

GEORGIA ENERGY POLICY TALKS

Optimizing the Electricity Value Chain (From Production to Consumption)

Topics for Discussion during Energy Policy Talk 1,
Tbilisi February 25, 2016

FOREWORD AND INTRODUCTION

The Georgia Energy Policy Talks are co-hosted by the Ministry of Energy of Georgia and the Delegation of the European Union to Georgia. Services for preparation and implementation of the Georgia Energy Policy Talks are provided by the INOGATE Technical Secretariat project which is funded by the European Commission Directorate-General for Neighbourhood and Enlargement (DG NEAR).

This paper serves as an introduction to the 1st Georgia Energy Policy Talk. It will be distributed to all participants who have registered for participation in advance in order for them to prepare for active participation in the discussions. The paper addresses the main issues that will be covered by the speakers during the Talks. It must not be considered as an exhaustive analysis and presentation of the topics.

The electricity system value chain combines the following system values:

Grid services:

- Energy, system losses;
- Capacity: generation, distribution, transmission, DPV capacity;
- Grid support services: ancillary services, generator imbalances, dispatch, etc.

Financial:

- Market price response.

Security:

- Reliability & resilience.

1. *How are the above values addressed currently?*
2. *What needs to be improved (TSOs/DSOs, market, tariffs, demand curve, peak load reduction, consumers' behaviour, etc.)?*
3. *How will joining the Energy Community help? What are the challenges/obstacles (obligations, specifics of the Georgian case)?*
4. *Involvement of Civil Society Organisations (CSOs) & the private sector.*
5. *Lessons learned from other countries (UA, MD, EU).*

BACKGROUND

Generation

Currently the installed generation capacity in Georgia totals 3700 MW of which 75% (2786 MW) is Hydro Power Plants. The installed capacity of four thermal power plants is 913 MW. In 2014 HPPs accounted for 80% (8.3TWh) of total electricity produced, with TPPs accounting for the remaining 20%. The state-owned Enguri and Vardnili HPPs are the largest HPPs in the country. They account for 38% of total electricity generation. In 2015 231.2 MW capacity combined cycle Thermal Plant in Gardabani was commissioned. The plant efficiency is 1.5 times higher than that of existing thermal plants working on natural gas.

According to various electricity demand scenarios (growth rate 2-5%) by 2020 the consumption will reach 12-14 TWh and existing hydro generation units will not meet the demand. The deficit will be covered by more expensive thermal plans and imports. If no new generation capacities are added to the system, and because of the seasonal nature of hydropower generation, power shortages could occur at least in winter, although power may still be exported during summer months.

According to the Ministry of Energy 22 HPPs with total installed capacity of 1,550 MW are either under construction or at licensing stage and will be in operation by 2020. Hydro generation will increase by 2020 by 848 MW from current 3,000MW.

How the country is going to meet requirements of Directive 2009/72/EC during the construction of new generating capacities?

In addition the Ministry of Energy has signed 72 MoUs with investors for construction of HPPs with the total installed capacity of 2,600 MW. Output at HPPs is seasonal with peaks in summer and falls going into the early winter months. In order to balance deficit during the winter Georgia depends on thermal plants and imports. Since 2012 Georgia has become a net electricity importer after being a net exporter over 2006-2012 which can be explained by increased consumption and insufficient generation. In 2014, Georgia imported 793 GWh, while it exported 545 GWh. As new generation units come into operation Georgia will boost exports during the summer months. Georgia's long-term energy policy goal was 100% reliance on hydropower, making vulnerability of supply an issue. However, this approach was changed with the construction of a new thermal power plant and exploration of the possibilities for use of wind generation.

Transmission

The technical effectiveness of Georgia's power system has improved greatly since the reforms began. The system's rehabilitation combined with improved maintenance noticeably increased the operational capacity of existing plants. Both technical losses in the system and blackouts decreased significantly with the rehabilitation of the transmission network. Electricity-transmission and distribution losses (% of output) in Georgia in 1996 were 29.15, while in 2011 decreased to 11.20. According to GNERC as a result of improvement of distribution network and metering system electricity losses in all distribution networks tend to decrease. In 2014 electricity losses in the JSC "Kakheti Energo Distribution's" network have been 18.25, which is 25.5% less compared to previous year and 27.1% less than in 2012.

According to the GNERC annual report for 2014 actual losses in the Georgian electricity system have been decreased approximately by 32% compared with 2009. Electricity losses in the distribution networks in 2014 have been 5.2% which is 42% less than it was in 2009. Regarding electricity losses in transmission network its indicator has been steady, thus in 2014 a slight (2.1%) increase was observed. This low level of losses was achieved through aggressive rehabilitation and investment efforts that occurred over the past decade, after years of mismanagement and lack of investment had driven transmission losses as high as 16%.

The Georgian National Energy and Water Supply Regulatory Commission approve electricity normative losses, which are calculated using the Rules of Calculation of Electricity Normative Losses (adopted on 30.07.2014) in electricity transmission and distribution networks. Electricity normative losses show allowed outlay of electricity, which appears during electricity transmission and distribution. Electricity normative losses consist of technical losses, own consumption of electricity by substations and commercial losses (set standard by the Commission- no more than 5%). Technical losses appear during transportation of electricity through wires and electrical devices. Technical losses are divided into two groups: no-load losses and load losses. Internationally approved principles of incentive regulation are used for determination of electricity losses, which are based on the principle, that distribution and transmission licensees must reflect actual losses of electricity and their reduction towards normative losses for the next regulated period; this motivates licensees to reduce the actual outlay.

Under the amendments to the “Law of Georgia on Electricity and Natural Gas” adopted in December 2014, Georgian State Electrosystem (GSE) became a Transmission System Operator (TSO) authorized to operate and plan the development of entire transmission grid of Georgia. According to these amendments GSE will operate the entire electricity transmission network and will be responsible for network development planning. GSE is also responsible for day ahead and real-time balancing functions, as well as technical stability and system security.

New tariffs established for transmission and dispatch services enables GSE to operate and maintain the sustainability of the system in a more effective manner; GSE prepared and the Government approved the 10-Year Transmission Grid Development Plan for the period up to 2025 with the focused approach to the current developments in the sector.

On the basis of amendments of December 27, 2013 to the Law of Georgia on Electricity and Natural Gas the Commission was given authority to exercise important functions such as monitoring electricity market, approving grid codes, uniform system of accounting and standard terms of direct agreements on sale of balance electricity, sale of guaranteed capacity, transmission services and dispatch services together with licensing, tariff setting and dispute settlement functions. Grid Code approved by the Commission comprises transmission grid code and distribution grid code and sets procedures for managing transmission and distribution networks and terms, principles and standards for using those networks and determines relations between relevant licensees and users of their service. The Commission has approved standard terms and conditions of the direct agreements “Agreement On Selling Guaranteed Capacity”, “Agreement on Purchase of Guaranteed Capacity”, “Agreement on Electricity (Capacity) Dispatch Services”, “Agreement on Electricity (Capacity) Transmission Services”, “Agreement on Sale of Balance Electricity” and “Agreement on Purchase of Balance Electricity”. The Commission has also drafted and approved new tariff calculation methodology- “Tariff Setting Methodology for Electricity

Distribution, Pass Through and Consumption Tariffs”; “Tariff Setting Methodology for Electricity Generation, Transmission, Dispatch and Electricity Market Operator Service” and. “Regulated Assets Depreciation/Amortization Rates of Utilities under Tariff Regulation”. The Uniform System of Accounting,-developed by the Commission envisages usage of mandatory accounting and reporting system by licensees.

GSE is being responsible for ensuring stability of the Georgian power system, in accordance with the amendments introduced in the Law of Georgia on Electric Energy and Natural Gas, was assigned with the task of “developing the concept for organizing System Services till June 1, 2015; the concept shall describe the full structure of System Services, the purpose of each service, preliminary calculation of the estimated costs of System Services, expected effect, and the step-wise schedule of organization and introduction of the System Services.

The goal of System Services development is strengthening of reliability, stability, power quality and energy independence of the Georgian power system, both in short- and long-term perspective. Besides this: efficiency of power system performance, introduction of modern technologies, utilization of existing communication potential with the view of establishing information exchange with power plants, provision of possibilities for connecting wind and solar power plants to the network, stimulation of optimal performance, network development, technical improvement of the generation sites and utilization of their potential. The process shall be implemented in the most cost-efficient manner and consumers shall be receiving the system services at the lowest possible price.

The need for introduction and development of the System Services is caused by Georgia’s approximation to EU, which was reflected in endorsement of the Association Agreement. By signing this Agreement Georgia committed to adopting a number of legal acts in various fields, including energy. Besides this, the necessity of introduction of the System Services is also conditioned by the requirements of cooperation between ENTSO-E and Georgia, its prospective membership in the Energy Community and the development of the country’s power network in accordance with EU policies and goals.

In line with the requirements of the Third Energy package, System Services shall include a broad range of Transmission Service Operator (TSO) functions, fulfilment of which represents the most significant guarantee of the safe network operation. For instance, under this segment, the possibilities of restarting network operation after disconnection, ensuring appropriate frequency in the network through automated and fastest possible response, ensuring existence of additional power reserves in case of necessity, etc. are being considered.

In accordance with the requirements of EC Directive N2009/72 one of the most important functions of TSO is ensuring access to and functioning of the transmission network, as well as ensuring its safe, reliable, and efficient performance, for which purposes the TSO shall implement all the necessary System Services. At the same time, the TSO shall manage electricity flows in the system, taking into account exchanges with other interconnected systems.

According to the EC Directive 2005/89/EC, TSOs are obliged to ensure appropriate level of reserve of power generation. And last, but not least – it is the TSO that shall ensure the balance between consumption and generation in real time.

The Government of Georgia has already implemented several regulatory / legislative amendments, but reforms are still underway. These include the development of a Transmission Grid Code, the adoption by the Parliament of Georgia of a new Energy Policy, which outlines the process of harmonizing the Georgian energy sector regulation with EU standards and the creation of a competitive energy market and electricity trading mechanism.

Quality of customer service provided by distribution licensees is determined by the Commission according to following indicators: Commercial service quality; and Electricity supply reliability (no interruption of services and supply).

In order to ensure improvement of customer service quality by distribution licensees operating in the electricity sector the Commission has approved Resolution N6 of July 5, 2012 “On approving Commercial Quality Rules for Services Provided by Electricity Distribution Licensees”. This Resolution establishes both rules and criteria of commercial quality requirements, uniform requirements for keeping information by licensees and submitting it to the Commission as well as methods and amounts of compensating for services provided with breach of standards. 170 facts of breach of the abovementioned requirements took place in JSC “Telasi”. For that reason the utility has compensated 138 250 GEL to the customers.

Two indices have been defined for determining the electricity supply reliability):

1. System Average Interruption Duration Index per customer (SAIDI min/customer) and
2. System Average Interruption Frequency Index per customer (SAIFI interruptions/customer).

UNBUNDLING OF TRANSMISSION IN THE ELECTRICITY SECTOR- (WHICH MODEL TO CHOOSE, EXPERIENCE OF OTHER COUNTRIES)

Unbundling Distribution Network

The main objective is that the interests of all stakeholders are observed so to avoid any conflict of interests. There are problems in Georgia in this regard too. “Energo-pro-Georgia” Distribution Company (which supplies electricity to 75% of the Georgian population) owns 1 thermal power plant, 9 medium-size hydro power plants, and two small hydroplants. Besides, it represents foreign investment.

Electricity Trading with Turkey-development of cross border transmission infrastructure and cooperation in the process of becoming an ENTSO-E member

In order to meet requirements for cross-border electricity trading and attraction of investments in this sector, Georgia plans to shift from current bilateral contracts (1 year) to day ahead market (24 hours). The project starts in May 2016 and will last 22 months. The Turkish electricity market is very attractive for Georgia. There is a hourly trading model implemented in the Turkish electricity system.

Open Electricity Market

Wholesale electricity prices are increasing in Georgia. In the first half of 2015 the weighted average balancing electricity price at which ESCO (the market operator) sells electricity reached GEL 0.135/KWh, up by 55% y/y. In the existing market structure, electricity trade is largely conducted via direct contracts. In 2014 direct contracts accounted for 90% of all electricity trade. In a direct contract trading electricity producers sign bilateral contracts with large electricity consumers or distribution companies. Balancing electricity, which is traded via ESCO, accounted for only 10% of the total electricity trading.

Existing HPPs, which generate the cheapest electricity (weighted average tariff of GEL 0.024/KWh), are unable to meet increased demand. Increased demand will therefore need to be covered by imports (GEL 0.15-0.20/KWh), thermal power plants (GEL 0.10-0.12/KWh), or newly built hydropower plants (GEL 0.10-0.15/KWh).

Although the newly built HPPs are the cheapest source of electricity, their prices are still significantly higher than at old HPPs.

Electricity tariffs for HPPs built before 2008 and with installed capacity of over 13MW are regulated. The electricity generated by these HPPs fully satisfies summertime consumption. In the winter, Georgia's electricity generation shortfall is bridged by Thermal Power Plants (TPPs) and imports. Electricity prices for newly built HPPs (built after 2008) and all HPPs with installed capacity below 13MW are fully deregulated. Over the first 10 years of their life, all newly built HPPs are required to sell 20% of their annual output during the winter to ESCO at a pre-agreed price. The remaining 80% can be exported or sold domestically.

Generation companies, distribution companies, and qualified customers are participating in the wholesale trade. Wholesale electricity trade is conducted either by the ESCO according to standard conditions, or by direct contracts among dispatch licensees, sellers, and buyers under standard contract terms provided by the ESCO. The ESCO itself trades about 15% of the wholesale power, and is responsible for balancing electricity trade as well as for the guaranteed capacity.

Generation, supply, transmission, and distribution companies often have the same owners, or actually form part of the same vertically integrated company. As the main form of trade is bilateral contracts buyers often buy electricity from their own generation source.

By 2017, Georgia plans to have an open power retail market. Much needs to be done before this can be accomplished. Major regulatory changes are needed, as well as improved enforcement of existing laws and regulations, and changes in the industry structure.

Without a transparent and independent from political interference regulator, market conditions for true competition will not be established and will not attract investors. The company Inter RAO UES holds shares of transmission, distribution, and generation companies, while JSC Energo-Pro Georgia holds assets of distribution and generation companies and is building a transmission line.

Under the Georgian Electricity Market Model in 2015 planned reforms include creation of a market operator, establishment of day-ahead scheduling, implementing balancing and settlement rules, introducing hourly/daily settlement, unbundling supply and distribution, establishment of competitive trading, introducing electricity traders, and clearing mechanism for the trading.

Increasing role of the regulatory commission in internal market functioning and cross-border trade, is it realistic?

In order to promote competition in the internal market and in accordance with the EC Directive 2009/72/ Georgia plans to start opening of the market and at the beginning of 2017 the market will be open for consumers with a consumption of more than 1 million kWh (currently 3 GWh).

Upgrading distribution network

EC Directive 2009/72/EC on internal market in electricity and protection of consumers, the existence of so called intelligent network and accounting system provides the platform for the upgrading needed to be done. Transmission network in Georgia is being renovated. However, complete modernization requires huge investments. One of the prerequisites for transferring to the retail market is the introduction of so called “smart” meters on the wholesale level.

Energy Community and Association Agreement

On 27th June 2014 Georgia signed the Association Agreement with the European Union. This agreement is a framework for collaboration between two parties, and introduces the Deep and Comprehensive Free Trade Area (DCFTA), a preferential trade regime which establishes a free-trade area between the EU and Georgia. The DCFTA also identifies the main EU legislative acts which will need to be adopted by Georgia to ensure the alignment of both markets and to facilitate trade between them.

Georgia Joining the Energy Community

Georgia started negotiations for joining the Energy Community in February 2014. Joining the Energy Community requires, among others, the candidate to implement the European Acquis Communautaire in the energy sector, among them the “Third Energy Package” which sets the legal background for the functioning of the integrated, competitive electricity and gas markets. Having this in mind, experience of the EU member states, especially the new ones, having similar recent economic history with Georgia, may be very interesting and important for Georgia. In particular the Energy Community accession and introduction of appropriate legal framework in Georgia would enhance:

- Creation of a modern, competitive and sustainable energy system;
- Customers rights increased (independent and strong regulatory authority, transparent and cost-based tariffs, unbundling and networks accessibility);
- Investments in the energy system from European and other investors, including the European;
- Investment Bank (creation of employment opportunities, especially in renewable energy and energy efficiency sectors);
- Play an important role in implementation of the Association Agreement in the long-term and contribute to Georgia’s integration in pan-European energy market.

The comments below to this theme paper were provided by Mr. Janez Kopač, Director of the Energy Community Secretariat.

In general, participation in the Energy Community reflects primarily in:

1. Access to dedicated support for transposition and efficient application of the EU legal framework applicable in the domain of energy;
2. Acquiring a clear and transparent yardstick for the progress and effectiveness of the applied reforms;
3. A platform for coordination and cooperation in energy policies, integration of energy markets and resolving mutual discrepancies, and
4. Promotion of a country's progress in front of the investor's community, traders, IFIs, international and professional associations, diplomatic and judicial environment, the civil society and broader public.

“Related to electricity generation, the participation in the Energy Community could promote the potentials of the country, benchmark and rebrand the legal and regulatory environment for the interest of the potential investors, provide benchmarks for sustainable policies and best practices in planning of new projects.

With respect to reforms in transmission, distribution and market operation the participation in the Energy Community provides for substantial advantages, including: (1) assistance in transposition and assessment of compliance with the *acquis* for primary and secondary acts, (2) coordination and assistance in the process of development of the electricity market platform, (3) support to GNERC for compliance of its legal enforcement (powers, independence) and coordination with other regulatory authorities, (4) coordination in the cooperation with ENTSO-E, ACER and other EU associations.

Energy Community is continuously working in support of such processes. Participation could provide for review and application of best practices, benchmarking standards and promotion of applicable measures, as well as logistic support in the development of policies and criteria for customer protection.”

Civil Society Organisations (CSOs) & Private Sector

In Georgia there are no energy research institutes and civil society is not sufficiently informed about the development in the sector. Civil society advocacy regarding access to the Energy Community or development of energy strategy has been limited. There are no consumer associations to debate on energy security or energy tariffs. Georgia has an energy ombudsman housed within the energy regulator and its independence is doubtful. There is low level of public awareness. In order to enhance relations with media and the non-governmental sector and to give information on the Commission's activities. A Media club has however been founded and three projects have been implemented within its framework.

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