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WHITE PAPER ON NATURAL GAS MARKET CONCEPT DESIGN FOR GEORGIA

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12 June 2018

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ACRONYMS

bcm	Billion Cubic Meters
BM	Balancing Mechanism
CMP	Congestion Management Procedures
DSO	Distribution System Operator
EC	Energy Community
EU	European Union
GGTC	Georgian Gas Transportation Company
GNERC	Georgian National Energy and Water Supply Regulatory Commission
GoG	Government of Georgia
GOGC	Georgian Oil and Gas Corporation
GRP	Gas Release Program
GTM	Gas Target Model
ISO	Independent System Operator
MO	Market Operator
MoESD	Ministry of Economy and Sustainable Development of Georgia
SOCAR	State Oil Company of Azerbaijan Republic
SSO	Storage System Operator
TSO	Transmission System Operator
UGS	Underground Gas Storage
USAID	United States Agency for International Development
VTP	Virtual Trading Point

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EXECUTIVE SUMMARY

This *White Paper on Natural Gas Market Concept Design for Georgia* (“Paper”) sets out conceptual directions and principles of the natural gas market development for Georgia to further facilitate sector infrastructure improvements and introduce market efficiency. The goal of this Paper is to derive main steps of envisaged gas market concept in order to create a favorable environment for infrastructure development through various funding initiatives, deliver secure and affordable gas to all consumers of Georgia, and establish a competitive gas market. This Paper was conducted through rigorous analysis of the gas sector and within the so-called Gas Target Model (GTM).

The GTM presents the vision of the Government of Georgia (GoG) for the sector development in year 2026 and beyond through the Draft Energy Law as a general guidance for the market. The GTM considers the creation of a well-functioning gas balancing market, consisting of national entry-exit system with virtual trading point toward the implementation of an exchange platform for trading. The GTM endeavors to:

- Ensure security of natural gas supply for Georgia;
- Increase liquidity in the wholesale market;
- Remove barriers to cross-border trade;
- Create an efficient market delivering real choice to customers.

Clear and non-discriminatory natural gas market principles facilitate private investments for sector infrastructure development and drive the provision of secure and affordable natural gas supply.

The White Paper is scheduled to meet the impending gap between the overarching long-term natural gas market vision and the need to facilitate the scheduled infrastructure projects supported by legal and regulatory provisions. A sustainable natural gas market requires both structural and regulatory reforms through defining and implementing a set of rules and mechanisms that are crucial to its success. This Paper aims to support these market activities and the GoG market vision through a suite of recommended directions toward its realization:

- Stage 1 covers the period between year 2018 and year 2021. This period envisions unbundling of the network activities, development of a gas storage facility, creation of a Storage System Operator (SSO) and a Balancing Mechanism supported by various regulatory frameworks and regulations.
- Stage 2 considers the period between years 2021 and 2025 with the creation of a Virtual Trading Point (VTP), natural gas balancing and ancillary services markets, and a gas Market Operator (MO). These market implementations will be supplemented through necessary regulatory measures.

Optional Scenario for Stage 2: This scenario envisages implementation of the so-called Gas Release Program (GRP) that is, in general, an obligation on the incumbent monopolistic supplier to sell certain portion of its gas on the organized market.

- Stage 3 defines the final step toward the GTM at year 2026 and beyond through the implementation of a gas exchange platform, offering multiple standardized trading products and including possibility of a daily market.

CURRENT NATURAL GAS MARKET STRUCTURE OF GEORGIA

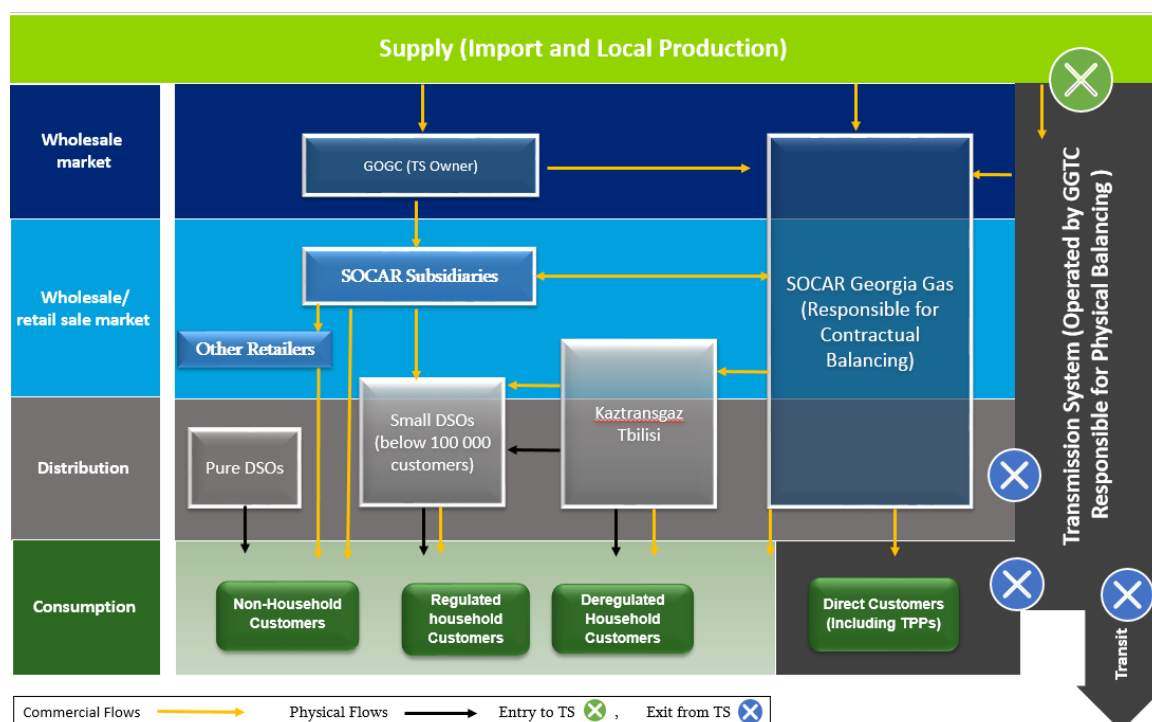
The current Georgian natural gas market structure is based on bilateral contracts between shippers, suppliers and customers. The wholesale supply of natural gas is deregulated by several types of contracts between suppliers, such as long-term import contracts with fixed and variable volumes, as well as short-term contracts. Two state owned companies, Georgian Oil and Gas Corporation and Georgian Gas Transportation Company (GGTC) import gas from Azerbaijan and Russia, respectively, satisfying around half of annual natural gas demand in Georgia. The rest of the gas supply is delivered mainly through the subsidiaries of the State Oil Company of Azerbaijan Republic (SOCAR). Shippers of the gas, distribution licensees and suppliers report their anticipated gas supply/demand to the Ministry of Economy and Sustainable Development of Georgia (MoESD), who based on the provided information, approve the annual natural gas balance, broken up in monthly volumes.

GGTC is a single licensed company for performing natural gas transportation through high pressure (cross-border, transit, internal) network and for operation (dispatch) the network. GGTC is a state-owned company with 100% shares managed by the MoESD. The Georgian National Energy and Water Supply Regulatory Commission (GNERC) regulates GGTC's activities, sets tariffs, and defines its licensing conditions. GGTC operates and maintains the gas transmission network according to the leasing agreement with Georgian Oil and Gas Corporation (GOGC). The latter is owner of the main transmission infrastructure. GGTC does not own transmission infrastructure but operates it and ensure that adequate investments are sourced to upgrade/modify network to provide gas transmission services within predefined criteria. Figure 1 presents the above described structure of the existing gas market.

The MoESD defines natural gas policy directions (i.e., gasification of certain areas), approves natural gas market rules and natural gas annual balance. GNERC issues licenses and defines licensing conditions for natural gas transmission and distribution, performs gas market monitoring, sets tariffs for natural gas tariffs for transmission, distribution, supply and consumption (only for regulated households).

Currently, the Georgian gas market is highly concentrated with a supply mainly from Azerbaijan. According to the annual gas balance for year 2018, no natural gas will be imported from Russia in 2018. Instead, 99.7% of the 2.7 billion cubic meters (bcm) of projected natural gas supply to Georgia will be imported from Azerbaijan.

Figure 1: Current Natural Gas Market Structure



Wholesale market

There are 26 gas distribution licensees performing functions of Distribution System Operator (DSO). Even though supply and network activities are regulated separately, legal unbundling has not been required, and in most cases, the DSO's are performing supply activities in their network. There are three distribution licensees in Georgia having more than 100 000 customers and serving around 90% of the customers. The rest of the distribution licensees are relatively small.

Retail market

Retail customers are divided into two groups - social sector and commercial sector. Gas supply is deregulated by the Decree of the Minister of Energy of Georgia, which granted an exception for household customers. For the social sector, GOGC is designated by Georgia's government as the buyer of the gas that Georgia receives at preferential prices for transiting gas through its territory. The agreements between the Georgian Government, SOCAR and GOGC ensure that this low-cost gas is channeled to residential customers and power generators at so called "social" prices. The gas consumed by these customers is referred to as social gas. For the commercial sector, all other natural gas in Georgia is commercial gas and is sold at deregulated prices. Furthermore, the GoG exercises direct influence on the suppliers to keep the tariffs low for the residential customers.

NATURAL GAS TARGET MODEL FOR GEORGIA

NATURAL GAS SECTOR DEVELOPMENT PRINCIPLES

The natural gas market principles are driven by directions and procedures that will enable the migration from the current sector structure to a structure that fully implements the GTM. The market is also desirable to create the fundamentals to facilitate the development of a liberalized gas market structure. In addition, the Georgian Gas market architecture must be compatible with the provisions of the European Union (EU) Acquis in the long term as well as to meet the following principles:

- Provide commercially unrestricted Third-Party access to transmission network for market participants after 2026;
- Distribution and supply must be legally unbundled to allow Third-Party Access to the distribution network;
- All consumers must be able to choose suppliers in the final implementation;
- Unbundled competitive activities (supply and production) from naturally monopolistic activities (transmission and distribution);
- Transparent and efficient natural gas wholesale and retail sale markets & cost-reflective network tariffs;
- Development of instruments to subsidize only vulnerable consumers.

The Draft Energy Law defines the legal grounds for liberalization of the natural gas market and the conclusion of natural gas deals for supply, trade, transmission, distribution, and storage. The GTM will be supported through various primary and secondary legislations that will put forward objectives and principles with a focus on arrangements for non-discriminatory access to gas infrastructure. The implementation of the GTM with respect to matters such as the full unbundling of network operators, establishment of Congestion Management Procedures (CMP) and the development of Network Codes, e.g. for capacity allocation mechanisms in gas transmission systems, gas balancing rules/updating the existing market rules, and tariff structure harmonization procedures. A series of secondary legislation are necessary to provide provisions for additional regulation, including the rules for price formation, market monitoring, increasing transparency, data exchange among market participants, granting of licenses, etc.

NATURAL GAS TARGET MODEL FOR GEORGIA

The Protocol concerning Accession of Georgia to the Treaty establishing the Energy Community (EC) foresees 31 December 2020 as the deadline for implementation of Directive 2009/73/EC, Regulation (EC) 715/2009 (concerning common rules for the internal market) and Directive 2004/67/EC (concerning measures to safeguard security of natural gas supply). Furthermore, Georgia must ensure that all customers within the meaning of EC Directives 2009/72/EC and 2009/73/EC are eligible from December 31, 2018 for all non-household and December 31, 2019 for all customers, respectively.

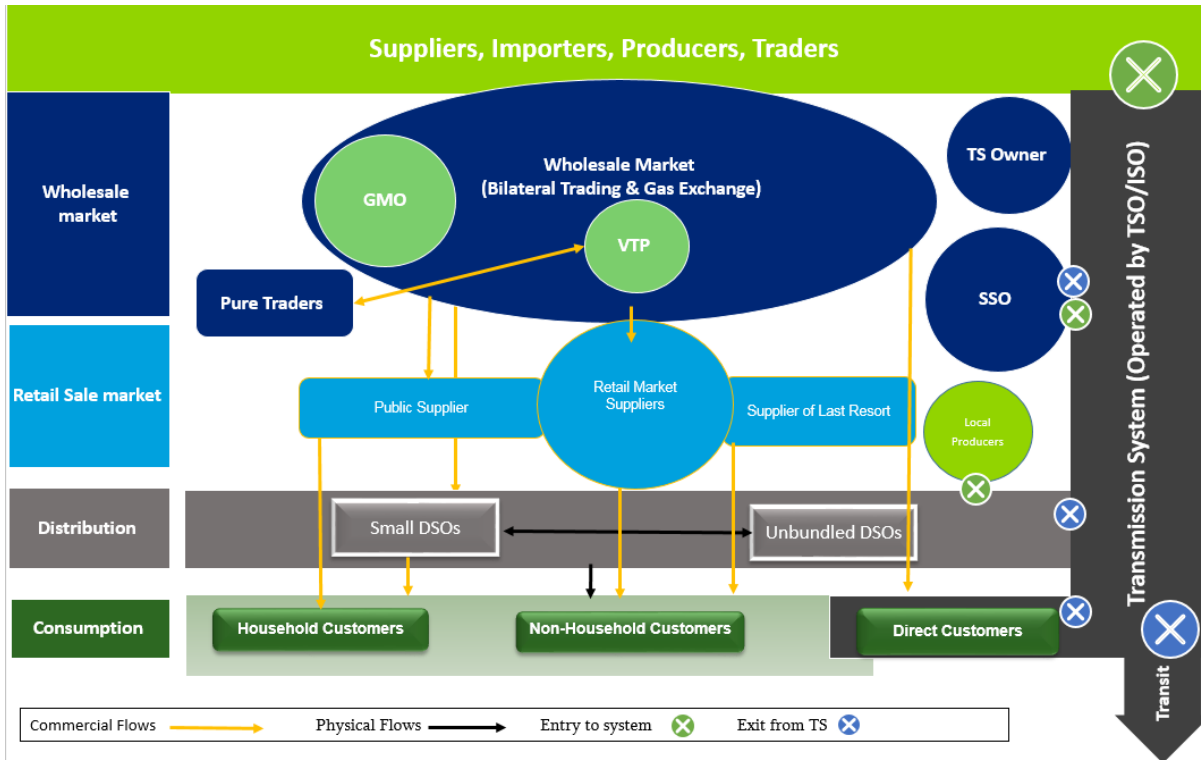
The Draft Energy Law defines the vision of the natural gas market development along with the provisions for implementation for the realization of the GTM:

- SSO will be established to operate and manage the natural gas storage facility under a Natural Gas Storage Code (Article 100);
- Implementation of an organized Balancing Market (Article 181);
- Creation of a gas MO (Article 139);
- Implementation of a VTP (Article 77);
- Purchase and sale on the wholesale natural gas market will be contracted under bilateral agreements as well as on the Day-ahead market when established (Article 136).

In addition, according to the draft Energy Law the South Caucasus Pipeline and the North South Gas Pipeline are exempted from the implementation of provisions of the Law regulating natural gas activities as well as operation and management of natural gas systems, including cross-border exchanges in natural gas until 31 August 2026.

As per the above provisions, the GTM in year 2026 and beyond is than identified as described in Figure2.

Figure 2: Natural Gas Target Model Structure



Market players aspire to perform different market roles that typically require some form of formal framework/ relationship before this role can actually be carried out. Such formal frameworks can take two main formats:

- License or some other authorization, usually provided by a competent authority;
- Contracts (e.g. with Transmission System Operator (TSO)/Independent System Operator (ISO), MO, etc.)

The unbundled entities as described in Figure 2 will coordinate the market activities between them to ensure a safe and secure network.

CUSTOMER PROTECTION

Article 2 of the 994/2010 Regulation requires “natural gas undertakings” such as gas suppliers to meet a certain “supply standard” in relation to protected customers. Article 3 of Directive 2009/73/EC also requires “appropriate measures to protect final customers,” in particular “vulnerable customers”. Hence, supplier obligations may be used in connection with the protection of “protected” or “vulnerable” customers, although in our reading of European regulation a public service obligation could be extended more widely for the protection to all final customers.

NATURAL GAS MARKET DEVELOPMENT DIRECTIONS

The natural gas market development directions are described through the below stages:

STAGE 1: UNBUNDLING OF NATURAL GAS SYSTEM OPERATORS, IMPLEMENTATION OF A SSO AND BALANCING MECHANISM, 2018 – 2021 PERIOD

Stage 1 of the Natural Gas Market Development is identified for the period between years 2018 and 2021. During this period, unbundling of natural gas system operators, implementation of a Balancing Mechanism (BM) and a SSO are considered.

Unbundling of Natural Gas System Operators

Effective separation of natural gas infrastructure activities from commercial interests is necessary not only to satisfy the Energy Community acquis but is also a prerequisite for a competitive gas market. Hence, gas infrastructure entities including gas storage, transmission and certain distribution networks, should be independent from supply and production companies by ensuring their legal (in case of TSOs-ownership), functional, administrative, operational and decision-making independence.

Currently, GGTC acts as a system operator for the gas network and bears all costs in relation to maintenance and operation of the pipeline while GOGC acts as a wholesaler. Full unbundling between GOGC and GGTC remains to be executed and such model has to be adopted by the GoG. Taking into account the current functions of GOGC and GGTC, the ISO can be considered as an appropriate model for unbundling TSO.

The ISO should be responsible for planning, operating, maintaining and developing the transmission system. Furthermore, the ISO, inter alia, shall be responsible for granting and managing third-party access. In order to ensure operational security of natural gas network and efficient functioning balancing markets (based on effective competition), the ISO shall cooperate with other system operators at the regional level. As regards investments, the ISO has full responsibility for ensuring the long-term ability of the system to meet reasonable demand through investment planning. Once an ISO is appointed, the Electricity and Gas Directives require legal and functional unbundling of the ISO.

The requirements for the ISO is similar to the provisions on legal unbundling of 'DSOs'.

Implementation of a Storage System Operator

As part of the current sector infrastructure development, the GOGC will convert the Samgori South Dome depleted field into an Underground Gas Storage (UGS) of natural gas to tackle: i) the highly seasonal natural gas consumption profile of Georgia; ii) high dependence on a single supplier; and iii) contracts flexibility to satisfy commercial needs, iv) secure and uninterrupted supply of gas. In parallel, the GoG plans to introduce legal and regulatory frameworks to facilitate and support lending institutions' funding of the gas storage facility. The Gas Storage Facility implementation should be supported by the following:

- Unbundled and independent SSO in terms of its legal, regulatory and organizational functions has to be established. The SSO could be owned by the TS owner or remains connected to the TS owner and leases the storage assets it operates from;
- A gas tariff methodology to guarantee adequate cost recovery;
- Non-discriminatory and cost-reflective injection/withdrawal tariffs;
- Gas Storage access rules;
- Supplier obligations to guaranteed security of gas supply to the country and protected customers;
- Type of storage products offered;
- "Strategic storage" (reserve for emergencies).

The above methodologies and frameworks are crucial for the implementation of the UGS and need to be developed/adopted before the completion of the unit.

Implementation of Balancing Mechanism

Under current Market Rules, gas supplies must be included in the "gas balance" approved by the Ministry every year in order to be accepted for transmission by the network operator. However, there is no penalty for failing to balance supply and consumption, other than the requirement to pay for gas taken and for damages. Over or under consumption of the contracted monthly volume of natural gas is a subject of individual contract arrangements between suppliers/large customers and SOCAR subsidiaries. This leads the transmission and distribution system operators to provide balancing in real time.

Physical daily balancing represents a set of activities by which the ISO ensures the effective operation of the transmission system in real day time period so that at any time to arrange gas transportation from the entry points of the transmission network to its exit points. This will guarantee the transmission system operates properly, safely and non-discriminatory for all network users and the costs of operation will be fairly distributed to the individual network users. Commercial balancing, which represents keeping the balance between the amount of gas entering the transmission network

for every network user and the quantity of gas taken from the transmission network by the respective network user, where failure to keep it shall be charged.

Physical balancing of the network is a function of commercial balancing. Physical balancing includes activities related to physical balancing of commercial imbalances and activities related to ensuring the operational integrity of the network. In addition, the ISO shall be responsible to introduce financial settlement for clearing the users' daily imbalances by i.e. applying tolerance and shall meet its obligation to provide adequate information to users so that they may undertake actions to adjust the within day natural gas flow for the purpose of effective risk management in connection with the balancing regime.

The balancing regime should be sufficient to incentivize the network user to ensure that by the end of the natural gas day demand and supply within the portfolio of the network user are matched. The exposure of the ISO to potential uncovered imbalanced should of course be limited. The maximum nominations imbalance could, for example, be linked to the financial guarantees a network user has in place. In this respect, the risk for the ISO is limited.

The physical balancing mechanism will be supported by Balancing Rules and a Daily Imbalance Calculation Methodology. Under the unbundled market structure, the ISO will be responsible for the physical and commercial balance of the network via balancing platform. The balancing platform will be beneficial for the Georgian gas market where the liquidity in the wholesale market is insufficient to act as a reliable source of balancing gas.

STAGE 2: IMPLEMENTATION OF A GAS MARKET OPERATOR, A VTP AND BALANCING MARKET, 2021 – 2025 PERIOD

The development of the natural gas sector between years 2021 and 2025 includes the following measures:

- All provisions of the draft Energy Law should be implemented and fully applicable from January 1, 2021¹;
- The natural gas storage facility to be operational by 2022; and
- Natural gas Balancing and Ancillary Services Market to be implemented by January 1 of year 2025.

Creation of a VTP

Regulation 715/2009 of the European Parliament and of the Council of 13 July 2009 specifies that ISO's/TSO should have a de-coupled entry-exit system in place. Such system allows network users to book capacity rights independently at entry and exit points.

After the introduction of physical balancing through a Balancing Mechanism, the creation of a VTP seems the next step towards market development. Furthermore, the introduction of entry and exit capacities is further supported by a VTP where network users who have booked entry or exit capacity can sell or buy gas. A VTP is defined as a notional point that offers network users the possibility to bilaterally transfer title of natural gas and/or swap imbalances. Once liquidity and confidence in the market have increased, the aim should be to procure balancing gas through the general wholesale market at the VTP.

Without a VTP, the system cannot facilitate the key functionality of an entry-exit system, i.e. the free exchange of natural gas between different network users within the entry-exit system. Similarly, short-term capacity products at cross-border points are important for connecting markets in neighboring networks (i.e. Azerbaijan). A VTP allows for title transfer of natural gas regardless of the natural gas' location within the system, thereby allowing all market parties flexibly to take positions in the gas market and – if the trade is liquid enough – to balance their positions if need be. The absence of a virtual point limits trade to physical locations and is therefore considered a critical barrier to markets. In addition, the absence of a VTP will complicate it for suppliers to flexibly combine entry and exit capacities and to use the virtual point to exchange gas with other traders. For Georgia, the VTP is a critical element towards natural gas market development and perhaps the way for creating a competitive environment.

¹ Except ones provided under transitory provisions.

For Georgia, the establishment of a VTP is vital to increase liquidity and create competition.

Creation of a Natural Gas Market Operator

A natural gas MO provides various services within the market including settlement services and interactions with market players and other market entities (e.g., ISO, SSO, etc.). According to the Draft Energy Law: “Each natural gas producer, subject to its compliance to paragraph 1 of this Article, shall be entitled to trade in natural gas on the natural gas market of Georgia following its registration by the natural gas market operator as of a natural gas market participant in accordance with the Natural Gas Market Rules.”

MO will be licensed by GNERC. GNERC will approve MO service fees taking into account the annual operational plan and financial plan of the MO. The gas MO can be established within one entity with the electricity MO. The MO will have the role of registrar of all of the contracts for these participants and will have the responsibility to inform the ISO of the aggregate position of all natural gas market participants.

The creation of gas MO will streamline the interaction between gas suppliers and the ISO. This will not only result in lower operating costs but will also make things simpler and more efficient for the shippers who move gas through the transmission system. The ISO will remain responsible for operating and maintaining its transmission network.

Balancing Market

The natural gas balancing market means an organized market for the purchase and sale of natural gas, as needed for balancing of the natural gas system. This stage assumes implementation of a well-functioning balancing market will favor its liquidity and further maturity. For every Balancing Period (daily basis), the natural gas market participants shall balance their quantities of natural gas incoming into the gas transmission system with the ones taken out of the gas transmission system. Where natural gas market participants cause imbalance to the system, they will either buy gas from the ISO or sell gas to the ISO, depending on whether they caused shortage or excess of gas in the Transmission System. The natural gas market participants will either buy the balancing natural gas quantity at a marginal buying price or sell the balancing natural gas quantity at the marginal selling price. Any imbalance amounts exceeding allowed tolerance limits will be subject to the payment of an imbalance payment.

OPTIONAL SCENARIO: IMPLEMENTATION OF THE GAS RELEASE PROGRAM, 2020 – 2025 PERIOD

Gas Release Programs in Europe have been historically introduced to reduce monopoly power of incumbents in the gas sector, usually with a focus on one of the following objectives:

- As a tool to open the natural gas wholesale markets to competition (in past cases such as UK, Spain, Italy);
- As undertakings in mergers or antitrust procedures (in past cases such as France, Germany, Austria).

GRP's have generally been implemented targeting relatively low quantities compared to national consumptions and were implemented for limited periods of time (~ 4-6 years), especially triggered by mergers between main players on the market, with the aim of reducing incumbent's monopoly power. In case of Georgia, the possible execution of the GRP would lead to issues related to the willingness of the supplier (SOCAR) to enter into the program, and in case it does, what criteria would its affiliates have to comply with for participation in the program. Additionally, implementation of GRP requires proper market monitoring tools, establishing a platform where gas will be auctioned, pricing mechanisms, and other related issues.

STAGE 3: IMPLEMENTATION OF A DAY-AHEAD NATURAL GAS MARKET

A vital characteristic of a competitive natural gas market is the existence of a liquid spot market. Essentially, the spot market is the daily market, where the commodity is bought and sold “right now”. Spot markets are the result of the demand for gas-on-gas competitive pricing models and are organized at all major exchanges and hubs.

There are many different products possible in a natural gas exchange, allowing participants to bid for complex profiles of contract to satisfy their needs. However, to avoid risk, it is recommended that in

the first incarnation, trading is kept simple. According to the Energy Law, the MO will be responsible on organization of spot market (Day-Ahead Market), as well as connection and integration with other entities regulated by the natural gas Market Rules.

The implementation of a natural gas spot market in Georgia can be only functional once a number of market players are increased and market is mature. However, it may still remain a challenge given the fact of the relatively small market.

CONCLUSIONS AND RECOMMENDATIONS

- Given the considered infrastructure projects in the next few years that will substantially affect the development of Georgia's natural gas market, the Draft Energy Law along with a mature Natural Gas Market Concept, should be adopted as priorities;
- Establishing GGTC as the ISO?
- Proceed with unbundling natural gas sector entities and develop clear and non-discriminatory rules related to the UGS, including storage tariff methodology, a storage tariffs framework, and entry-exit tariff methodology is crucial to the sector infrastructure development;
- Implementation of a physical Balancing Mechanism will solve current imbalance issues and will increase efficiency;
- The VTP combined with the storage facilities is the path towards a competitive natural gas market for the commercial sector. Both the VTP and the UGS (its commercial segment) could be used by suppliers for managing their trading portfolios, balancing and hedging.

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