The Model of Implicit Capacity Allocation in the Baltic States

This document describes a model of implicit allocation of gas transmission capacity in the Baltic States. Implicit capacity allocation is a measure for the integration of the national markets. In addition, it is an alternative to capacity auctioning system in implementing the EU Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems. The Baltic States will need to implement this Network Code as soon as the derogations granted under Article 49 of Directive 2009/73/EC expire.

1. Glossary of terms and abbreviations

Continuous trading is a trading method when a gas exchange platform puts every order to buy or sell gas in the order book and immediately verifies whether the placed order matches any other order received earlier.

Exchange operator is an entity dedicated to act as an organised market place. It provides a trading platform and gas products to ensure transparent and anonymous trade of gas.

Implicit allocation method is 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.

Interconnection point (IP) is a physical or virtual point connecting adjacent entry-exit systems or connecting an entry-exit system with an interconnector, in so far as these points are subject to booking procedures by network users.

National regulatory authority (NRA) is an is institutionally and functionally independent, autonomous body governed by public law, which carries out regulation of energy sector (and possibly other public service sectors).

Network code on Capacity Allocation Mechanisms (NC CAM) is the Commission regulation (EU) No 984/2013 of 14 October 2013 establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems and supplementing Regulation (EC) No 715/2009 of the European Parliament and of the Council.

Network user is a customer or a potential customer of a transmission system operator, and transmission system operators themselves in so far as it is necessary for them to carry out their functions in relation to transmission.

Nomination is the prior reporting by the network user to the transmission system operator of the actual flow that the network user wishes to inject into or withdraw from the system.

Offer is a notice of a trader's willingness to sell a certain quantity of gas at a specific price within specific time. It is issued by a trader and posted on the trading platform of a gas exchange.

Order is an offer to sell gas and/or request to buy gas.

Order book is an electronic list of orders that a gas exchange uses to record the interest of buyers and sellers to buy or sell gas. Order book is formed in the trading platform of the gas exchange.

Request is a notice of a trader's willingness to buy a certain quantity of gas at a specific price within a specific time. It is issued by a trader and posted on the trading platform of a gas exchange.

Shipper is a network user of gas transmission systems. It uses the gas transmission services of a TSO to transport gas.

Trader is an entity that buys or sells gas. It may do so via bilateral contracts or on a gas exchange. Within the market area, the title to gas is transferred between traders in the virtual trading point.

Transmission system operator (TSO) is an entity dedicated to ensuring the transportation of natural gas via gas transmission system.

Virtual trading point (VTP) is an arrangement in entry-exit transportation systems that facilitates title transfer and trading downstream of entry and upstream of exit points.

2. Background

The Baltic gas markets are in the early stage of development and have limited liquidity. However, the markets of the Baltic States have physical interconnections and liquidity can be increased via cross-border trade between market areas. Therefore, Baltic State gas transmission system operators (TSOs) AB Amber Grid, Elering AS and JSC Latvijas Gaze are seeking for measures for closer integration of the national gas markets of Lithuania, Latvia and Estonia, which would foster the cross-border trade and development of a competitive regional market. With this in mind, the TSOs are considering to implement implicit capacity allocation method for short-term cross-border capacity and trade. When this method is applied both cross-border transmission capacity and a corresponding quantity of purchased gas are allocated at the same time through the trading platform of gas exchange. Thus, the national gas markets would be coupled to the extent of available interconnection capacity.

The framework for the allocation of cross-border gas transmission capacity at interconnection points (further – IPs) connecting adjacent entry-exit systems is also set out by the European Union Commission Regulation No 984/2013 of 14 October 2013 establishing a Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems (further – NC CAM).The Regulation applies to all interconnection points between Member States from 1 November 2015, except for the interconnection points where one of the Member States holds the derogation granted under Article 49 of Directive 2009/73/EC. NC CAM will start applying to these interconnection points from the moment the exemptions expire.

Upon the decision of National Regulatory Authorities (further - NRAs) NC CAM allows applying two alternative capacity allocation mechanisms: explicit auctions or implicit allocation mechanism (Article 2(4)).Where explicit auctions are chosen, capacity is allocated using standardised capacity allocation mechanisms based on auction procedures and using joint capacity booking platforms. Where implicit capacity allocation methods are applied, the IP capacity is allocated at the same time with the quantities of gas traded between market areas on the gas exchange.

The Regulation focuses on defining the requirements of explicit auction procedures and the platforms where the auctions are held. The procedures are rather extensive and may place considerable administrative burden

on the market players. For the developing gas markets with limited demand and liquidity and non-congested cross-border capacity – like those of the Baltic States – it is reasonable to streamline the administrative procedures.

Where implicit allocation methods are applied, national regulatory authorities (NRAs) may decide not to apply the NC CAM requirements on the auction procedures etc. (Article 2 (4). **Implicit allocation method** means an allocation method where, possibly by means of an auction, both transmission capacity and a corresponding quantity of gas are allocated at the same time (Article 3 (8).

According to the Gas Target Model of the EU Agency for the Cooperation of Energy Regulators (ACER), when the implicit allocation method is employed a market operator (gas exchange) allocates capacity to cross-border trades on a first-come first served basis at the regulated price with high process efficiency. When the market players acquire gas on the gas exchange, they seek to purchase the commodity at the lowest possible price and the sellers want to sell it at the highest price. Once the combined prices of commodity and capacity form the offers to sell and requests to buy gas at a specific virtual trading point, the implicit capacity allocation resembles an auction mechanism.

Benefits and drawbacks of implicit capacity allocation method

The implicit capacity allocation has its merits and shortcomings that are the following:

Benefits	Drawbacks
• A simpler capacity allocation method than the explicit auctions required by NC CAM (both to the market participants and to the TSOs). With non-congested interconnection points, the capacity auctions are an excessive administrative burden. • No dedicated capacity booking platform (like PRISMA, GSA or RBP) is necessary. • Increased liquidity and transparency in gas trading. Implicit allocation model is also a market integration tool. Hence, the liquidity in the connected markets becomes much more visible and accessible compared to only auctioning the capacity. • Cross-border trading can happen without any additional efforts from the traders. • Better alignment of market prices between markets with the only difference being the transmission service tariffs. • Trading of capacity and commodity takes place at the same time. The market players always end up with matching quantities of commodity and transmission capacity. • Optimised flows and capacity usage on cross-border connections. The transported gas always equals booked capacities. Trades in opposite directions allows to net the flows. Implicit capacity bookings allow the trades to exceed the technical capacities.	• Does not lead to a unified spot price between markets as in the case of market merger. • Day-ahead capacity products are sold at a fixed regulated price, which does not reflect the true economic value of transmission services as it would if they were auctioned. • In case of congestions TSOs do not earn extra income (do not collect economic rent). • Balancing for the network user stays separate in comparison with full market merger. Users have to balance their positions in their national entry-exit balancing zones.

Benefits	Drawbacks
• Potential additional revenues for the TSOs due to more capacity bookings compared to employing auction procedures. • Less changes in market rules are necessary compared to implementation of auctions and booking platforms required in NC CAM. • Does not require cross-border inter-TSO-compensation. • A more convenient system to network users. Short term capacity is mainly booked and allocated implicitly while the allocation of long term capacity stays with the TSOs. • Booking and allocation of virtual reverse capacity products of gas flow from Estonia to Latvia are easy to implement. This virtual capacity would become available immediately after any capacity of gas from Latvia to Estonia is sold and allocated via implicit capacity allocation. • Convenience to the market players – gas exchange deals with the booking, nomination and invoicing related to cross-border capacity with TSO as well as with issues related to VAT and import-export reporting	

Comparison of capacity allocation methods proposed by NC CAM

NC CAM proposes two alternative capacity allocation methods which Member States can choose to employ in their gas markets. Below is a comparison of the two capacity allocation methods with regards to their application to the gas markets of the Baltic States, by taking into account regional specificities.

Effects	Implicit capacity allocation	Capacity auctions
Compliance with NC CAM	(+) Compliant with NC CAM.	(+) Compliant with NC CAM.
Competition and Liquidity	(+) Considerably increases competition and liquidity in short-term gas trading. All the bids and offers in the national trading points start to compete in the connected markets up to the level of the available capacity of the interconnection points of the connected markets. (+) All the gas exchange users (participants of short-term market)	(-) Has no positive effect on enhancing competition and liquidity in the markets connected by uncongested interconnection points (the case in Baltic States). (-) Only a few traders or consumers will use the capacity booking platforms.

Effects	Implicit capacity allocation	Capacity auctions
	participate in the competition between the national markets. (+) The liquidity in the connected markets becomes much more visible, transparent and accessible. (+) Stimulates trading and liquidity on gas exchange and the development of short-term trading.	 (-) Does not increase the visibility, transparency and accessibility of liquidity in the connected markets. (-) Does not stimulate the development of trading on gas exchange.
Market development	(+) Integrates and couples Lithuanian, Latvian and Estonian short-term gas markets. (+) The capacity is allocated to those network users who transport the cheapest gas acquired on the market. (-) In case of congestions, TSOs do not earn extra income (but an unlikely situation in Baltic States due to the uncongested nature of the transmission systems). (+) Promotes alignment of market rules in the region.	(-) Does not integrate gas markets. (-)The capacity is allocated to those network users who are willing to pay the most for the capacity irrespective of the price of the commodity that they will transport. (+) In case of congestions, capacity products are sold at a price representing their economic value. TSOs earn extra income (but unlikely situation in Baltic States due to the uncongested nature of the transmission systems). (+) Has little to no influence on alignment of market rules in the region.
Costs	(+) Likely to be less costly solutions than the auction platforms (the exact level to be determined once the principles of implicit capacity allocation are agreed upon).	(-) Quite expensive fees of using the auctioning platforms (at least 90-120 thousand EUR per year for Baltic States).
User friendliness	(+) Simple to use. Short term capacity is acquired automatically when trading gas in an organized market place. (+) The model solves the coordination problem by allocating the capacity together with the traded gas in short-term market.	(-) More complicated to use. Transmission capacity needs to be purchased separately from commodity. (-) Shippers crossing a border without implicit allocation may face trouble in perfectly coordinating their bidding in the day-ahead capacity auctions with

Effects	Implicit capacity allocation	Capacity auctions
	(+) Cross-border trading can happen without any additional efforts from the trader. (+) The allocated short-term capacity always matches the quantities of gas traded.	their gas trades on either side of the border. (-) Traders need to book cross-border capacity separately to trade across borders. (+) Market players may end up with mismatching quantities of commodity and short-term transmission capacity.
Administrative burden	(+) Easier for the TSOs. (+) Easier for system users (no specific auction knowledge needed, no bidding for capacity is needed).	(-) More difficult for the TSOs. (-) More difficult for system users.
Flow optimisation	(+)Ensures a more efficient use of the available capacity.	(-) Does not ensure the efficient use of available capacity.
IT system functionality	- Services of gas exchange platform have to be used. - Data exchange solutions between gas exchange platform and TSO systems have to be developed. - TSO IT systems for booking and allocation of capacity and for invoicing, nomination, balancing have to be maintained.	- Services of European capacity booking platforms has to be used. - Data exchange solutions between capacity booking plaftorms and TSO systems have to be developed. - TSO IT systems for booking of capacity in non-IP entry-exit points, allocation of capacity and for invoicing, nomination, balancing have to be maintained.

Implicit capacity allocation model – preffered method in the Baltic States

Weighing the pros and cons of implicit capacity allocation model it becomes apparent that it is a viable and convient capacity allocation option proposed by NC CAM. Further investigation and comparison with the alternative of explicit auctions leads to the conclusion that implicit capacity allocation is a suitable integration measure for the Baltic States, where the liquidity is limited, and congestions at interconnection points are unlikely. It is to be seen as an interim solution before the regional gas market reform of the Baltic States is carried out in full.

3. General overview of the proposed model

The main properties of the model

The model of implicit capacity allocation proposed to the Baltic States is based on the ACER's Gas Target Model. It encompasses the following features:

1. The balancing systems and the **virtual trading points (VTPs)** of Lithuanian (LT), Latvian (LV) and Estonian (EE) market areas remain separate.
2. In each of the three markets a spot market is operated – as is common in gas – on the basis of continuous trading.
3. During a period of trading in gas exchange a substantial share or all the day-ahead capacity (and later possibly within-day and long-term capacity) between market areas LV, LT and EE is made available to the implicit allocation process. The total day-ahead capacity consists of all technical capacity not booked by shippers and all booked but unused technical capacity made available for booking again (e.g. under the provisions of the congestion management procedures). Implicit allocation does not require that longer-term bookings of shippers (monthly, quarterly, yearly) are abolished.
4. The day-ahead capacity is priced at a fixed regulated tariff per MWh.
5. The exchange operator organising trading on the LT, LV and EE VTPs is provided with exclusive access to the day-ahead capacity during the period of trading hours. After the trading session all unallocated capacity is returned to the TSOs for further allocation, if necessary. The application of implicit allocation method does not mean surrendering of day ahead capacity for the whole D-1 (day before the transportation day) till the end of booking session with TSOs. The implicit allocation process is performed on a single gas exchange platform operated by the gas exchange operator.
6. The balancing systems and rules in the connected markets remain principally unaffected because the exchange acts as a shipper of gas traded cross-border on the gas exchange.
7. The model allows for an easy implementation of virtual reverse capacity from EE to LV. That is because with the implicit allocation mechanism any cross-border trade in one direction automatically creates additional cross-border capacity in the opposite direction.

The basic process

1. At the beginning of the gas day, the TSOs inform the exchange operator about the level of available day-ahead entry and exit capacities at the IPs. If the corresponding entry and exit capacity of an IP differs, the exchange offers the lower of the two for the implicit allocation process, i.e. applies the lesser rule.
2. Then, trading of natural gas takes place on the gas exchange. Throughout the trading session (for example, from 10 a.m. to 2 p.m.), traders can enter their **offers** for gas (if they want to sell gas) and their **requests** for gas (if they want to buy gas). Other traders can accept these offers or requests. Offers and requests for the sale and purchase of gas are both referred to as **orders**.
3. The exchange operator forms separate order books for LT, LV and EE market areas. An **order book** is an electronic list of orders that the gas exchange uses to record the interest of buyers and sellers to buy or sell gas. The exchange operator forms the order books based on the placed orders, the market in which they are located, the available IP capacity, and its price:
    a. Depending on the available IP capacity, orders are made available not only in the market where they were initially placed (for example, LT) but also in the order books of the other connected markets (for example, LV and EE).

   b. The price of these orders increases (in the case of offers) or decreases (in the case of requests) by the fixed regulated unit cost of transporting gas between the connected markets, i.e., from LT to LV or from LV to EE etc.
   c. In continuous trading mode the traders wanting to buy or sell gas can immediately accept offers and requests. When markets are connected via the implicit allocation mechanism, the traders can place and accept offers and requests not only from their own but also from the connected markets. The order books will be combined depending on the available IP capacity and trades will happen seamlessly without knowing which orders were placed in the connected market and which trades happened cross-border.
   d. Any particular trader will trade on its domestic VTP and be balance responsible in that same VTP. The orders from the connected markets will be adjusted to take into account the transportation across the border and will be treated as if they were placed in the domestic VTP (as described later and in Annex 1).
4. The matching engine of the gas exchange platform uses the order book to determine which orders can be fulfilled. After every fulfilled transaction, the platform immediately updates the order book by reducing the available offers, requests, and adjusts the available IP capacity. Any time a trader accepts an offer or request that originates from the connected market, the exchange operator implicitly allocates the respective share of cross-border capacity between the market areas required for transporting the traded amount of gas.
5. If during the continuous trading process traders make deals across the border in one direction this automatically creates additional cross-border capacity in the opposite direction. This also holds true for the virtual reverse capacity from EE to LV. Any trade from LV to EE would create virtual transmission capacity of the same size from EE to LV.
6. Cross-border trading stops once all cross-border capacity available to the implicit allocation process has been allocated to the traders. If there is transmission capacity left unallocated after the trading session, the exchange operator returns it to the TSOs who can allocate the remaining capacity in the usual order.
7. The exchange operator collects money from the cross-border buyer of gas (or uses a prepaid collateral) and splits it up. The part paid for the commodity is passed on to the seller of gas in the other market. Meanwhile, the part paid for the transport is passed on to the TSOs operating the IPs. With the agreed frequency, TSOs also pay to the exchange operator for the capacity allocation services.
8. On the gas day of a particular gas product, on behalf of the buyers the exchange operator transports all the gas that has been sold cross-border from the VTP of the sellers' market via an IP (or several IPs) to the VTP of the buyers' market. The ownership of gas stays with the buyer while the exchange only organises the transportation of that gas. For that, it books the cross-border capacity equal to the net capacity allocated implicitly and nominates the net flow. In addition to the nomination, the gas exchange provides the information on title transfers of gas to the TSOs. The information on title transfers of gas lists all the trades of a particular day in a particular VTP and allows the TSO to follow the title transfer of gas between the shippers and determine their balancing positions in a particular VTP. In terms of gas transmission and balancing the gas exchange will appear as a counterparty to the trades and act as a separate shipper. Hence, if a trade happens across the border the respective traders will be balance responsible at their domestic VTPs and the exchange at both VTPs.
9. TSOs allocate the gas flows on the implicitly allocated capacities as nominated.

The basic process of implicit capacity allocation is depicted in the diagram below. The green boxes represent the information flows between the gas exchange and the TSO related to gas transmission. The blue boxes represent the trading session and the implicit allocation of capacity. The orange boxes relate to money flows.

Please find a worked example of forming of order book, trading and implicit allocation of capacity in **Annex 1**.

Prerequisites of the implementation of the model

For the implicit allocation model to be implemented in the three connected gas markets of the Baltic States the following conditions need to apply:

- All the three gas markets are physically connected, at least in one direction;
- There are entry-exit models established in each of the markets;
- Each market has a virtual trading point;
- Cross-border capacity products of the same type are available;
- TSO interoperability is harmonised as necessary, e.g. gas is measured in energy units in all the three markets.

4. The process of trading and implicit allocation of capacity

Trading platform

The implicit allocation process shall be performed on a single gas exchange platform. The exchange operator shall provide the single gas exchange platform in all three connected gas markets – Lithuania, Latvia, and Estonia – with three separate spot markets. The operator shall establish the process between the markets that will closely tie the allocation of cross-border day-ahead capacity (with the possibility to extend to other trading and capacity products) to the continuous trading process of gas in each of these markets. The process shall allocate the cross-border capacity in line with the trading activity.

Continuous trading process

Trading on the gas exchange platform shall happen in a continuous trading mode. **Continuous trading** is a trading method when a gas exchange platform puts every order to buy or sell gas in the order book and immediately verifies whether the placed order matches any other order received earlier. If the platform finds such an order, the transaction is fulfilled immediately. If the platform does not find such an order, the newly placed order stays in the order book until a matching order appears or until the order expires or it is withdrawn. The order (or an unfulfilled part of an order) expires after it is not fulfilled by the end of the trading session which takes place before the beginning of the gas day of the particular gas product. On the trading platform buyers and sellers conclude anonymous deals for a volume of gas at a price that is specific to that trade (a “deal-specific” price).

Combined Order Books

In the single gas exchange platform, all the connected gas markets (LT, LV, and EE) will have their own order books. The spot of trade in natural gas will be the VTP of each gas market. The gas exchange platform shall combine the order books so that traders in one country are able to see orders from the other countries as if they were in the same country.

The order books on the gas exchange platform shall be formed following these rules, which shall apply in all the connected gas markets:

- Offers and requests will be displayed in the order books anonymously. This means that the traders are not provided with and cannot have access to information about the counterparties on the exchange platform.

- The requests shall be arranged in the order book in the price descending order, while the offers – in the price ascending order. If two orders with the same price are placed, then the one placed earlier is higher in the priority queue. Requests with the highest price and orders with lowest price shall appear on the top of the priority queue.

- Orders of day-ahead product (and later possibly within-day and long term products) will be seen in the order books of the connected gas markets, depending on the available cross-border capacity. For example, if the total quantity of all offers exceeds the transmission capacity, only the top offers of the priority queue up to the cumulative quantity equal to the available capacity will be displayed in the connected market.

- If the potential counterparty to the transaction is in the same market area, for example, LT, the price of an order in the order book will be equal to the price submitted by the trader. In the connected market area, for example, LV, the price of same order will be increased (in case of offers) or decreased (in case of requests) by the fixed regulated unit cost of transporting gas from LT to LV (and vice versa).

- The trader shall have the right to amend or withdraw an order as long as no transaction relating to that order has been fulfilled, i.e. no other order has been matched.

- The trader shall be entitled to submit as many orders as needed. The orders may have different or the same parameters (gas day, price, and quantity).

- The gas exchange platform shall update all the order books continuously depending on the submitted orders in any of the market areas, any amendments to or withdrawals of the submitted orders, fulfilled transactions and the available day-ahead capacity.

Execution of Transactions

Every trader can select two ways of fulfilling an order – in full or in part:

- **Full fulfilment orders** are the type of orders where a trader demands to buy or sell the exact quantity stipulated in the offer or request and at the exact or better price.
- **Partial fulfilment orders** are the type of orders where a trader demands to buy or sell any quantity of gas up to the one stipulated in the offer or request and at the exact or better price.

On the exchange platform the transactions shall be carried out in the specific order books dedicated to each of the market areas. An order shall be fulfilled when an offer and a request match each other. The orders match when they meet the following criteria:

- Both the offer and the request are at the top of the priority queue of the order book;
- Both the offer and the request are placed for the same product of a specific delivery period;

- If the order is of a partial-fulfilment type, the matching factor is price. The orders match if the price of an offer is lower or equal to the price of the request. If an order is fulfilled in part the residual portion of the offer remains in the order book until it is fulfilled or the order expires;
- If the order is of a full-fulfilment type, the matching factors are quantity and price. The orders match if the quantity of an offer is equal to (or, if the offer can be partially fulfilled, higher than) the requested quantity and the price of an offer is lower or equal to the price of the request;
- If the prices of the same type orders are the same, then the order submitted earlier shall be fulfilled first.

The price of each transaction shall be determined based on whether the matching offer or the request was submitted first. If the matching offer was submitted earlier than the request, the price of the transaction shall be equal to the price of the offer. Likewise, if the matching request was submitted earlier than the offer the price of the transaction shall be equal to the price of the request.

Implicit allocation process on the gas exchange platform

During the trading session the exchange operator will allocate the available day-ahead capacity. TSOs shall provide information on all available day-ahead capacity before the start of the trading session. The available day-ahead capacity will be published and saved to the gas exchange platform.

This available capacity will be recalculated by the gas exchange platform any time an offer or request for gas is fulfilled by a trader that happens to be made initially in the connected market. The gas exchange platform will reduce the available capacity in the direction of the flow of the purchased gas and increase additional available capacity in the opposite direction. The available capacity will be equal to zero and cross-border trading shall stop once all day-ahead capacity (in both directions) available to the implicit allocation process has been implicitly allocated to the traders that have conducted cross-border trades from the start of trading for the following day.

Upon completing each trading session, the exchange operator shall electronically provide the following information to TSOs:

- The **information on the title transfers of gas**, which indicates the transactions fulfilled by each participant during the trading session and specifies the volume of natural gas, which was sold and bought in a specific virtual trading point. The information on title transfers of gas lists all the trades of a particular day in a particular VTP and allows the TSO to follow the title transfer of gas between the shippers and determine their balancing positions in a particular VTP. In terms of transportation and balancing the exchange will appear as a counterparty to the trades. In terms of gas ownership the title to the gas will stay with the buyer of the gas. Hence, if a trade would happen across the border the respective traders would be balance responsible at their domestic VTPs and the exchange at both VTPs. The exchange operator will provide separate sets of information on the title transfers of gas for the Lithuanian, Latvian, and Estonian TSOs with the trade information of a concrete country.

- A **nomination** containing the accumulated number of allocated cross-border capacity in each direction of the interconnection points (IPs) between LT and LV and LV and EE – IP Kiemėnai and IP Karksi, respectively. Specifically, the exchange operator will only nominate the net cross-border flows LT to LV and LV to LT and so on.

If there is transmission capacity left unallocated after the trading session, the exchange operator returns it to the TSOs who can allocate the remaining capacity in the usual order. This means that the application of implicit allocation method does not mean surrendering of day ahead capacity for the whole D-1 till the end of booking session with TSOs.

5. Legislation, regulation, rules and contracts

The rules governing capacity booking and allocation will need to be altered or designed (depending on the country) to allow for the implicit allocation process. They should determine:

- that day-ahead capacity is available through implicit allocation during trading session;
- how the available day-ahead capacity for implicit allocation is calculated;
- how the flows resulting from implicit capacity allocation are nominated and allocated;
- how the financial settlements for the implicit capacity allocation are conducted;
- the requirements for data exchange between TSOs and exchange.

In addition to the necessary changes in regulation, the provisions in the agreements between TSOs and the exchange operator should be in place. They should govern data exchange of trading data (for balancing management purposes) and the implicit allocation process and services.

Also all TSOs will need to amend their existing interconnection agreements with clauses regarding implicit allocation.

The agreements between the exchange operator and the traders will remain unchanged. Only the Regulation of Trading on the Natural Gas Exchange will need to be updated and the market participants informed.

6. IT systems and data exchange processes

The data exchange between the TSO and the exchange operator IT systems:

1. TSOs shall submit data regarding the available day-ahead capacity to the exchange operator once per day, before the start of the trading session;
2. The exchange operator shall return the information about the allocated capacities and shall place its nomination to TSOs once per day, after the trading session ends.

In order to implement implicit allocation TSOs and the exchange operator have to modify their IT systems. TSOs have to modify their relevant IT systems in order to calculate available day-ahead capacity for implicit capacity allocation, to submit this data to the exchange operator, and to receive information from the exchange operator. The exchange operator has to modify its gas exchange platform in order to receive data from TSOs, execute and administer the implicit allocation process and to submit implicit allocation data to

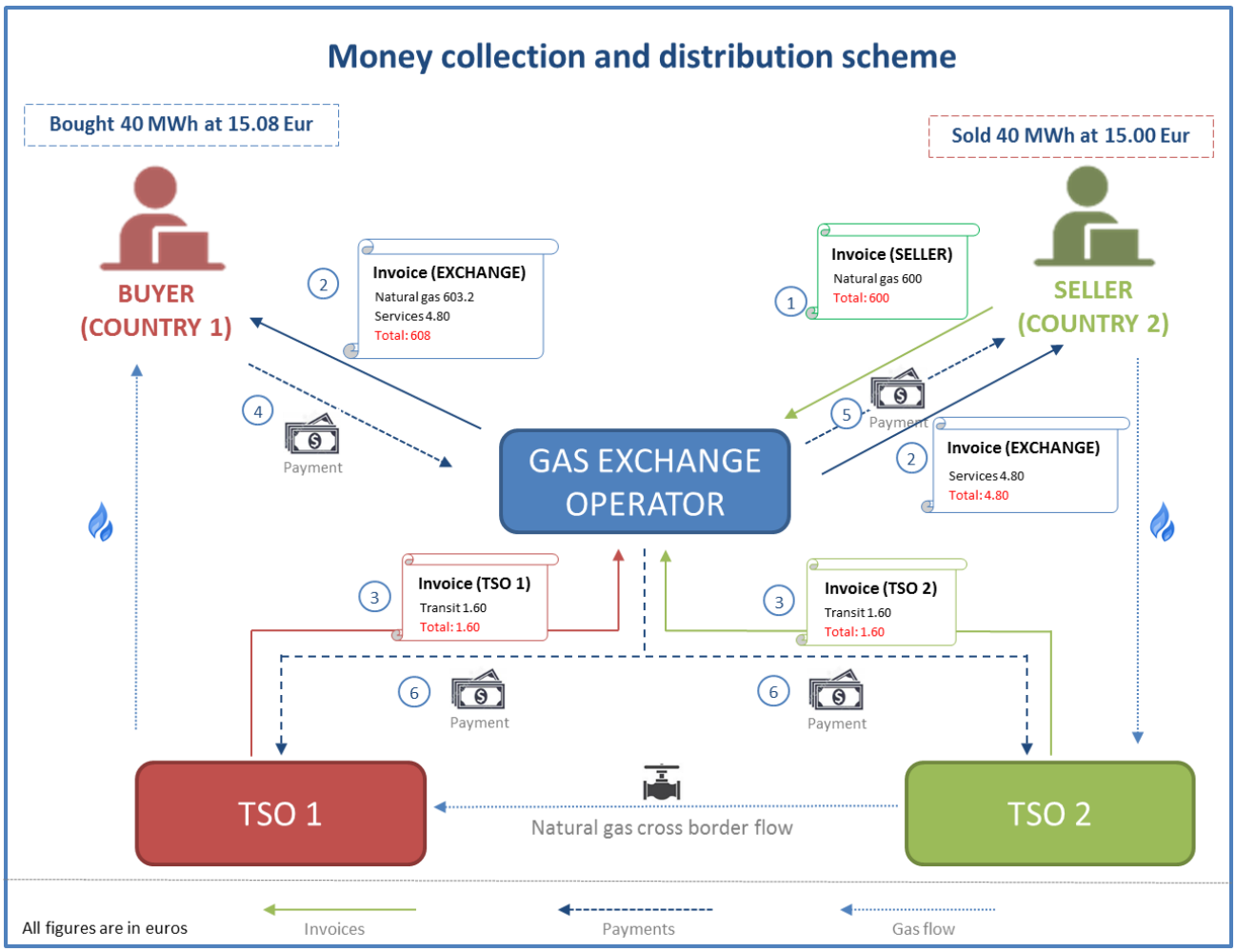
TSOs. TSOs and the exchange operators need to agree upon data exchange format and on interoperability of their systems. Data security requirements must also be taken into account.

7. Money collection and distribution principles

The gas exchange operator carries out the clearing and settlement services for exchange transactions, collects money from the cross-border buyer of gas, and splits it up to sellers and TSOs. In an invoice, traders see the transaction price in which the fixed regulated capacity unit cost is added and the exchange service fee of arranging trading on the exchange**.**

The gas exchange platform calculates the part paid for gas and the part paid for transport service (capacity). The part paid for gas will be passed on to the seller of gas (in the other market). The part paid for transport will be passed on to the two TSOs operating the IP.

Below, an example of money collection and distribution process is provided. It assumes that a seller from Country 2 sold 40 MWh of gas to a buyer in Country 1 and capacity has been allocated implicitly. The following tariffs were assumed as an example (and should not be taken as a forecast): 0.04 EUR/MWh for entry capacity, 0.04 EUR/MWh for exit capacity, and 0.12 EUR/MWh exchange fee.



The money collection and distribution process is the following:

1) Invoice issued by the Seller from Country 2 to the exchange operator for the sold gas;
2) Invoice issued by the exchange operator to the buyer from Country 1 for the obtained gas including, transportation services and exchange fees. Another invoice is issued to the gas seller for the exchange fees;
3) Invoices issued by the TSOs to the exchange operator for transportation services;
4) Payment made by the gas buyer from Country 1 to the exchange operator for the purchased gas;
5) Payment made by the exchange operator to the gas seller from Country 2 for the sold gas;
6) Payment made by the exchange operator to the TSOs for the transportation services.

Note that the transportation fee (3.20 EUR) has been added to the price of the purchased gas (600 EUR) and included in an invoice issued by the exchange operator to the buyer from Country 1. Finally, amount collected for the transportation should be split between TSOs.

8. Costs of implementing the model

The TSO costs for the implementation of the implicit allocation model and for capacity allocation services are likely to not exceed the costs of implementing and running capacity auctions on a selected dedicated platform. Hence, the implementation of the implicit allocation model would have the same or smaller incfuence on the transmission tariff

Despite the pricing question the implicit capacity allocation model brings considerable additional benefits to the gas market. In contrast to the auctions implicit allocation is a market integration measure that increases liquidity, it is simpler to implement, more convenient for traders and shippers, enables virtual reverse capacity products, and optimises capacity bookings and gas flows.

9. Project timeline

With the opening and liberalisation of all the gas markets of the Baltic States comes the requirement to apply NC CAM provisions. With this in mind, the project timeline aims at implementing the implicit capacity allocation model in all three Baltic States in the 2nd quarter of 2017.

The implementation consists of several stages. First, common view between market participants regarding the implementation of the model need to be reached. This consultation is a part of this stage. Second, the necessary legislative or regulatory acts, and contracts need to be amended. That includes analysing what changes in legislation and regulation are necessary in particular, establishing the necessary conditions in the markets for the model to work (like, virtual trading points or accounting in energy units), and introducing relevant provisions in the Network Rules, Regulation of Trading on the Natural Gas Exchange, etc. Contracts between TSOs and exchange operator may need to be reviewed as well. Third, the necessary IT solutions need to be implemented.

If any part of the implementationprocess would take longer than expected there is a risk (particularly with the legislative and regulative changes) that the starting date of applying the implicit allocation model would also be delayed.

Annex 1. A worked example: forming of order book, trading and implicit allocation of capacity

This simplified example provides several illustrations with the main points of the concept, where implicit allocation mechanism for cross border capacity booking (between Baltic gas markets) is implemented.

In this example, we consider that the transit tariffs at the interconnection points between Lithuania and Latvia as well as between Latvia and Estonia are 0,08 EUR (per transported MWh) in all directions. Therefore, the matching of orders has to take into account the transit tariffs.

The orders of participants of Lithuania, Estonia and Latvia are marked in different colours for the purposes of illustration. In practice the trades will be anonymous and the order will not be highlighted in the order book.

Illustration at the starting point

In the starting point, we can see the order books for all three Baltic countries before the orders are consolidated into combined order books for each market.

LITHUANIAN PRICE ZONE			
Order book			
2016-06-01			
Order number	Order type	Quantity, MWh	Price, MWh/EUR
LT04	Sell	65	15,70
LT03	Sell	50	15,60
LT02	Sell	30	15,30
LT01	Sell	40	15,00
LT05	Buy	35	15,10
LT06	Buy	55	14,80
LT07	Buy	15	14,75
LT08	Buy	10	14,60

LATVIAN PRICE ZONE			
Order book			
2016-06-01			
Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,10
LV03	Sell	40	16,00
LV02	Sell	10	15,50
LV01	Sell	30	15,35
LV05	Buy	25	15,30
LV06	Buy	45	15,20
LV07	Buy	90	14,55
LV08	Buy	5	14,30

ESTONIAN PRICE ZONE			
Order book			
2016-06-01			
Order number	Order type	Quantity, MWh	Price, MWh/EUR
EE04	Sell	15	16,20
EE03	Sell	80	15,75
EE02	Sell	10	15,70
EE01	Sell	35	15,20
EE05	Buy	25	14,65
EE06	Buy	15	14,50
EE07	Buy	35	14,25
EE08	Buy	45	14,10

Illustration with the combined order books

When consolidating the orders of three markets into combined order books for each of the markets the orders of one market are transferred into the order books of the connected markets taking into account the transportation tariff. For example, the selling order from Lithuania - LT01 (40 MWh on sale at 15,00 EUR) is transferred to the Latvian order book including the transit fee (0,08 EUR per MWh), and also is transferred to the Estonian order book including the transit fee from Latvia to Estonia. Then the same process is applied to all other orders.

LITHUANIAN PRICE ZONE			
Order book			
2016-06-01			
Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,18
LV03	Sell	40	16,08
LT04	Sell	65	15,70
LT03	Sell	50	15,60
LV02	Sell	10	15,58
LV01	Sell	20	15,43
LT02	Sell	30	15,30
LT01	Sell	40	15,00
LV05	Buy	25	15,22
LV06	Buy	45	15,12
LT05	Buy	35	15,10
LT06	Buy	55	14,80
LT07	Buy	15	14,75
LT08	Buy	10	14,60
EE05	Buy	25	14,49
LV07	Buy	90	14,47
EE06	Buy	15	14,34
LV08	Buy	5	14,22
EE07	Buy	35	14,09
EE08	Buy	45	13,94

LT->LV capacity is 500 MWh / day

LV->LT capacity is 450 MWh / day

LATVIAN PRICE ZONE			
Order book			
2016-06-01			
Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,10
LV03	Sell	40	16,00
LT04	Sell	65	15,78
LT03	Sell	50	15,68
LV02	Sell	10	15,50
LT02	Sell	20	15,38
LV01	Sell	30	15,35
LT01	Sell	40	15,08
LV05	Buy	25	15,30
LV06	Buy	45	15,20
LT05	Buy	35	15,02
LT06	Buy	55	14,72
LT07	Buy	15	14,67
EE05	Buy	25	14,57
LV07	Buy	90	14,55
LT08	Buy	10	14,52
EE06	Buy	15	14,42
LV08	Buy	5	14,30
EE07	Buy	35	14,17
EE08	Buy	45	14,02

LV->EE capacity is 400 MWh / day

There is no capacity on EE->LV direction

ESTONIAN PRICE ZONE			
Order book			
2016-06-01			
Order number	Order type	Quantity, MWh	Price, MWh/EUR
EE04	Sell	15	16,20
LV04	Sell	65	16,18
LV03	Sell	40	16,08
LT04	Sell	65	15,86
LT03	Sell	50	15,76
EE03	Sell	80	15,75
EE02	Sell	10	15,70
LV02	Sell	10	15,58
LT02	Sell	20	15,46
LV01	Sell	30	15,43
EE01	Sell	35	15,20
LT01	Sell	40	15,16
EE05	Buy	25	14,65
EE06	Buy	15	14,50
EE07	Buy	35	14,25
EE08	Buy	45	14,10

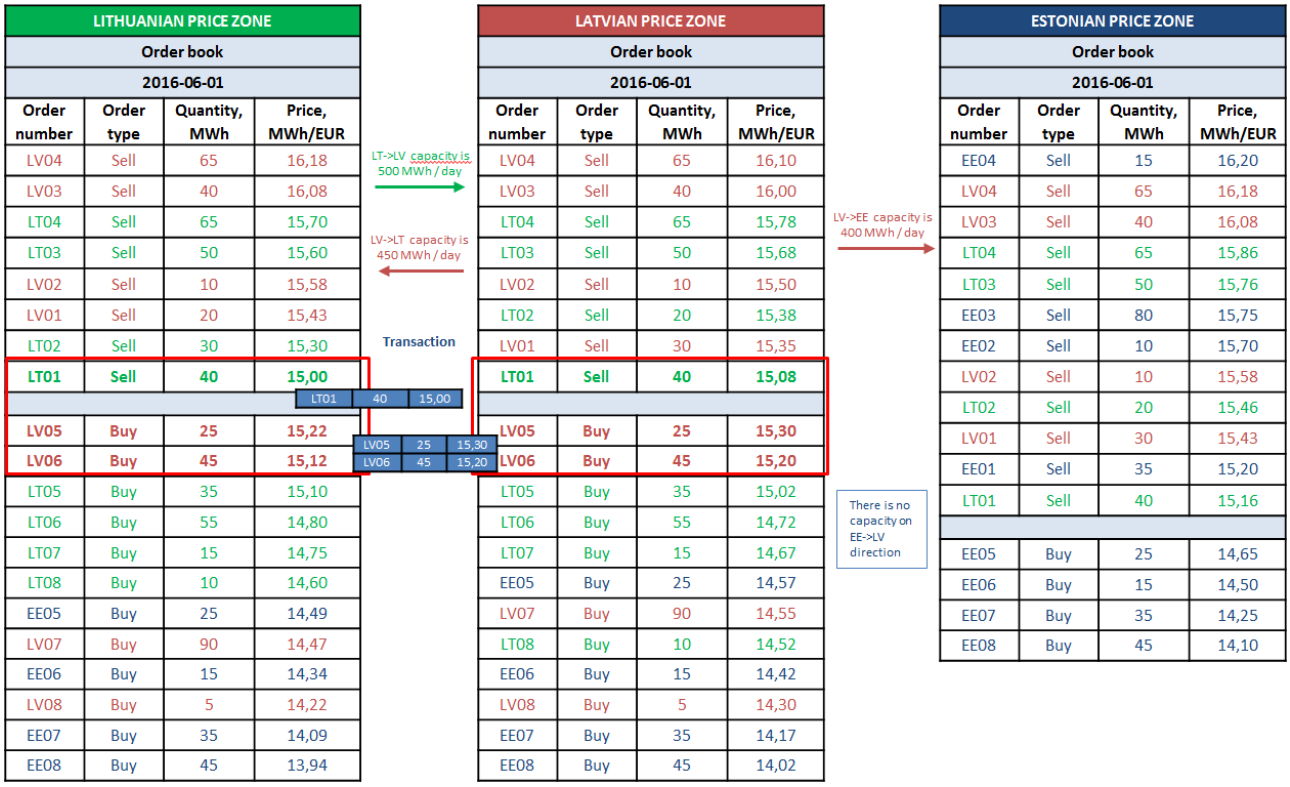
Currenty there is no technical possibility to transport natural gas from Estonia to Latvia physically. Neither are there virtual reverse capacity products implemented today.

For simplicity and illustration purposes, in this example it is assumed that no virtual reverse capacity from EE to LV is available. As a result, Estonian sell bids are not seen in Lithuanian and Latvian order books. The virtual capacity is available with a condition that any trade is concluded in the opposite direction beforehand.

However, it is important to stress that the implicit allocation model allows for an easy implementation and use of the virtual reverse capacity. It is one of the main benefits of this mechanism. The implementation of virtual reverse capacity products depends only on the agreement between LV and EE TSOs. The TSO rules governing this area already allow virtual products in EE and will soon allow in LV.

Illustration with the matched orders

During the matching process 40 MWh sale order in Lithuania at 15,00 EUR match with two orders from Latvia - 25 MWh at 15,22 EUR and 45 MWh at 15,12 EUR, respectively. Second order from Latvia is executed partly (15 MWh from 45 MWh).



LITHUANIAN PRICE ZONE

Order book

2016-06-01

Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,18
LV03	Sell	40	16,08
LT04	Sell	65	15,70
LT03	Sell	50	15,60
LV02	Sell	10	15,58
LV01	Sell	20	15,43
LT02	Sell	30	15,30
LT01	**Sell**	**40**	**15,00**
LV05	**Buy**	**25**	**15,22**
LV06	**Buy**	**45**	**15,12**
LT05	Buy	35	15,10
LT06	Buy	55	14,80
LT07	Buy	15	14,75
LT08	Buy	10	14,60
EE05	Buy	25	14,49
LV07	Buy	90	14,47
EE06	Buy	15	14,34
LV08	Buy	5	14,22
EE07	Buy	35	14,09
EE08	Buy	45	13,94

LT->LV capacity is 500 MWh / day

LV->LT capacity is 450 MWh / day

Transaction

LT01	40	15,00
LV05	25	15,30
LV06	45	15,20

LATVIAN PRICE ZONE

Order book

2016-06-01

Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,10
LV03	Sell	40	16,00
LT04	Sell	65	15,78
LT03	Sell	50	15,68
LV02	Sell	10	15,50
LT02	Sell	20	15,38
LV01	Sell	30	15,35
LT01	**Sell**	**40**	**15,08**
LV05	**Buy**	**25**	**15,30**
LV06	**Buy**	**45**	**15,20**
LT05	Buy	35	15,02
LT06	Buy	55	14,72
LT07	Buy	15	14,67
EE05	Buy	25	14,57
LV07	Buy	90	14,55
LT08	Buy	10	14,52
EE06	Buy	15	14,42
LV08	Buy	5	14,30
EE07	Buy	35	14,17
EE08	Buy	45	14,02

LV->EE capacity is 400 MWh / day

There is no capacity on EE->LV direction

ESTONIAN PRICE ZONE

Order book

2016-06-01

Order number	Order type	Quantity, MWh	Price, MWh/EUR
EE04	Sell	15	16,20
LV04	Sell	65	16,18
LV03	Sell	40	16,08
LT04	Sell	65	15,86
LT03	Sell	50	15,76
EE03	Sell	80	15,75
EE02	Sell	10	15,70
LV02	Sell	10	15,58
LT02	Sell	20	15,46
LV01	Sell	30	15,43
EE01	Sell	35	15,20
LT01	Sell	40	15,16
EE05	Buy	25	14,65
EE06	Buy	15	14,50
EE07	Buy	35	14,25
EE08	Buy	45	14,10

The final situation after the transaction

The matching requires to use 40 MWh of available capacity from Lithuania (selling gas) to Latvia (buying gas). So the available capacity for the Lithuanian market (after the transaction) is adjusted from 500 MWh to 460 MWh (LT → LV). Respectively, capacity is adjusted from 450 MWh and 490 MWh (LV → LT) for the Latvian market. Therefore, the situation after the transaction changes. The order LT01 from Lithuania has been removed, therefore the second order from Lithuania LT02 now takes the first place in the Lithuanian order book. Latvian order LV05 also has been removed. So the LV06 order goes to the first place (with the remaining 30 MWh).

LITHUANIAN PRICE ZONE

Order book

2016-06-01

Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,18
LV03	Sell	40	16,08
LT04	Sell	65	15,70
LT03	Sell	50	15,60
LV02	Sell	10	15,58
LV01	Sell	20	15,43
LT02	Sell	30	15,30
LV06	Buy	30	15,12
LT05	Buy	35	15,10
LT06	Buy	55	14,80
LT07	Buy	15	14,75
LT08	Buy	10	14,60
EE05	Buy	25	14,49
LV07	Buy	90	14,47
EE06	Buy	15	14,34
LV08	Buy	5	14,22
EE07	Buy	35	14,09
EE08	Buy	45	13,94

LT->LV capacity is 460 MWh / day

LV->LT capacity is 490 MWh / day

LATVIAN PRICE ZONE

Order book

2016-06-01

Order number	Order type	Quantity, MWh	Price, MWh/EUR
LV04	Sell	65	16,10
LV03	Sell	40	16,00
LT04	Sell	65	15,78
LT03	Sell	50	15,68
LV02	Sell	10	15,50
LT02	Sell	20	15,38
LV01	Sell	30	15,35
LV06	Buy	30	15,20
LT05	Buy	35	15,02
LT06	Buy	55	14,72
LT07	Buy	15	14,67
EE05	Buy	25	14,57
LV07	Buy	90	14,55
LT08	Buy	10	14,52
EE06	Buy	15	14,42
LV08	Buy	5	14,30
EE07	Buy	35	14,17
EE08	Buy	45	14,02

LV->EE capacity is 400 MWh / day

There is no capacity on EE->LV direction

ESTONIAN PRICE ZONE

Order book

2016-06-01

Order number	Order type	Quantity, MWh	Price, MWh/EUR
EE04	Sell	15	16,20
LV04	Sell	65	16,18
LV03	Sell	40	16,08
LT04	Sell	65	15,86
LT03	Sell	50	15,76
EE03	Sell	80	15,75
EE02	Sell	10	15,70
LV02	Sell	10	15,58
LT02	Sell	20	15,46
LV01	Sell	30	15,43
EE01	Sell	35	15,20
EE05	Buy	25	14,65
EE06	Buy	15	14,50
EE07	Buy	35	14,25
EE08	Buy	45	14,10