capacity: 0,14277 €/kWh/day/year (0,39115 €/MWh)
- Reference price for exit capacity: 0,97875 €/kWh/day/year (2,68151 €/MWh)

4.4 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.

The commodity-based tariff shall be set so that it covers the flow-based costs of domestic gas consumption. For the year 2023, the target revenue to be collected by commodity tariff is 4,0 M€ in 2023. Most of the costs are estimated to be caused by the commodity compensations of the pressure reduction stations. Costs covered by commodity charge include uncertainty due to highly changing flow dynamics due to Inkoo LNG terminal.

The price of electricity and gas has been high, which is also reflected in the cost of gas and electricity purchased by Gasgrid to run the compressor units and commodity costs borne by the pressure reduction stations. The price level is estimated to be higher also in the next year. On the other hand, changing flow dynamics is expected to decrease the number of hours during which the compressor stations will be run.

In the commodity charge calculation, it is estimated that domestic gas consumption would be 14 TWh in 2023. This results to the commodity charge of 0,00028286 €/kWh (= 0,28286 €/MWh) in 2023.

4.5 Centralized data exchange charge (= datahub charge)

Starting from the Finnish gas market opening in 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 is 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 turnover to be collected by datahub charge is 50 000 € in 2023. Gasgrid Finland is entitled to collect regulated profit from datahub service. The Energy Authority has set the WACC-% for datahub service which is 5,57 % in 2023. There are approximately 6 000 consumption sites which are subject to invoicing of the datahub charge. During the ongoing year, the number of metering sites has decreased more than 10 % compared to previous year. The datahub charge for 2023 is 0,69 €/metering point/month. A significant decrease in the datahub charge is based on the need to adjust the turnover so that the reasonable return of the regulation period is reconciled which is needed due to surplus collected from the previous years.

4.6 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. 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.

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 renominations 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.

4.7 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:

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

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

<u>Capacity-commodity split: 93%/7%</u>

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:

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

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

<u>Entry-exit split: 12%/88%</u>

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%

4.8 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 9. 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	**0,97875**

5 The service price list of Gasgrid Finland in tariff period 2023

Transmission tariffs

In Finland, the *postage stamp* reference price methodology is applied. In the postage stamp methodology, the distance between entry and exit points or the technical transmission capacity do not affect the unit price of entry or exit capacity, but the tariff for entry or exit capacity is the same for all entry or exit points.

Firm capacity products

The price of yearly capacity product (= *reference price*)	
Entry capacity	
Balticconnector	– €/kWh/day/year
Biogas virtual entry point	0,14277 €/kWh/day/year (0,39115 €/MWh)
Hamina LNG entry point	0,14277 €/kWh/day/year
Imatra	0,14277 €/kWh/day/year
Inkoo LNG entry point	0,14277 €/kWh/day/year
Exit capacity	
Balticconnector	– €/kWh/day/year
Finnish exit zone	0,97875 €/kWh/day/year (2,68151 €/MWh)

The price of short-term entry capacity products	
Capacity product	Tariff multiplier
Year (= *reference price*)	1,00
Quarter	1,10

The price of short-term entry capacity products	
Capacity product	Tariff multiplier
Year (= *reference price*)	1,00
Month	1,25
Day	1,50
Within-day	1,70
Capacity overrun	1,5 x 1,7 = 2,55

The price of short-term exit capacity products	
Capacity product	Tariff multiplier
Year (= *reference price*)	1,00
Quarter	1,10
Month	1,25
Day	1,70
Within-day	2,00
Capacity overrun	1,5 x 2,0 = 3,00

The tariffs for short-term capacity products are calculated by multiplying the reference price (the price of an annual capacity product) by the tariff multiplier of short-term capacity products.

Example: The tariff of monthly capacity for the Finnish exit zone:

$$Tariff = (0{,}97875 \times 1{,}25)\ €/\mathrm{kWh/day/month} = \mathbf{1{,}22344}\ €/\mathrm{kWh/day/month}$$

At the end of this document, an illustrative calculation example of the entry and exit capacity tariff unit conversion from a capacity unit (€/kWh/day/year) to an energy unit (€/MWh) is demonstrated.

Commodity charge

Commodity charge (= *energy charge*) is charged at Finnish exit zone.	
Based on the transported gas quantity	0,00028286 €/kWh (0,28286 €/MWh)

Interruptible capacity

Interruptible capacity	
Discount of interruptible capacity as a percentage of the price of the corresponding firm capacity product.	
Entry capacity	Discount

Interruptible capacity	
Imatra	5 %

At Inkoo LNG entry point, Hamina LNG entry point and biogas virtual entry point, there is no discount for interruptible capacity, because Gasgrid Finland foresees to be able to receive LNG fulfilling the quality requirements without limitation meaning that only firm capacity will be offered. Only firm capacity is offered also at the Finnish exit zone.

At Balticconnector, capacity is allocated according to the confirmed nominations. Thus, only firm capacity is offered.

Capacity overrun charge

Capacity overrun charge

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

$$\boldsymbol{Capacity\ overrun\ charge = reference\ price \times 1,5 \times multiplier\ of\ for\ withinday\ capacity}$$

Capacity overrun charge is paid at the exit zone, biogas virtual entry point and Inkoo LNG entry point.

Finnish exit zone: If, based on the results of the final balance settlement, exit quantities during the gas day to the domestic end consumption exceed the shipper's total exit zone capacity of the gas day, the shipper must pay capacity overrun charge for the gas quantity exceeding the allocated capacity.

Biogas virtual entry point: If, based on the results of the final balance settlement, gas entry quantities injected into the Finnish gas system during the gas day through biogas virtual entry point exceed the shipper's total biogas virtual entry point capacity of the concerned gas day, the shipper must pay capacity overrun charge for the gas quantity exceeding the allocated capacity.

Inkoo LNG entry point: If, based on the results of the final balance settlement, gas entry quantities injected into the Finnish gas system during the gas day through Inkoo LNG entry point exceed the shipper's total Inkoo LNG entry point capacity of the concerned gas day, the shipper must pay capacity overrun charge for the gas quantity exceeding the allocated capacity.

Underutilization fee of Balticconnector

Underutilization fee is applicable at the Balticconnector entry and exit point. The principle concerning tolerance is not final since the terms and conditions of Balticconnector is not yet confirmed by Energy Authority.

Tolerance: 10 000 - 50 000 kWh/h (set in accordance with the Energy Authority's confirmation decision on the terms and conditions of Balticconnector capacity allocation)
Pricing: 0,002 €/kWh

Centralized data exchange charge (= gas datahub)

The centralized data exchange charge is charged from the Distribution System Operators. 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).

Pricing: 0,69 €/metering site/month

Charges levied from Balance management

The principles for determining the buy and sell prices of imbalance gas, including neutrality charges, are described in the Terms and Conditions of Balancing, which can be found on Gasgrid's website.

Other charges

Pricing for connections

TSO has obligation to connect new infrastructure to its grid as long as connecting infrastructure fulfils 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 by Gasgrid Finland case by case.

Nomination imbalance charge

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

Pricing: 0 €/kWh

Compensation for non-conformity with gas quality and supply requirements

Compensation terms and conditions have been mentioned in the Shipper and Trader Framework Agreement which can be found from Gasgrid webpage.

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

Transmission tariff calculation example

For illustrative purposes only, non-binding example calculations for use of the firm transmission capacity price list.

Conversion of yearly capacity tariff from capacity unit into energy unit (example is based on the tariffs in 2021)

The shipper estimates that it requires transmission capacity at an average capacity of 100 MW (=total transmission requirement during a gas day is 100 MW x 24 h/gas day = 2 400 MWh/gas day) throughout the year. For this purpose, the shipper books the required entry capacity from Hamina LNG entry point and the exit capacity for Finnish exit zone.

The market participant may obtain the transmission capacity from Hamina LNG entry point 1 kWh/gas day for a year with the unit price of the entry capacity. If the annual booking lasts 365 days, the unit price 0,14277 € equates to a transmission quantity of 365 kWh (0,365 MWh). The total transmission quantity required by the shipper is 2 400 MWh/day x 365 days = 876 000 MWh. In which case the shipper requires 876 000 MWh/0,365 MWh/unit = 2 400 000 units of entry capacity. The unit price is 0,14277 €/unit, in other words the total cost is 0,14277 €/unit x 2 400 000 units = 342 648 €. The average cost of entry capacity is 342 648 €/876 000 MWh = 0,3912 €/MWh.

The market participant may obtain in Finnish exit zone to get the transmission capacity to the exit point 1 kWh/gas day for a year with the unit price of the exit capacity. If the annual booking lasts 365 days, the unit price 1,04859 € equates to a transmission quantity of 365 kWh (0,365 MWh). The total transmission quantity required by the shipper is 2 400 MWh/day x 365 days = 876 000 MWh. In which case the shipper requires 876 000 MWh/0,365 MWh/unit = 2 400 000 units of exit capacity. The unit price is 1,04859 €, in other words the total cost is 1,04859 €/unit x 2 400 000 units = 2 516 616 €. The average cost of exit capacity is 2 516 616 €/876 000 MWh = 2,8728 €/MWh.

The average cost of the capacity booking is therefore 0,3912 €/MWh + 2,8728 €/MWh = 3,264 €/MWh.

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