

Estonian Competition Authority

**Methodology for calculating prices
of gas transmission network services**

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Foreword

Pursuant to section 23 (4¹) of the Natural Gas Act (hereinafter the NGA) the Estonian Competition Authority (hereinafter the Authority) develops uniform methods for calculating the prices of network services, taking account of the requirements set out in sections 23 and 23² of the NGA. Section 23(4²) of the NGA sets out that the Authority publishes¹ uniform methods for calculating the prices of network services and relies on such methods when approving the price of a network service.

According to section 23(1) for the purposes of the NGA ‘network service’ means the provision of the gas transmission or distribution service through a gas network.

Sections 23(2,3,3¹ and 3²) of the NGA set out the basis for the network service price formation and section 23 subsections 1 to 9 set out the principles for the network service price calculation, which are described in greater detail in respective chapters of this methodology

Pursuant to section 23(4) of the NGA the network operator must submit the prices of network services and the grounds for the establishment of such prices to the Competition Authority for approval and, at the demand of the Competition Authority, state the reasons for the formation of those prices.

Pursuant to section 23(5) of the Competition Authority considers the applications for the establishment of prices provided for in subsection 4 in accordance with the procedure provided in subsections 5 and 6 of section 10 of the NGA.

According to the letter of 11 January 2018 no 1.15-5/2017/288 of the Ministry of Economic Affairs and Communications Estonia shall apply the European Commission directly applicable gas regulations by the end of 2020 at the latest (not exercising the exemption).

Therefore, in the preparation of this methodology (to enter into force from 2020 at the latest) it is necessary to particularly proceed from the Commission Regulation (EU) 2017/460, establishing a network code on the principles of harmonised transmission tariff structures for gas (hereinafter Regulation 2017/460). Regulation 2017/460 has been prepared on the principle that network users should be able to understand the costs underlying transmission tariffs and to forecast transmission tariffs to a reasonable extent.

Article 26 of Regulation 2017/460 sets out the form for reference price and the organisation of consultations with the stakeholders. Article 27 sets out that prior to establishing the final methodology the Competition Authority shall consult with the Agency for the Cooperation of Energy Regulators (ACER)² using respective *online* template. More details on consultations are given in chapter 13 (publishing by the system operator).

Proceeding from the Administrative Procedure Act the Authority has the right to determine the form of administrative proceeding on the basis of the right of discretion. The Authority develops and publishes on its web site the forms or questionnaires for network service price application in the form of MS Excel tables.

The questionnaires have been developed on the basis of the NGA, legal acts of the European Union and the Competition Act, which enable the Authority to verify whether the price components used as the basis for a price contain only justified cost and justified profitability.

¹ The Competition Authority publishes the methodology on its web site www.konkurentsiamet.ee.

² ACER – Agency for the Cooperation of Energy Regulators

Section 23(6) of the NGA sets out that the network operator who provides a transmission service publishes the approved prices of the network service on its website and informs the consumers and distribution network operators of new prices at least three months in advance. This methodology explains and substantiates the principles of gas transmission service prices⁷ formation and their calculation, as set out by the NGA and Regulation 2017/460.

1. Methodological reference points

Pursuant to section 23(4) of the NGA the network operator must submit the prices of network services and the grounds for the establishment of such prices to the Competition Authority for approval and, at the demand of the Competition Authority, state the reasons for the formation of those prices.

Raising from that and from Regulation 2017/460 in Estonia the *price cap* regulation regime is applied. A specific of the *price cap* regime is the approval by the Competition Authority of prices for the fixed transmission network services. The system operator may any time submit an application for a change in the applicable prices considering the following requirements:

- a regulation period according to Regulation 2017/460³ is five years⁴, as a maximum
- the approved prices shall be in force one year⁵, as a minimum
- the requirements of publication set out by the NGA and by Regulation 2017/460 are fulfilled.

The Competition Authority may initiate, if necessary, a supervisory proceeding in order to ensure cost-based prices.

From 2020 the gas transmission system in Estonia will change substantially in connections with the commissioning of Balticconnector. From 2019 the Narva border point as a gas entry point will not be available any more as commercial entry point.

The present methodology considers Estonia as a standalone entry-exit area. In cooperation with the neighbouring countries the Estonian entry-exit area functioning mechanisms may change as follows:

- in the calculation of the transmission prices the standalone *postage stamp methodology*⁶ is maintained;
- the entry tariffs with neighbouring countries will be harmonised (levelled) using *benchmarking*, in order to ensure access to the market for the most favourable gas in the region;
- the cross-border connection points between countries will be eliminated;
- the anticipated compensations between the system operators will be minimised through the exit tariffs of each country participating in cooperation.

In the result of cooperation the Paldiski and Karksi connection points, as well as Misso (Izborsk–Korneti) and Paldiski – Karksi cross-system network uses³ may become obsolete.

In the present methodology the Estonian transmission system is viewed separately before commencement of cooperation with neighbouring countries. The Competition Authority is in a position that the start-up of the cooperation between countries will change the reference data, but

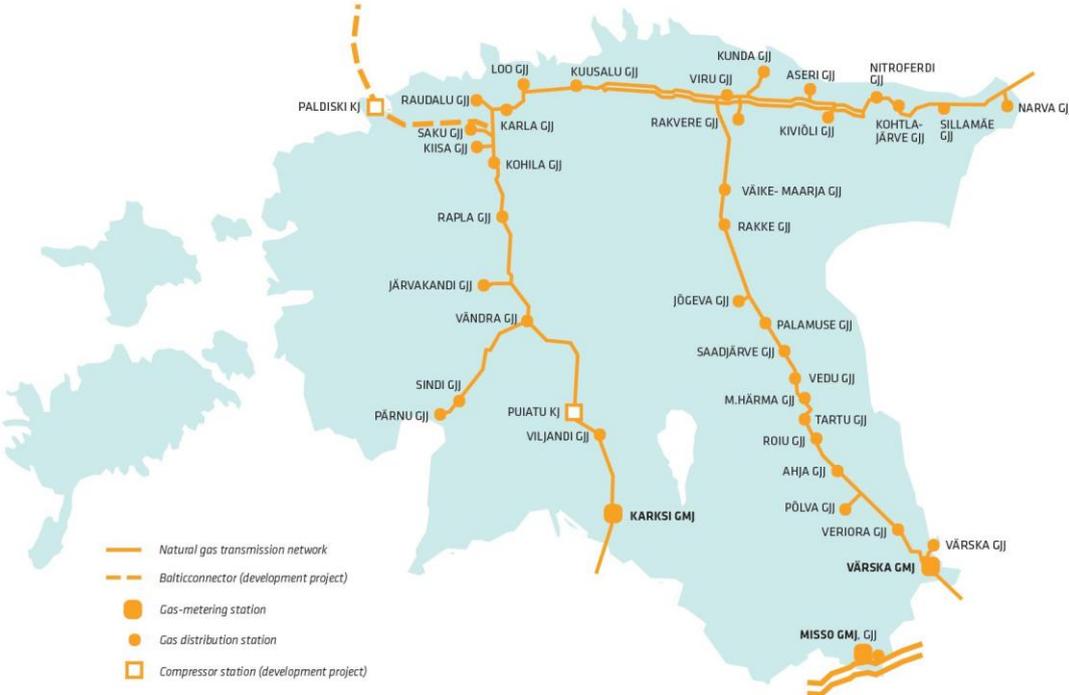
³ *Cross-system network use* means transporting gas within an entry-exit system to customers connected to another entry-exit system.

not the principles of methodology and therefore, the methodology shall be applicable also after the start-up of cooperation.

Having regard to the above from 2020 a new entry point of gas in Paldiski will start operation and therefore an additional cross-system network use possibility between Paldiski and Karksi connection points will take place. The mentioned connection points will supplement the existing cross-system network use entry point in Misso (Izborsk – Korneti). The Värskä - Karksi and Värskä – Paldiski cross-system network uses are unlikely and exceptional, that is why the methodology do not take these into account.

A schematic presentation of the transmission network in 2020 is given in Figure 1.

Figure 1. Transmission network from 2020.



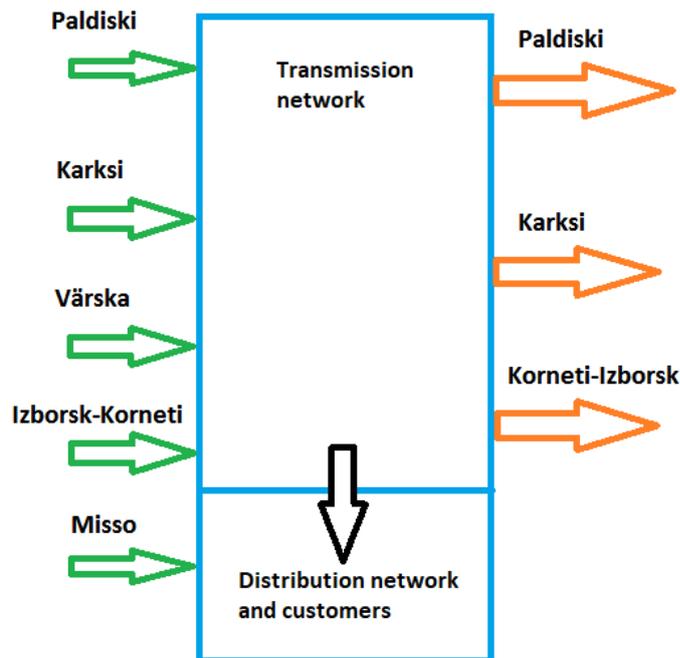
In the introductory point 19 of the Regulation (EC) No 715/2009 of the European Parliament and of the Council (on conditions for access to the natural gas transmission networks) it is explained that to enhance competition through liquid wholesale markets for gas, it is vital that gas can be traded independently of its location in the system. The only way to do this is to give network users the freedom to book entry and exit capacity independently, thereby creating gas transport through zones instead of along contractual paths. Transmission service tariffs should not be dependent on the transport route. The tariff set for one or more entry points should therefore not be related to the tariff set for one or more exit points, and vice versa.

Regulation 2017/460 differentiates interconnection points from other transmission system entry and exit points. From 2020 in Estonia the interconnection points are Paldiski, Karksi and Korneti. The chapters of Regulation 2017/460: III (Reserve prices), V (Pricing of bundled capacity and capacity at virtual interconnection points), VI (Clearing price and payable price), Article 28 (Consultation on discounts, multipliers and seasonal factor), paragraphs 2 and 3 of Article 31

(Form of publication) and chapter IX (Incremental capacity) are applicable only for interconnection points.

The principal diagram of the Estonian entry-exit system is presented in Figure 2.

Figure 2. Estonian gas transmission entry-exit system



2. Definitions

For the purposes of this methodology the following definitions shall apply:

2.1 Reserve price means approved capacity based transmission tariff or the initial clearing price. An annual reserve price equals to the reference price, the reserve price for non-yearly capacity products shall be calculated in the manner set out in point 5.8 of this methodology.

2.2. Ex-ante regulation means regulated transmission services, which are provided by the system operator in the entry-exit system to organise the service of gas transmission and local distribution.

2.3. Ex-post regulation means revenues and charges controllable after the entry into force of the tariffs for transmission services (e.g. an extra revenue from a capacity auction, a connection fee and alike).

2.4. Gas day means a 24-hour period, which begins at 7:00 in the morning and ends at 7:00 in the morning of the next day. After switch to daylight saving time the gas day is respectively 23 (winter) and 25 (summer) hours.

2.5. Price cap regime means a regulatory regime under which a transmission tariff is determined on the basis of the target revenue.

2.6. Investments in the regulatory fixed assets means one-time cost for the acquisition or improvement of fixed assets.

2.7. Weighted average cost of capital (WACC) means the total cost of capital determined by the structure of capital (proportion of own and borrowed funds in the aggregate capital) and the cost of debt and the cost of equity.

2.8. Multiplier (K) means the factor, on the basis of which the allocation (distribution) of revenue between the entry and exit points is controlled. Please refer to point 5.6 for details.

2.9. Costs mean justified variable costs, operating costs and the depreciation of fixed assets necessary for the provision of the transmission service.

2.10. Working capital means a component of the regulated assets, which generally constitutes five percent of the average (arithmetic mean) of the last three calendar years' regulated activity turnover.

2.11. 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 transmission tariffs.

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

2.13. Variable costs mean the costs, which substantially depend on the change of sales volume.

2.14. Fixed assets mean tangible and intangible fixed assets, which are necessary for the provision of network service and are acquired by an undertaking using own and borrowed funds.

2.15. Useful technical life of fixed assets is the period, during which the assets are likely to be used by the undertaking and which takes into account the expected physical (technical) wear of the assets and in connection with IT related assets also the moral aging.

2.16. Depreciation of fixed assets (capital expenditure) means the cost included in the price of service, which is related to reallocation the cost as depreciation expense of the acquired fixed assets (excl. land) during useful technical life of the fixed assets.

2.17. Rate of depreciation of fixed assets (rate of capital expenditure) means the inverse value of useful life, on the basis of which the amount of asset base is calculated and included in the network service prices.

2.18. Justified profitability (justified rate of return on invested capital) means operating profit, which is calculated as the product of regulated asset base and the weighted average cost of capital.

2.19. Regulatory period means the 12-month period in which the forecasted amounts of sales, costs and justified profitability form the basis for the calculation of prices for network services.

2.20. Regulated asset base means the amount of the residual value of the fixed assets invested by the undertaking for the provision of network services and the working capital.

2.21. Target revenue means the sum of expected transmission services revenue and expected non-transmission services revenue for the provision of services by the transmission system operator for a specific time period within a given regulatory period under a price cap regime.

2.22. Operating costs mean costs, which do not include variable costs, financial costs and depreciation of fixed assets.

2.23. Network undertaking means an undertaking who provides network service (either transmission or distribution service, or both).

2.24. Network service means the provision of gas transmission service through a network.

2.25. Network service price or, transmission charge means capacity-based and/or commodity-based charge payable by network users for transmission services provided to them, which is approved by the Competition Authority prior to entry into force (*ex-ante* regulation).

2.26. Transmission service means the service provided via transmission network, where both of the conditions shall be fulfilled:

- service price is correlated to the technical capacity or forecasted contractual capacity and distance dependent cost driver;
- service cost is correlated to investing in the infrastructure as a part of regulated asset base used for the provision of transmission service or to operation of the infrastructure.

As an exception, subject to the approval of the national regulatory authority, the transmission system operator may recover a part of the transmission services revenue by commodity-based transmission tariffs.

2.27. Non-transmission services mean the fields of activity, to which neither ex-ante nor ex-post regulation is applied but instead, it is verified whether a cross-subsidising of the costs in relation to regulated activities is avoided.

2. Principles of calculation of network service prices of transmission network

Target revenue is the sum of expected transmission services revenue and expected non-transmission services revenue recovered by the transmission system operator within yearly regulatory period under a price cap regime;

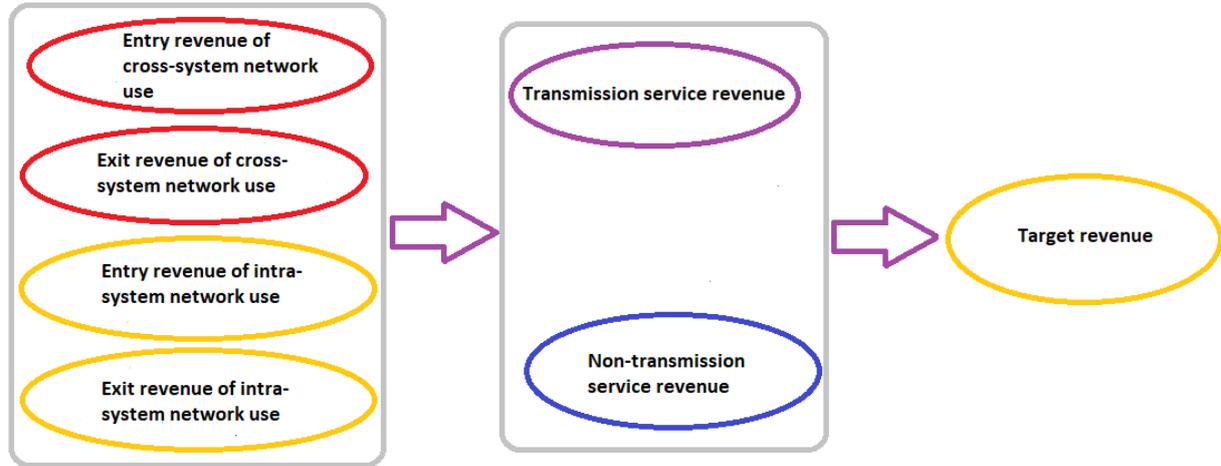
Transmission service related revenues consist of the revenue for the transmission of capacity and/or commodity of cluster of similar entry-exit points (intra-system entry points and exit points, cross-system entry-exit points).

The non-transmission service revenues are the revenues recovered by the transmission system operator for the provision of distribution service and other provided non-transmission services

(possible revenues are, for example, additional revenue from clearings, under-recovery revenue, revenues from operating the data exchange platform and issuing certificates of origin etc.)

The components of the target revenue are presented on Figure 3.

Figure 3. Formation of target revenue of transmission network



The Competition Agency uses the price cap regulation regime under which the target revenue of the transmission system operator and the prices for network service are calculated on the basis of the forecasted contracted capacity/flow amounts.

The target revenue is determined as the sum of justified costs and justified profitability (*ex-ante* regulation), to which the non-transmission revenue of the previous period is added (*ex-post* regulation).

According to Article 4 of Regulation 2017/460 the transmission services revenue shall be recovered by capacity-based transmission tariffs. As an exception, subject to the approval of the national regulatory authority, a part of the transmission services revenue may be recovered by commodity-based transmission tariffs.

According to Regulation 2017/460 the basis for transmission network prices is the **reference price**, which is the price for a capacity product for firm capacity with a duration of validity of one year, which is applicable at entry and exit points and which is used to set capacity-based transmission tariffs (quarterly, monthly, daily and intra-day transmission charges).

Reference price method is the methodology applied to the part of the transmission services revenue to be recovered from transmission tariffs with the aim of deriving reference prices.

The same reference price methodology shall be applied to all entry and exit points in a given entry-exit system⁴.

Adjustments to the application of the reference price methodology to all entry and exit points may be made in a way of one or more of the following:

⁴ Article 6 of Regulation 2017/460

- a) benchmarking by the national regulatory authority, whereby reference prices at a given entry or exit point are adjusted so that the resulting values meet the competitive level of reference prices;
- b) equalization by the national regulatory authority, as decided by the national regulatory authority, whereby the same reference price is applied to some or all points within a homogeneous group of points;
- c) rescaling by the national regulatory authority, as decided by the national regulatory authority, whereby the reference prices at all entry or all exit points, or both, are adjusted either by multiplying their values by a constant or by adding to or subtracting from their values a constant.

In the result of consideration, the Competition Authority has come to a conclusion that it is reasonable to use the **postage stamp reference price method** in Estonia.

4. Unbundling of activities in accounting

4.1. Regulation set out by the NGA:

Section 8(2) of the NGA sets out that a gas undertaking shall, in its internal accounting rules, establish principles which require the accounts for transmission, distribution and sale of gas and for any activity area unrelated to these activities to be kept in the manner that separate undertakings operating in these areas of activity would be obligated to.

An undertaking keeps separate accounts of intangible assets (excl. computer software, computer software licences and the rights of use of the land related to utility works), the assets acquired under grant aid and connection charges, as well of the assets not used by the undertaking for the provision of network services. The undertaking shall supplement his price application with an explanatory letter justifying the principles of cost allocation and the allocated cost.

Section 8(2²) of the NGA sets out that gas undertakings must establish accounting rules regarding the classification of assets and liabilities and of items of revenue and expenditure, to be followed in keeping the accounts of the activity areas specified in subsection 2 of this section.

Section 8¹(1) of the NGA sets out that the network operator who provides transmission services may concurrently engage in the provision of distribution services but may not at the same time be a seller.

4.2. The transmission system operator shall keep at least the following separate accounts:

4.2.1. revenues and expenses for intra-system network use (*ex-ante* regulation - prices are approved with the Competition Authority);

4.2.2. revenues and expenses for cross-system network use (*ex-ante* regulation - prices are approved with the Competition Authority);

4.2.3. revenues and expenses for the provision of balance services (*ex-post* regulation – the Competition Authority has the right to verify the justification of prices and adherence to the neutrality principle⁵ of this activity);

4.2.4. additional revenues from capacity clearings and costs (*ex-post* regulation – the revenue is taken into account in the determination of the target revenue);

4.2.5. revenues from connection charges and grant aid, and the costs for the assets acquired from these revenues (*ex-post* regulation – is used in the accounting of the regulated fixed assets);

4.2.6. other revenues and costs of non-transmission services (*ex-post* regulation - the revenues are taken into account in the determination of the target revenue).

5. Formation of prices for network services

5.1. Regulation set out by the NGA:

Section 23(3) of the NGA sets out that the price of network services must be established such that it ensures:

- 1) coverage of the necessary operating expenses are covered;
- 2) the making of investments to fulfil operational and development obligations;
- 3) compliance with environmental requirements;
- 4) compliance with quality and safety requirements;
- 5) the return of a justified profit on the capital invested by the undertaking;
- 6) the price of the network service must cover the justified costs of purchasing the gas used to provide that network service.

Section 23(3¹) of the NGA sets out that justified profit is calculated on the basis of the capital invested by the undertaking and the weighted average cost of capital.

Section 23(3²) of the NGA sets out that the price of the network service must make it possible for the system operator to operate, and to develop, in fulfilment of the obligations flowing from the law, the data exchange platform and the database of electronic certificates of origin.

Section 23²(2) of the NGA sets out that the calculation of the price shall not include the following expense items:

- 1) expenses related to monetary claims unlikely to be collected;
- 2) sponsorships, gifts and donations;
- 3) expenses unrelated to principal activities;
- 4) fines and late interest charged on the basis of legislation;
- 5) finance expenses;
- 6) expenses related to income tax charged on dividend payments;

⁵ Commission Regulation (EU) No 312/2014 of 26 March 2014, establishing a Network Code on Gas Balancing of Transmission Networks, Article 29

7) other expenses not required for the performance of duties imposed on the undertaking by law.

Section 23²(3) of the NGA sets out that the expenses included in the price calculation must be justified, and must be based on cost efficiency and allow the undertaking to carry out the tasks prescribed by law.

5.2. In price proceedings the Competition Authority distributes the target revenue components related to the provision of transmission service as follows (differentiating the intra-system and cross-system transmission components):

- 5.2.1. variable cost;
- 5.2.2. operating cost;
- 5.2.3. depreciation of fixed assets;
- 5.2.4. justified profitability.

5.3. According to Regulation 2017/460 the transmission service target revenue is calculated in accordance with the following formula⁶:

$$R_S = R_{S-\ddot{u}k} + R_{ms} = Revenue_{cap}^{intra} + Revenue_{comm}^{intra} + Revenue_{cap}^{cross} + Revenue_{comm}^{cross} + R_{ms} ,$$

Where:

R_S is the target revenue of the system operator

$R_{S-\ddot{u}k}$ is the target revenue from the transmission service;

$Revenue_{cap}^{intra}$ is the revenue, which is obtained from capacity tariffs and charged for intra-system network use;

$Revenue_{comm}^{intra}$ is the revenue, which is obtained from commodity tariffs and charged for intra-system network use;

$Revenue_{cap}^{cross}$ is the revenue, which is obtained from capacity tariffs and charged for cross-system network use;

$Revenue_{comm}^{cross}$ is the revenue, which is obtained from commodity tariffs and charged on cross-system network use;

R_{ms} is the revenue, not related to the transmission service.

5.4. The intra-system and cross-system network use transmission service revenues are determined in accordance of the following formulas:

$$\begin{aligned} Revenue_{cap}^{intra} &= MK_{cap}^{intra} + TK_{cap}^{intra} + PK_{cap}^{intra} + PT_{cap}^{intra} \\ Revenue_{comm}^{intra} &= MK_{comm}^{intra} + TK_{comm}^{intra} + PK_{comm}^{intra} + PT_{comm}^{intra} \\ \\ Revenue_{cap}^{cross} &= MK_{cap}^{cross} + TK_{cap}^{cross} + PK_{cap}^{cross} + PT_{cap}^{cross} \\ Revenue_{comm}^{cross} &= MK_{comm}^{cross} + TK_{comm}^{cross} + PK_{comm}^{cross} + PT_{comm}^{cross} \end{aligned}$$

⁶ Variables and factors have been taken directly from Regulation 2017/460 (where English variables and factors are used), or derived analogically. If a variable or a factor has no equivalent in the Regulation, it is derived from the Estonian words.

Where:

- MK are the variable costs of capacity-based (cap) and commodity based (comm) services for intra-system and cross-system network use;
- TK are the operating costs of capacity-based (cap) and commodity based (comm) services for intra-system and cross-system network use;
- PK is the depreciation of fixed assets of capacity-based (cap) and commodity based (comm) services for intra-system and cross-system network use;
- PT is the justified profitability of capacity-based (cap) and commodity based (comm) services for intra-system and cross-system network use.

5.5. In the cost allocation assessment for intra-system and extra-system network use it is figured out, how much cross-subsidising takes place in case of intra-system and extra-system network use on the basis of the reference price method.

The cost allocation assessment for intra-system and extra-system network use proceeds from the regulation set out in Article 5 of Regulation 2017/460 as follows:

- a) the transmission service revenue to be obtained from intra-system network use at both all entry points and all exit points is calculated and divided by the relevant capacity cost driver for intra-system network use in order to calculate the intra-system capacity ratio in accordance with the following formulas:

$$Ratio_{cap}^{intra} = \frac{Revenue_{cap}^{intra}}{Driver_{cap}^{intra}} \text{ and/or } Ratio_{comm}^{intra} = \frac{Revenue_{comm}^{intra}}{Driver_{comm}^{intra}}$$

Where:

$Driver_{cap}^{intra}$ is the value of capacity-related cost driver describing intra-system network use, is found as the sum of the average daily forecasted capacities contracted at each intra-system entry point and intra-system exit point, or cluster of points, [MWh/day];

$Driver_{comm}^{intra}$ is the commodity-related cost driver [MWh] describing intra-system network use and is calculated as the sum of the average daily forecasted flows at each intra-system entry and exit point, or cluster of points.

- b) the transmission service revenue to be obtained from cross-system network use at both all entry points and all exit points is calculated and divided by the relevant capacity cost driver for cross-system network use in order to calculate the cross-system capacity ratio in accordance with the following formulas:

$$Ratio_{cap}^{cross} = \frac{Revenue_{cap}^{cross}}{Driver_{cap}^{cross}} \text{ and/or } Ratio_{comm}^{cross} = \frac{Revenue_{comm}^{cross}}{Driver_{comm}^{cross}}$$

Where:

$Driver_{cap}^{cross}$ is the value of capacity-related cost driver describing cross-system network use and is calculated as the sum of the average daily forecasted capacities contracted at each cross-system entry and exit point, or cluster of points, [MWh/day]

$Driver_{comm}^{cross}$ is the commodity-related cost driver [MWh] describing cross-system network use and is calculated as the sum of the average daily forecasted flows at each cross-system entry and exit point, or cluster of points.

- c) the commodity cost allocation comparison index in percentage between the ratios referred to in points (a) and (b), is calculated in accordance with the following formula:

$$Comp_{cap} = \frac{2 \times |Ratio_{cap}^{intra} - Ratio_{cap}^{cross}|}{Ratio_{cap}^{intra} + Ratio_{cap}^{cross}} \times 100\% ,$$

$$Comp_{comm} = \frac{2 \times |Ratio_{comm}^{intra} - Ratio_{comm}^{cross}|}{Ratio_{comm}^{intra} + Ratio_{comm}^{cross}} \times 100\% .$$

If the comparative indexes ($Comp_{cap}$ and/or $Comp_{comm}$) exceed 10 percent, the national regulatory authority shall provide the justification for such results in the decision.

5.6. The target revenue of the system operator (R_s), from the other side, is obtained from the sales of the services included in the following formula:

$$R_s = R_{sisend}^{intra} + R_{v\ddot{a}ljund}^{intra} + R_{sisend}^{cross} + R_{v\ddot{a}ljund}^{cross} + R_{ms} ,$$

Where:

$R_{sisend}^{intra} = R_{sisend-cap}^{intra} + R_{sisend-comm}^{intra}$ is the amount of entry points capacity and/or commodity transmission revenue for intra-system network use;

$R_{v\ddot{a}ljund}^{intra} = R_{v\ddot{a}ljund-cap}^{intra} + R_{v\ddot{a}ljund-comm}^{intra}$ is the amount of exit points capacity and/or commodity transmission revenue for intra-system network use;

$R_{sisend}^{cross} = R_{sisend-cap}^{cross} + R_{sisend-comm}^{cross}$ is the amount of entry points capacity and/or commodity transmission revenue for cross-system network use;

$R_{v\ddot{a}ljund}^{cross} = R_{v\ddot{a}ljund-cap}^{cross} + R_{v\ddot{a}ljund-comm}^{cross}$ is the amount of exit points capacity and/or commodity transmission revenue for cross-system network use.

The entry-exit multipliers for the transmission service in intra-system network use are calculated in accordance with the following formula:

$$K_{intra}^{sisend} = \frac{R_{sisend}^{intra}}{R_{sisend}^{intra} + R_{v\ddot{a}ljund}^{intra}} \quad \text{and} \quad K_{intra}^{v\ddot{a}ljund} = \frac{R_{v\ddot{a}ljund}^{intra}}{R_{sisend}^{intra} + R_{v\ddot{a}ljund}^{intra}} ,$$

Where:

K_{intra}^{sisend} and $K_{intra}^{v\ddot{a}ljund}$ are factors that characterise the ratio of entry revenue and exit revenue to the intra-system network use revenue. The sum of these factors is 1.

The entry and exit multipliers of the transmission service in cross-system network use are calculated in accordance with the following formula:

$$K_{cross}^{sisend} = \frac{R_{sisend}^{cross}}{R_{sisend}^{cross} + R_{v\ddot{a}ljund}^{cross}} \quad \text{ja} \quad K_{cross}^{v\ddot{a}ljund} = \frac{R_{v\ddot{a}ljund}^{cross}}{R_{sisend}^{cross} + R_{v\ddot{a}ljund}^{cross}}$$

Where:

K_{cross}^{sisend} and $K_{cross}^{väljund}$ are factors that characterise the ratio of entry revenue and exit revenue to the cross-system network use revenue. The sum of these factors is 1.

The ratios of entry and exit revenue distribution of the whole system are calculated in accordance with the following formula:

$$K_{sisend} = \frac{R_{sisend}^{intra} + R_{sisend}^{cross}}{R_{sisend}^{intra} + R_{väljund}^{intra} + R_{sisend}^{cross} + R_{väljund}^{cross}} \quad \text{and}$$

$$K_{väljund} = \frac{R_{väljund}^{intra} + R_{väljund}^{cross}}{R_{sisend}^{intra} + R_{väljund}^{intra} + R_{sisend}^{cross} + R_{väljund}^{cross}}$$

The values of the multiplier K indicate how various market participants contribute into the transmission service revenue.

5.7. The reference prices are formed (T) in accordance of the following formulas:

$$T_{sisend-cap}^{intra} = \frac{R_{sisend-cap}^{intra}}{CAP_{sisend}^{intra}} \left[\frac{\text{€}}{MWh} / \text{year} \right] \quad \text{and/or}$$

$$T_{sisend-comm}^{intra} = \frac{R_{sisend-comm}^{intra}}{COMM_{sisend}^{intra}} \left[\frac{\text{€}}{MWh} \right],$$

$$T_{väljund-cap}^{intra} = \frac{R_{väljund-cap}^{intra}}{CAP_{väljund}^{intra}} \left[\frac{\text{€}}{MWh} / \text{year} \right] \quad \text{and/or}$$

$$T_{väljund-comm}^{intra} = \frac{R_{väljund-comm}^{intra}}{COMM_{väljund}^{intra}} \left[\frac{\text{€}}{MWh} \right].$$

$$T_{sisend-cap}^{cross} = \frac{R_{sisend-cap}^{cross}}{CAP_{sisend}^{cross}} \left[\frac{\text{€}}{MWh} / \text{year} \right] \quad \text{and/or}$$

$$T_{sisend-comm}^{cross} = \frac{R_{sisend-comm}^{cross}}{COMM_{sisend}^{cross}} \left[\frac{\text{€}}{MWh} \right],$$

$$T_{väljund-cap}^{cross} = \frac{R_{väljund-cap}^{cross}}{CAP_{väljund}^{cross}} \left[\frac{\text{€}}{MWh} / \text{year} \right] \quad \text{and/or}$$

$$T_{väljund-comm}^{cross} = \frac{R_{väljund-comm}^{cross}}{COMM_{väljund}^{cross}} \left[\frac{\text{€}}{MWh} \right].$$

Where:

CAP_{sisend}^{intra} is forecasted contractual capacity at an entry point or cluster of entry points for intra-system network use;

$COMM_{sisend}^{intra}$ is forecasted commodity-based amount at an entry point or cluster of entry points for intra-system network use;

$CAP_{väljund}^{intra}$ is forecasted contractual capacity at an exit point or cluster of exit points for intra-system network use;

$COMM_{väljund}^{intra}$ is forecasted commodity-based amount at an exit point or cluster of exit points for intra-system network use;

CAP_{sisend}^{cross} is forecasted contractual capacity at an entry point or cluster of entry points for cross-system network use;

$COMM_{sisend}^{cross}$ is forecasted commodity-based amount at an entry point or cluster of entry points for cross-system network use;

$CAP_{väljund}^{cross}$ is forecasted contractual capacity at an exit point or cluster of exit points for cross-system network use;

$COMM_{väljund}^{cross}$ is forecasted commodity-based amount at an exit point or cluster of exit points for cross-system network use;

5.8. The reserve price of a yearly capacity product equals to the reference price. The calculation of a reserve price for non-yearly capacity product is done in accordance of the following formula:

$$RP_y^x = \frac{T_y^x}{DY} \times D \times M \times H \quad [€/MWh/period],$$

Where:

RP_y^x is the reserve price in a period (quarter, month, day) for a service (intra-system or cross-system (x), entry service and exit service (y)). The reserve price of a yearly capacity product equals to the reference price;

T_y^x is the reference price for a service (intra-system or cross-system (x), entry service and exit service (y));

DY is the number of days in a year (usually 365, except for leap years, when it is 366);

D is the duration of a period (quarter, month, day) expressed in gas days.

M is the level of the multiplier corresponding to the respective standard capacity product. For the quarterly and monthly standard capacity products the multiplier may not be less than 1 and higher than 1.5. For the within-day standard capacity product the multiplier may not be less than 1 and higher than 3.

H is the seasonal factor. The calculation of seasonal factors takes place in accordance with the principles outlined in Article 15 of Regulation 2017/460.

5.9. In the verification of the target value the target value defined in point 4.3 shall correspond to the target value calculated in accordance with the following formula:

$$\begin{aligned} R_S &= Revenue_{cap}^{intra} + Revenue_{comm}^{intra} + Revenue_{cap}^{cross} + Revenue_{comm}^{cross} + R_{ms} \pm R_k \\ &= T_{sisend-cap}^{intra} \times CAP_{sisend}^{intra} + T_{väljund-cap}^{intra} \times CAP_{väljund}^{intra} \\ &+ T_{sisend-comm}^{intra} \times COMM_{sisend}^{intra} + T_{väljund-comm}^{intra} \times COMM_{väljund}^{intra} \\ &+ T_{sisend-cap}^{cross} \times CAP_{sisend}^{cross} + T_{väljund-cap}^{cross} \times CAP_{väljund}^{cross} \\ &+ T_{sisend-comm}^{cross} \times COMM_{sisend}^{cross} \\ &+ T_{väljund-comm}^{cross} \times COMM_{väljund}^{cross} + R_{ms} \end{aligned}$$

5.10. Example of calculation of the reference prices on the basis of the target revenue for network service (in a year that has 365 days)

Line no	Indicator	Unit	Application	Remarks
Target revenue (in a year)				
1	Variable cost (MK)	thousand €	500,00	According to sections 6 and 11 of the methodology for calculating
2	Operation cost (TK)	thousand €	5 500,00	
3	Depreciation of fixed assets (PK)	thousand €	5 000,00	
4	Justified profitability (PT)	thousand €	4 000,00	
5	Total transmission service target revenue (R_{S-ük})	thousand €	15 000,00	
6	Non-transmission service revenue (R _{ms})	thousand €	2 500,00	
7	Total target revenue (R _s)	thousand €	7 500,00	
Entry prices harmonised with neighbouring counties				
8	Entry price (<i>entry - intra - cap</i>)	€/MWh/day yearly	0,250	Agreed upon with the Latvian and Finnish system operators and regulators
9	Entry price (<i>entry - intra - comm</i>)	€/MWh	0,100	
10	Cross-system price (<i>cross - cap</i>)	€/MWh/day yearly	0,0714	
11	Cross-system price (<i>cross - comm</i>)	€/MWh	0,0286	
Revenue components (year)				
12	<i>Revenue^{intra}_{cap}</i>	thousand €	11 545,00	Sum of lines 12 to 15: <i>intra</i> 12400 + <i>cross</i> 2600 = 15000 thousand €
13	<i>Revenue^{intra}_{comm}</i>	thousand €	855,00	
14	<i>Revenue^{cross}_{cap}</i>	thousand €	1 856,40	
15	<i>Revenue^{cross}_{comm}</i>	thousand €	743,60	
16	<i>R^{intra}_{sisend-cap}</i>	thousand €	1 250,00	Sum of lines 16 to 19: 12400 thousand €
17	<i>R^{intra}_{sisend-comm}</i>	thousand €	500,00	
18	<i>R^{intra}_{väljund-cap}</i>	thousand €	10 295,00	
19	<i>R^{intra}_{väljund-comm}</i>	thousand €	355,00	
20	<i>R^{cross}_{sisend-cap}</i>	thousand €	928,20	Sum of lines 20 to 23: 2600 thousand €
21	<i>R^{cross}_{sisend-comm}</i>	thousand €	371,80	
22	<i>R^{cross}_{väljund-cap}</i>	thousand €	928,20	
23	<i>R^{cross}_{väljund-comm}</i>	thousand €	371,80	
Amounts (day)				
24	<i>Driver^{intra}_{cap}</i>	MWh/day	13 699	
25	<i>Driver^{intra}_{comm}</i>	MWh	13 699	
26	<i>Driver^{cross}_{cap}</i>	MWh/day	35 616	
27	<i>Driver^{cross}_{comm}</i>	MWh	35 616	
Ratios				
28	<i>Ratio^{intra}_{cap}</i>	€/MWh/day	842,79	formulas of section 5.5 (a)
29	<i>Ratio^{intra}_{comm}</i>	€/MWh	62,42	
30	<i>Ratio^{cross}_{cap}</i>	€/MWh/day	52,12	formulas of section 5.5 (b)
31	<i>Ratio^{cross}_{comm}</i>	€/MWh	20,88	

32	$Comp_{cap}$	%	176,7	formulas of section 5.5 (c) Justification: according to agreement with neighbouring countries <i>cross</i> covers only variable cost.
33	$Comp_{comm}$	%	99,7	
34	K_{sisend}^{intra}	-	0,14	formulas of section 5.6
35	K_{sisend}^{cross}	-	0,50	
36	K_{sisend}	-	0,20	
Reference prices				
37	$T_{sisend-cap}^{intra}$	€/MWh/year	0,250	formulas of section 5.7
38	$T_{väljund-cap}^{intra}$	€/MWh/year	2,059	
39	$T_{sisend-comm}$	€/MWh	0,100	
40	$T_{väljund-comm}^{intra}$	€/MWh	0,071	
41	$T_{sisend-cap}^{cross}$	€/MWh/year	0,071	formulas of section 5.7
42	$T_{väljund-cap}^{cross}$	€/MWh/year	0,071	
43	$T_{sisend-comm}^{cross}$	€/MWh	0,029	
44	$T_{väljund-comm}^{cross}$	€/MWh	0,029	

5.11. The reserve prices, determined on the basis of the reference prices calculated in the table of above point 5.10 ((in a year that has 365 days)

Period (M = 1)	Reserve price							
	Domestic (intra-system) network use				Cross-system network use			
	Capacity-based price		Commodity-based		Capacity-based price		Commodity-based	
	Entry price	Exit price	Entry price	Exit price	Entry price	Exit price	Entry	Exit price
	€/MWh/period	€/MWh/period	€/MWh	€/MWh	€/MWh/period	€/MWh/period	€/MWh	€/MWh
Year	0,250	2,059	0,100	0,071	0,071	0,071	0,029	0,029
I quarter	0,0622	0,5077	0,100	0,071	0,0176	0,0176	0,029	0,029
II quarter	0,0622	0,5133	0,100	0,071	0,0178	0,0178	0,029	0,029
III quarter	0,0628	0,5190	0,100	0,071	0,0180	0,0180	0,029	0,029
IV quarter	0,0628	0,5190	0,100	0,071	0,0180	0,0180	0,029	0,029
January	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
February	0,0198	0,1580	0,100	0,071	0,0055	0,0055	0,029	0,029
March	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
April	0,0205	0,1692	0,100	0,071	0,0059	0,0059	0,029	0,029
May	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
June	0,0205	0,1692	0,100	0,071	0,0059	0,0059	0,029	0,029
July	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
August	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
September	0,0205	0,1692	0,100	0,071	0,0058	0,0058	0,029	0,029
October	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
November	0,0205	0,1692	0,100	0,071	0,0059	0,0059	0,029	0,029
December	0,0212	0,1749	0,100	0,071	0,0061	0,0061	0,029	0,029
Day	0,0007	0,0056	0,100	0,071	0,0002	0,0002	0,029	0,029

In the table the multiplier for all capacity products is 1 and the seasonal factors are not used. The commodity-based price in periods does not change.

6. Comparison of selected reference price method with capacity weighted distance method

In connection with consultations Article 26 of Regulation 2017/460 provides that where the proposed reference price methodology is other than the capacity weighted distance reference price methodology, its comparison against the latter accompanied. Therefore, the capacity based reference prices of the postage stamp method shall be compared with the capacity based reference prices of the weighted distance method.

6.1. In the reference price method based on capacity weighted distance the following is taken into account:

- a) the part of the transmission services revenue to be recovered from capacity-based transmission tariffs;
- b) the forecasted contracted capacity at each entry point or a cluster of entry points and at each exit point or a cluster of exit points;
- c) where entry points and exit points can be combined in a relevant flow scenario, the shortest distance of the pipeline routes between an entry point or a cluster of entry points and an exit point or a cluster of exit points;
- d) the combinations of entry points and exit points, where some entry points and some exit points can be combined in a relevant flow scenario;
- e) the entry-exit revenue split shall be 50/50.

Where entry points and exit points cannot be combined in a flow scenario, this combination of entry and exit points shall not be taken into account.

6.2. The reference prices are calculated by the following steps:

a) the weighted average distance for each entry point or each cluster of entry points and for each exit point or each cluster of exit points shall be calculated, taking into account, where relevant, the combinations referred to in paragraph 1(d), in accordance with the following respective formulas:

- i) for an entry point or cluster of entry points the division of two sums is calculated, where the numerator is the sum of the products of the contractual capacity at each exit point or cluster of exit points and the distance from this entry point or cluster of entry points to each exit point or cluster of exit points, while the denominator is the sum of the contractual capacities at each exit point or cluster of exit points:

$$AD_{En} = \frac{\sum_{all\ Ex} CAP_{Ex} \times D_{En,Ex}}{\sum_{all\ Ex} CAP_{Ex}}$$

Where:

- AD_{En} is the weighted average distance for an entry point or a cluster of entry points,
 CAP_{Ex} is the forecasted contracted capacity at an exit point or a cluster of exit points,
 $D_{En,Ex}$ is the shortest distance of the pipeline routes between a given entry point or a cluster of entry points and a given exit point or a cluster of exit points;

- ii) for an exit point or cluster of exit points the division is calculated, where the numerator is the sum of the products of the capacity with the right of use at each exit point or cluster of exit points and the distance from this entry point or cluster of entry points to each exit point

or cluster of exit points, while the denominator is the sum of the capacities with the right of use at each exit point or cluster of exit points:

$$AD_{Ex} = \frac{\sum_{all\ En} CAP_{En} \times D_{En,Ex}}{\sum_{all\ En} CAP_{En}}$$

Where:

AD_{Ex} is the weighted average distance for an exit point or cluster of exit points,
 CAP_{En} is the forecasted contracted capacity at an entry point or cluster of entry points,
 $D_{En,Ex}$ is the shortest distance of the pipeline routes between a given entry point or cluster of entry points and a given exit point or cluster of exit points;

b) the weight of cost for each entry point or each cluster of entry points and for each exit point or each cluster of exit points shall be calculated in accordance with the following respective formulas:

$$W_{c,En} = \frac{CAP_{En} \times AD_{En}}{\sum_{all\ En} CAP_{En} \times AD_{En}}$$

$$W_{c,Ex} = \frac{CAP_{Ex} \times AD_{Ex}}{\sum_{all\ Ex} CAP_{Ex} \times AD_{Ex}}$$

Where:

$W_{c,En}$ is the weight of cost for a given entry point or cluster of entry points,
 $W_{c,Ex}$ is the weight of cost for a given exit point or cluster of exit points,
 AD_{En} is the weighted average distance for an entry point or cluster of entry points,
 AD_{Ex} is the weighted average distance for an exit point or cluster of exit points,
 CAP_{En} is the forecasted contracted capacity at an entry point or cluster of entry points;
 CAP_{Ex} is the forecasted contracted capacity at an exit point or cluster of exit points;

c) the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all entry points and the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all exit points shall be identified by applying the entry-exit split;

d) the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at each entry point or each cluster of entry points and for each exit point or each cluster of exit points shall be calculated in accordance with the following respective formulas:

$$R_{En} = W_{c,En} \times R_{\Sigma En}$$

$$R_{Ex} = W_{c,Ex} \times R_{\Sigma Ex}$$

Where:

$W_{c,En}$ is the weight of cost for a given entry point or a cluster of entry points,
 $W_{c,Ex}$ is the weight of cost for a given exit point or a cluster of exit points,
 R_{En} is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at an entry point or a cluster of entry points;

- R_{Ex} is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at an exit point or a cluster of exit points;
- $R_{\Sigma En}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all entry points;
- $R_{\Sigma Ex}$ is the part of the transmission services revenue to be recovered from capacity-based transmission tariffs at all exit points;

e) the resulting values referred to in point (d) shall be divided by the forecasted contracted capacity at each entry point or each cluster of entry points and at each exit point or each cluster of exit points in accordance with the following respective formulas:

$$T_{En} = \frac{R_{En}}{CAP_{En}}$$

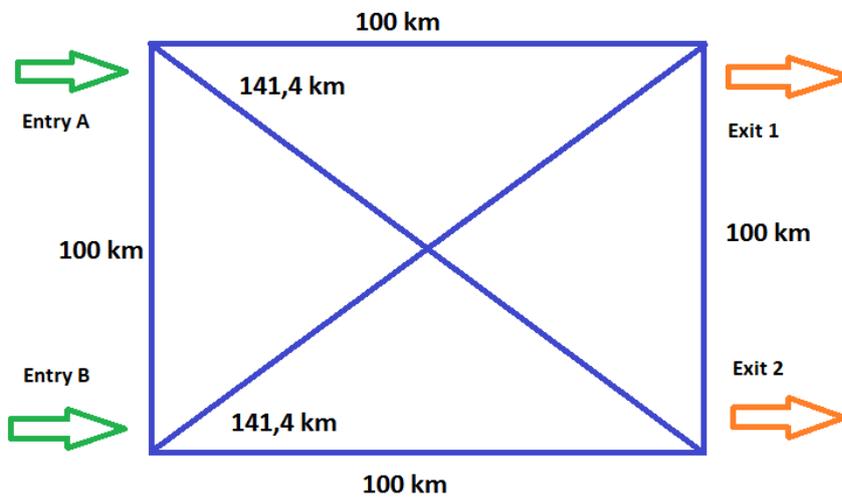
$$T_{Ex} = \frac{R_{Ex}}{CAP_{Ex}}$$

Where:

- T_{En} is the reference price at an entry point or each entry point within a cluster of entry points;
- T_{Ex} is the reference price at an exit point or each exit point within a cluster of exit points;
- CAP_{En} is the forecasted contracted capacity at an entry point or a cluster of entry points;
- CAP_{Ex} is the forecasted contracted capacity at an exit point or a cluster of exit points.

6.3. Capacity-weighted distance reference price method calculation example for the system illustrated in figure 5.

Figure 5. Schematics for calculation example



Line no	Indicator	Unit	Value	Remarks
Input data				
1	Entry A contracted capacity (CAP_{EnA})	MWh/day	9000	Sum entry 14 000 MWh/day
2	Entry B contracted capacity (CAP_{EnB})	MWh/day	5000	
3	Exit 1 contracted capacity (CAP_{Ex1})	MWh/day	6000	Sum exit 14 000 MWh/day
4	Exit 2 contracted capacity (CAP_{Ex2})	MWh/day	8000	
5	Target revenue	1000 € / year	15000,00	Prognosed
6	Share of capacity based revenue	%	85%	Chosed
7	Share of entry revenue	%	50%	Regulation (EL) 2017/460 art 8 (1) (e)
Weighted average distance				
8	AD_{EnA}	km	123,66	Formula 6.2 (a) (i)
9	AD_{EnB}	km	117,74	
10	AD_{Ex1}	km	114,79	Formula 6.2 (a) (ii)
11	AD_{Ex2}	km	126,61	
Weight of cost				
12	$W_{c,EnA}$	-	0,65	Formula 6.2 (b)
13	$W_{c,EnB}$	-	0,35	
14	$W_{c,Ex1}$	-	0,40	
15	$W_{c,Ex2}$	-	0,60	
Entry-exit revenue split				
16	Capacity based target revenue	€	34 931,51	Revenue per day
17	Entry revenue ($R_{\Sigma En}$)	€	17 465,75	Divided by share
18	Exit revenue ($R_{\Sigma Ex}$)	€	17 465,75	
Transmission services revenue				
19	R_{EnA}	€	11 423,11	Formula 6.2 (d)
20	R_{EnB}	€	6 042,65	
21	R_{Ex1}	€	7 069,06	
22	R_{Ex2}	€	10 396,69	
Reference prices				
23	T_{EnA}	€/MWh/day	1,27	Formula 6.2 (e)
24	T_{EnB}	€/MWh/day	1,21	
25	T_{Ex1}	€/MWh/day	1,18	
26	T_{Ex2}	€/MWh/day	1,30	

In the comparison of capacity based reference prices of the postage stamp method with the capacity based reference prices of the capacity weighted distance method the cost of similar consumer groups to the transmission service is observed.

During the comparison the advantages of the selected methodology are justified.

7. Amount of sales

7.1. Section 23²(2) of the NGA sets out that the calculation of the price of a network service shall be based on the average (arithmetic mean) amount of sales during the last three calendar years. If necessary, further analysis shall be conducted in order to determine the amount of sales

7.2. The NGA does not specify in which units and how the amounts of sale (and prices) shall be accounted for (capacity based or commodity based amount of sales and price).

Article 4 of Regulation 2017/460 sets out that, generally the transmission services revenue shall be recovered by capacity-based transmission tariffs. As an exception, subject to the approval of the national regulatory authority, a part of the transmission services revenue may be recovered by the commodity-based transmission, if the following conditions are fulfilled:

- levied for the purpose of covering the costs mainly driven by the quantity of the gas flows;
- calculated on the basis of forecasted or historical flows, or both, and set in such a way that it is the same at all entry points and the same at all exit points.

7.3. The present methodology enables to use both capacity based amount of sales [MWh/year] and quantity based amount of sales [MWh] in a yearly period.

7.4. The amount of sales is forecasted by the following components:

- intra-system (domestic) network use transmission capacity [MWh/year] and/or commodity based amount in MWh in a regulatory period (in a balanced network the amount of incoming gas (flows) equal to the amount of exit gas (flows));
- cross-system network use transmission capacity [MWh/year] and/or commodity based amount in MWh in a regulatory period (in a balanced network the amount of incoming gas (flows) equal to the amount of exit gas (flows)).

8. Non-controllable prices and costs

8.1. Non-controllable prices and expenses cannot be affected by the economic activity of an undertaking, but these completely depend on the factors that are external to the undertaking.

8.1.1. state levies;

8.1.2. land tax;

8.1.3. state imposed charge for the toleration of infrastructure;

8.1.4. charges for administratively regulated services.

8.2. Both variable costs (chapter 7) and operating costs (chapter 8) may contain non-controllable costs.

8.3. If the non-controllable costs are justified (proven), then the principle of full reflection in the prices is applied to these costs.

8.4. Specific revenues and costs are taken into account for the system operators: for example, the revenues and costs of the Inter Transmission System Operator Compensation for Transits (ITC), revenues and costs of countertrade etc. These revenues and costs shall be accounted on a continuing basis.

9. Variable costs

9.1. Regulation set out by the NGA:

Section 23³(3) of the NGA sets out that the expenses included in the price calculation must be justified, and must be based on cost efficiency and allow the undertaking to carry out the tasks prescribed by law.

9.2. Variable costs are related to the use of such services and goods, which are directly connected with sales amount of network services (for example, gas flows in network operation, electricity or gas energy quantity in pressure regulators (reducers) required for heating of gas, and the cost of compressor operation and alike).

9.3. Variable costs equal to the product of justified price of required services or goods and the purchase quantity of these services or goods.

10. Operating costs

10.1. Regulation set out by the NGA:

Section 23³(3) of the NGA sets out that in assessing justified operational expenses the following principles shall be observed:

- 1) observation of the dynamic of expenses in time and its comparison with the dynamics of the consumer price index;
- 2) detailed analysis (including expert assessments) of the justifiability of different expense components;
- 3) comparison of the undertaking's expenses and of the statistical parameters calculated on their basis with the expenses of other similar undertakings.

10.2. Operating expenses are the ones that do not include variable and financial costs and the depreciation of fixed assets. Operating expenses are not directly related to the amount of sales and an undertaking can affect these expenses through its more efficient economic activity (excl. non-controllable cost). Operating expenses include gas network maintenance and repair costs born by the undertaking, outsourced works and services, sales costs, transportation costs, rental costs, IT costs, office costs, labour costs and non-controllable costs (state levies, land tax, state imposed charge for the toleration of infrastructure).

10.3. The observation of the dynamic of expenses in time means the comparison of the undertaking's yearly operation costs with the consumer price index (CPI).

Generally, the operating expenses of an undertaking in monopolistic position shall not rise more than the rise of expenses of the undertakings that provide free market services, which in the aggregate are reflected in the rise of the CPI. In its regulatory practice in the application of CPI the Competition Authority takes into account also the obligation set out in section 23³(3) of the NGA that the expenses included in the price calculation must be cost efficient. The CPI values in earlier years are taken from the web site of Statistics Estonia www.stat.ee and the current year value is taken from the projection of the Ministry of Finance, published on the web site www.fin.ee

10.4. In-depth analysis of cost components (including expert assessments).

To carry out an in-depth analysis the undertaking shall present a detailed distribution of its operating cost for the free last financial years and a projection for the regulatory period. In addition, the undertaking shall justify the necessity of the applicable operating costs, their change and cost-efficiency mainly from the point of view of the following principles:

- the expenses shall be really born in the previous periods (proven with invoices, contracts, salary payments and alike);
- the expenses shall be directly related to the provision of the network service (if necessary, the distribution of costs between different areas of activity);
- the expenses shall be required for the provision of the network service (proven by an explanation for the undertaking, how the expense changed the service provided to customers, for example, the quality of network service);
- expenses are made in a must efficient manner (proven by the documents of request of commercial offers and replies to them).

Example. Detailed distribution of operating costs (time of application in 2019). Network operators may distribute the operating cost at their best discretion, provided that the detailing and controllability of the data are sufficient.

Line No	Kind of operating cost	Unit	2016	2017	2018	Regulatory period
1	Cost for network maintenance and repair carried out by the undertaking	thousand €				
2	Outsourced works and services	thousand €				
3	Sales cost	thousand €				
4	Transportation cost	thousand €				
5	Rental cost	thousand €				
6	IT cost	thousand €				
7	Communication cost	thousand €				
8	Office cost	thousand €				
9	Labour cost, total	thousand €				
10	incl. wages and salaries	thousand €				
11	incl. taxation	thousand €				
12	Other cost (to be listed)	thousand €				
14	Total	thousand €				

In the evaluation of the operating costs justification the Competition Authority has the right to involve experts according to necessity.

10.5. Comparison of undertaking's expenses and calculated statistical indicators with the expenses of other similar undertakings is not domestically possible for the transmission system operator, as Estonia has only one transmission system. International comparison may not be reasonable as the TSOs of different countries operate in different economic environments.

10.6. Section 23²(2) of the NGA sets out that the calculation of the price shall not include the following expense items:

- 1) expenses related to monetary claims unlikely to be collected;
- 2) sponsorships, gifts and donations;
- 3) expenses unrelated to principal activities;
- 4) fines and late interest charged on the basis of legislation;
- 5) finance expenses;
- 6) expenses related to income tax charged on dividend payments;
- 7) other expenses not required for the performance of duties imposed on the undertaking by law.

The formation of the price of network service ends up with the component of justified return/profitability (operating profit). Therefore, the financial costs are not included in the network charges (according to the income statement format the financial costs are accounted after profit). Other expenses that are not needed for an undertaking to perform its obligations imposed by legal acts are, for example:

- *fringe benefit costs (e.g. costs for sporting venues, use of a company car and alike) or additional expenses (benefits), granted to employees by the employer in connection with connection with an employment relationship, which exceed the obligations imposed on the undertaking by legal acts or exceed the rates provided for by law. These expenses are not required and not related to the provision of network services and undertakings can choose, whether to make them or not. Avoiding such expenses does not cause lower quality of provided services and have no connection with the main activity.*
- *income tax on fringe payments, gifts, donations, reception of guests, dividends and other profit distributions, expenses and payments, which are not related to entrepreneurship. These expenses are not required for the provision of network services, and therefore undertakings have to compensate these costs at the expense of justified profitability.*
- *penalty payments and compensations for damage. The mentioned expenses are not related to the provision of network services as the reason for such expense occurrence is, as a rule, breach of legal and/or contractual obligations by the undertaking or a failure to follow these in full. Network undertakings are obliged to cope with obligations imposed by legal acts and/or contracts entered into and therefore, it is not justified to include in the network charges these penalty payments and compensations for damage caused by a failure to fulfil their obligations.*
- *loss from the sale or liquidation of tangible and intangible fixed assets. This cost cannot be included in the network charges as the task may be intentional increase in expenses (for example, after the liquidation of fixed assets sale of them with profit takes place). The depreciable value of a fixed asset shall be expended in the accounts during the useful life of the asset.*

11. Value of regulated asset base and depreciation of fixed assets

11.1. Regulation set out by the NGA:

Section 23(3) of the NGA sets out that the price of network services must be established such that it ensures the making of investments to fulfil operational and development obligations (including compliance with environmental, quality and safety requirements).

Section 23²(4) of the NGA sets out that the calculation of justified profitability and depreciation of fixed assets included in the price calculation shall be based on the fixed assets required for the provision of network service.

Section 23²(9) of the NGA sets out that the calculation of the depreciation charge for fixed assets shall be based on the value of the fixed assets required for the provision of network service and the rate of depreciation which corresponds to the technical useful life of the fixed assets.

11.2. The value of regulated asset base is the sum of the residual value of fixed assets invested in by the undertaking for the provision of network services and the working capital.

11.3. The task of the accounting of depreciation is the recovery of expenses made to acquire fixed assets through the price of network service during the useful technical life of the fixed assets.

11.4. Depreciation rate is the inverse value of the useful technical life of assets. Different fixed assets may have different useful technical life time and thus, different rate of depreciation. In the justification of the duration useful technical life of fixed assets the Competition Authority verifies the following circumstances:

- (a) expected duration of the use of fixed assets;
- (b) expected physical wear of the fixed assets;
- (c) technical or moral wear of the fixed assets.

11.5. In the accounting of the depreciation of fixed assets a linear method is used.

11.6. The depreciation of fixed assets is calculated on the basis of the acquisition value of the fixed assets required for the provision of network service and the depreciation rate that corresponds to the useful life of the fixed assets.

11.7. The investments in fixed assets in the current calendar year are depreciated in accounts in the way that their acquisition value is multiplied with the coefficient of 0,5. In the following years their full acquisition value is used in the accounting of depreciation.

The regulatory fixed assets removed from accounting (sold, liquidated, written off the books) in the current year are depreciated in the accounts of this year in the way that their acquisition value is multiplied with the coefficient of 0,5.

11.8. Only actually implemented and projected for the regulatory period justified investments are considered as the fixed assets in compliance with principles outlined in subsections 11.9. and 11.12. of this methodology.

Not finished construction projects are not considered as fixed assets (except the cases described in the document „Assessment methodology and criteria for investments in electricity and gas infrastructure projects and bigger risks involved“ (<http://www.konkurenciamet.ee/index.php?id=24555>)).

11.9. Section 23²(5) of the NGA sets out that the fixed assets shall not include:

- 1) long-term financial investments;
- 2) intangible assets, except for software licences;
- 3) fixed assets acquired with grant aid (including targeted funding);
- 4) fixed assets acquired with funds obtained from connection fees;

5) fixed assets which the undertaking does not use for the purpose of providing network service.

11.10. In the accounting of an undertaking the fixed assets shall be unbundled by the various areas of activity in accordance with the principles outlined in section 4 of this methodology. The Competition Authority analyses the allocation of fixed assets between areas of activity and verifies whether in the selling of goods and services a cross-subsidising between the areas is avoided. If the undertaking sells its services both intra-system and cross-system, there shall be separate accounts for all regulated assets used for the provision of all services.

The undertaking shall clarify the principles of the fixed assets' allocation between the services in the explanatory letter attached to its price application.

11.11. The Competition Authority verifies whether the fixed assets listed in subsection 11.9 are excluded and thereby analyses the justification of both already implemented and planned investments, which form the basis for the calculation of the value of fixed assets.

In the process of analysis of economic activity of undertakings, the Competition Authority analyses the justification of implemented and also planned investments in the fixed assets. The Competition Authority does not accept the non-justified investments and assets, which are not actually used by the undertaking in its main activity due to lack of economic feasibility, as the regulated fixed assets. As the regulation provides for the calculation of justified profitability from the value of regulated assets, there is a relationship – the bigger the value of regulatory assets base, the bigger the justified profitability. It may happen that proceeding from the task of gaining remarkably higher profitability an undertaking wishes to revalue the assets upwards without investing further to increase the asset's value and/or prolonging useful life. That is why the Competition Authority considers expenses into fixed assets unjustified if, for example, one undertaking has resold fixed assets at a higher price than the regulated residual value to another undertaking or, from one undertaking to another undertaking that belongs to the same ownership circle or, when an undertaking has made an upwards revaluation of its fixed assets. The situation, when in the result of sales actions and/or upwards revaluations the assets, related to the provision of network services, are resold at a remarkably higher price (only the owner of assets changes) without additional investments to increase the value of the same assets and to prolong their useful life, cannot be considered as investing in existing assets. Also the fixed assets, which value does not correspond to the value of fixed assets with the same functionality and useful life, will be considered as non-justified investments.

11.12. Pursuant to section 23²(6) of the NGA the value of fixed assets shall be accounted on a continuing basis and shall continue to be accounted also when the ownership of the undertaking or of the assets changes.

11.13. Section 23²(8) of the NGA sets out that the amount of the working capital shall be five per cent of the average (arithmetic mean) turnover of the last three calendar years. If it appears that the three years' working capital average is not sufficient for the purchase of goods and services for the timely provision of network service, a further analysis shall be conducted in order to determine the amount of the working capital.

Working capital ensures for an undertaking monetary means with which it is possible to pay for goods and services before sums paid by consumers will be received. The Competition Authority considers under arithmetic turnover of the last three years only the turnover of the last three financial years related to the provision of network service. If a network undertaking has been in operation for less than three financial years, the amount of working capital is determined as the arithmetic average turnover of the actual operation years. If it appears from the data that the

amount of the average working capital of financial years is insufficient to pay for goods and services, which are needed for a timely provision of network service, an additional analysis to determine the working capital component will be conducted. The internal turnover of other undertakings, that belong to a vertically integrated by group, is not included in the calculation of the working capital. The mentioned internal turnover is excluded from the working capital calculation to avoid situations where network operators establish a business entity that belongs to the group and first sell all services provided by them, to this entity. This entity, in turn, sells the services further to consumers, obtaining thereby a working capital that amounts two-fold in its size.

11.9. The value of regulated asset base of a regulatory period or the value of invested capital is calculated by the following formula:

$$RV = PV_1 + KK,$$

Where:

RV is the value of regulated asset base,
 PV1 is the residual value of fixed assets at the end of financial year,
 KK is the working capital.

11.10. Residual value of fixed assets at the end of financial year is calculated by the formula:

$$PV_1 = PV_0 + I - PK - L,$$

where:

PV₀ is the residual value of fixed assets at the beginning of year;
 PV₁ is the residual value of fixed assets at the end of year;
 I are the investments in fixed assets for the provision of network services in the financial year;
 PK is the depreciation of fixed assets;
 L are the removed (sold or written off) fixed assets in the financial year in residual value.

11.16. Example: calculation of the depreciation and the residual value of fixed assets for a regulatory period (taking as a basis the actual stand of the fixed assets at the time of the earlier decision, for example, the end of 2015, adding to it the investments of the following years financed with own funds and the value of removed⁷ assets is subtracted).

Indicator	Unit	2016	2017	2018	Regulatory Period
Acquisition value of the transmission network at the beginning of year	thousand €	84 200,00	85 200,00	86 300,00	92 000,00
incl. depreciated fixed assets	thousand €	84 000,00	85 000,00	86 100,00	91 800,00
incl. land	thousand €	200,00	200,00	200,00	200,00
Residual value of fixed assets in the beginning of year (PV₀)	thousand €	50 000,00	48 223,50	46 758,15	49 392,00

⁷ sold or written off the books

Investment of undertaking in depreciated fixed assets (I)	thousand €	1 500,00	1 800,00	6 000,00	5 000,00
Sold and liquidated at acquisition value	thousand €	500,00	700,00	300,00	100,00
Sold and liquidated at residual value (L)	thousand €	150,00	100,00	75,00	20,00
Average depreciation rate	%	3,70%	3,70%	3,70%	3,78%
Depreciation of fixed assets (PK)	thousand €	3 126,50	3 165,35	3 291,15	3 562,65
Fixed assets at the end of year (PV₁)	thousand €	48 223,50	46 758,15	49 392,00	50 809,35

The formation of the depreciation of fixed assets and the residual value of fixed assets, as presented in the table:

a) the depreciation fixed assets in the regulatory period (PK) is calculated:

$91800 \times 3,78\% + (5000 - 100) / 2 \times 3,78\% = 3562,65$ thousand €.

b) the residual value of fixed assets at the beginning of the regulatory period (PV₀) shall equal to the value of fixed assets at the end of 2018 (PV₁).

c) the value of fixed assets at the end of the regulatory period (PV₁) is calculated:

$49392 + 5000 - 20 - 3562,65 = 50809,35$ thousand €.

12. Justified profitability

12.1. Regulation set out by the NGA:

Section 23(3¹) of the NGA sets out that justified profit referred to in clause 5 of subsection 3 of section 23 is calculated on the basis of the capital invested by the undertaking and the weighted average cost of capital.

Section 23²(7) of the NGA sets out that the calculation of justified profitability shall be based on the principle according to which the value of the fixed assets required for the provision of network service, plus the amount of working capital, is multiplied by the weighted average cost of capital.

12.2. Justified profitability is calculated on the basis of the value of regulatory assets and weighted average cost of capital in accordance with the following formula:

$$PT = WACC \times RV \quad ,$$

Where:

PT is the justified profitability;

WACC is the weighted average cost of capital;

RV is the value of regulated asset base.

Justified return (profitability) is calculated on the basis of the value of regulated asset base (including also the value of non-depreciated fixed assets, which is the value of land used in the main activity) and weighed average cost of capital (WACC) or, in other words, on the basis of a justified rate of return.

The rate of return (profitability) of monopolistic undertakings shall be limited. This is particularly set out by section 23(3)(5) of the NGA, i.e. the price for network service shall be formed in a way that ensures a justified return on the capital invested by the undertaking. The customers of monopolistic undertaking have no possibility to buy a product or a service from

competing undertakings. To that end both in Europe and elsewhere in the world certain price regulation principles have been worked out, one of the tasks of which is to limit the profit of undertakings. Without limitation market dominant undertakings would have a possibility to earn super-profit at their consumer's expense and without the intervention by the regulator (in this case the Competition Authority) consumers would possibly have to pay a market dominant undertaking super-profit, as they have no choice to select alternative provider of a service.

12.3. Weighted average cost of capital (WACC) is calculated by the Competition Authority and is published on its web site www.konkurentsiamet.ee. The published document contains both the WACC calculation methodology and the values of weighted average cost of capital various fields of activity in the year of their validity. The values of WACC are differentiated for the transmission network undertaking and for a distribution network undertaking.

12.4. Weighted average cost of capital (WACC) is calculated in accordance with of the following formula:

$$WACC = k_e \times \left(\frac{OK}{VK+OK} \right) + k_d \times \left(\frac{VK}{VK+OK} \right),$$

Where:

- k_e is the cost of equity (%);
- k_d is the cost of debt (%);
- VK is the share of debt (%);
- OK is the share of equity (%).

Example: Formation of justified return/profitability

Indicator	Unit	Regulatory period
Residual value of fixed assets at the end of year (PV_1)	thousand €	50 809,35
Turnover of last three years	thousand €	9 000,00
Working capital = 5% of an average turnover of last three years (KK)	thousand €	450,00
Value of regulated asset base (RV)	thousand €	51 259,35
WACC	%	4,50
Justified profitability	thousand €	2 306,67

The formation of residual value of fixed assets, the value of regulated asset base and justified profitability, as presented in the table:

- a) PV_1 is taken from the table in point 11.16;
- b) $KK = 9000 * 5\% = 450,00$ thousand €;
- c) $RV = PV_1 + KK = 50809,35 + 450,00 = 51259,35$ thousand €;
- d) WACC is the weighted average cost of capital established by the Competition Authority at the time of application;
- e) $PT = RV \times WACC = 51259,35 * 4,50\% = 2306,67$ thousand €.

13. Publication by system operator

13.1. The system operator shall follow the publication requirements of chapter VIII (Articles 29 to 32) of Regulation 2017/460.

13.2. Together with the submission of a price application the transmission system operator shall publish on its web site the following information:

- relative size and reasons for changes of the components of target revenue;
- change in the forecasted sales volume and reasons for the change;
- multipliers and seasonal factors applied and justifications for their change;
- reference price applied.