Lithuanian Electricity Market Development and Implementation Plan

Last year Kaunas University of Technology assessed Lithuanian electricity system's adequacy for the next decade (2019-2030) by using the probabilistic method. The assessment compared supply and demand adequacy forecasts with a reliability standard (Loss of Load Expectation (LOLE)). Lithuanian electricity market will face substantial mothballing and phasing-out of old inefficient power units by 2025. The study results showed that, in order to maintain reliable electricity system's operation and security of supply, it is necessary to make sure that, in addition to the existing capacities, by 2025 new reliable electricity sources will appear in Lithuania.

Lithuanian electricity system's adequacy concerns are unlikely to be solved by the market only. The Lithuanian electricity market is fully operational – all commercial consumers pay for electricity at market prices and household consumers have the right to choose an independent electricity supplier and purchase electricity in the market, there are necessary conditions in place for ability to provide DSR services in the market, there are no unreasonable price limitations or barriers in the market. However, still Lithuanian electricity market is suffering from inability to send adequate investment signals.

Thus, in order to improve the investment signals sent by the Lithuanian market and to enhance the electricity market as it is stated in Article 20(3) of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity, hereinafter Regulation (EU) 2019/943, Lithuania is considering actions, listed in the last section of this implementation plan, in order to accomplish electricity market reforms in Lithuania. Moreover, to eliminate residual resource adequacy concerns remaining while implementing measures foreseen in implementation plan, Lithuania is planning to introduce capacity mechanism pursuant to the Regulation (EU) 2019/943.

Current situation

Prices for household electricity consumers:

In Baltic Energy Market Interconnection Plan (BEMIP) Action Plan (approved in 2015) it is set that there should be a gradual phase-out of regulated prices for households and set target-deadline – national electricity price regulations mechanisms abolished by 2020. Lithuania supports the gradual phase-out of regulated electricity prices for households and currently is preparing necessary legislation to set measures for its effective implementation. It should be noted that by introducing this change, Lithuania seeks to achieve full de-regulation of electricity prices for households by terminating regulation of electricity supply to household customers (except for vulnerable consumers that have not chosen independent supplier). The aim is to enable all consumers to choose the desired electricity supplier and to ensure lower electricity prices and better services for customers.

From 2013 all commercial users pay for electricity at market prices and, when necessary, a guarantee supply for a maximum period of 6 months is safeguarded for these customers. The household consumers also have the right to choose an independent electricity supplier and purchase electricity in the market or under bilateral contracts. In 2018, consumption of the household consumers who buy electricity at public prices accounted for 2.96 TWh and was slightly higher compared to 2017 (2.71 TWh). Currently household consumers who are buying electricity in the market at the agreed prices amount only a small part of the whole consumers.

Ministry of Energy has initiated the preparation of the study on Liberalization of electricity supply for households. The study has been prepared by independent consultants at the end of 2017. Based on the Study results, the consultation document on Full liberalization of the retail electricity supply market for households ("white paper") has been prepared. The public consultation with the market participants on the consultation document took place from May to July 2018.

Based on the Study results and the results from public consultation with the market, Lithuania is preparing further arrangements for a full de-regulation of the retail electricity prices for households. Furthermore, in order to smoothly reach the effective retail electricity supply market, Lithuania considers that there is a need to introduce certain technical conditions: to roll-out electricity smart meters, create a centralized electricity consumption data collection and sharing database, to standardize process for independent supplier's switching, to standardize provisions of invoices and price offers, and to introduce changes of legal acts.

Amendments of the Electricity Law regarding to the gradual phasing out of regulated retail prices for households adopted by the Parliament and entered into force from 1 June 2020.

It is foreseen that the public supply of electricity for regulated prices shall be terminated to the following consumers in three stages within the following timeline:

1) from 1 January 2021 – to all household consumers whose actual electricity consumption on the site from 1 June 2019 to 31 May 2020 is not less than 5 000 kWh, also for household consumers whose objects are connected to medium-voltage electricity networks, except for certain exclusive group of consumers (as prescribed by the Electricity Law (i.e. gardeners, associations of owners of individual car garages, associations of owners of dormitory type multi-apartment residential buildings) and vulnerable consumers;

2) from 1 January 2022 – to all household consumers whose actual electricity consumption on the site from 1 June 2020 to 31 May 2021 is not less than 1 000 kWh except for exclusive group of consumers (as prescribed by the Electricity Law (i.e. gardeners, associations of owners of individual car garages, associations of owners of dormitory type multi-apartment residential buildings) and vulnerable consumers;

3) from 1 January 2023 – to all other household consumers to whom electricity is supplied for the regulated public price of electricity. This will also apply for the vulnerable consumers who will have to select an independent supplier as well.

The table below provides information on how phase out stages are defined by the groups of consumers depending on their yearly consumption rates based on 2019 data (with some exceptions, i.e. vulnerable consumers).

Stage	Start data	Annual consumption (by objects), kWh	Total Market consumption, %	Objects, pcs.	Objects, %
I stage	01.01.2021	>5000	27	90 000	5
II stage	01.01.2022	1000-5000	55	720 000	43
III stage	01.01.2023	<1000	18	870 000	52
			TOTAL:	1 680 000*	

*Vulnerable consumers represent about 6% (101 thousands) of all household consumers

Stages of de-regulation of the retail electricity supply market for households have been selected according to the least vulnerable groups of electricity consumers, taking into account that certain amount of time is necessary for the market mechanisms to evolve with regard to the pricing, effective consumers and suppliers interaction, etc. The first and second phase of de-regulation shall cover only those electricity consumers with the highest annual electricity consumption, who should be most interested and capable in finding an alternative electricity supplier that is able to offer the most competitive electricity price to such a consumer because of their high annual electricity consumption. It is expected that at the third stage when electricity supply for regulated price will be terminated to all the rest of the consumers, the market will be developed and supply prices will be already settled.

It is currently foreseen that after the contracts with public supplier will be phased-out and, if a consumer will not have a new contract with the independent supplier until the end of the phasing out date, the service of warranty supply will be provided. However, consumers with warranty supply shall be subject to the supply price, which shall be above costs incurred by the warranty supplier and calculated by applying the coefficient of not less than 1.25 to the average price of the power exchange formed in the Lithuanian price area during the previous reporting month and also taking into account the prices set by other suppliers in the market as the benchmark. Additionally, it will be ensured that after the six months period if the consumer will further stay with the incumbent supplier, the supplier will be free to set its price in relation to such consumer (except vulnerable consumers).

Whereas, it is foreseen that the warranty supply price for vulnerable consumers shall be calculated as the sum of the average price of the electricity exchange formed in the Lithuanian price area during the previous reporting month and the price of the warranty supply service for vulnerable consumers, which shall be determined by the National Regulatory Authority (National Energy Regulatory Council).

National Regulatory Authority currently sets the prices for public supply service. The principle of setting the prices is based on costs and rate of return (calculated as WACC). In order to fully transpose Electricity Directive Article 5(7)(c) when setting the price for public supply service price calculations should be made based on costs incurred by the public supplier and also taking into account as a benchmark the prices set by other suppliers in the market. Setting price for public supply service similar to prices set by independent suppliers is one of the means to create a level playing field encouraging consumers to look for alternatives, i.e. enabling effective competition, – specifically – other suppliers services and flexible tariff plans. At the same time through regulatory and competition authorities fair competition will be ensured. It shall be noted that consumers currently purchasing electricity for regulated prices are free to choose the independent supplier regardless of the foreseen gradual phasing out of regulated retail prices for households. Since the prices of electricity supply of independent suppliers are unregulated, there are no limits in regulatory framework for suppliers to offer and for consumers to enter into a dynamic electricity price contracts (however, the actual availability of such contracts is also subject to the availability of smart metering). In order to ensure full compliance with the recast Electricity Directive, national legislation will be reviewed in the course of transposition of the Directive by 31st December 2020.

It should be noted that the implementation of smart electricity meters is an integral part of the electricity market liberalization process. However, the implementation of the phasing out of retail price regulation will not be strictly bound with the introduction of smart meters. These two processes

are planned to be performed in parallel. However, in case of delays in smart metering deployment the de-regulation of electricity prices would not be postponed.

It is worth to mention that Lithuania is planning to establish the supplier-centric market model and data hub in 2020-2023, to be able to solve issues related to information exchange and billing. Households will have one actual contract with the supplier ("wholesale model"). Between the supplier and the DSO there is a standard contract. Data hub implementation together with new retail market design will help to prepare for deregulation in many ways: enable single contract structure (one process with supplier), mandatory combined billing, supplier primary contact for all issues related to contracts and invoicing, customer access to own consumption data and third party (supplier) access to data, if granted by customer. Lithuania is also considering to review the possible additional measures (if any) to accompany the price deregulation process.

Policies and plans regarding self-consumption:

According to the National Energy Independence Strategy (endorsed by the Parliament in June 2018) the share of renewable energy in electricity sector will be 45 % by 2030. One of the policy directions – increasing the share of renewable decentralised prosumers; it is foreseen to reach 2 % prosumers comparing to the number of all electricity consumers by 2020, 30 % by 2030 and 50 % by 2050.

Prosumer in Lithuania means a natural or legal person who develops a renewable energy power plant, generates electricity for its own use and is enabled to "store" unused electricity into the grid and recover it from the grid, when its needed (from the 1st of April till the 31st of March next year). For the energy amount "stored" in the grid, the "grid fee" should be paid reflecting grid cost.

The "grid fee" could be paid in four flexible ways according to energy user pattern:

- per kilowatt-hour;
- monthly per kilowatt;
- binary – monthly plus per kilowatt-hour;
- payment with electricity (barter).

This net metering principle has been launched in 2015 and since then, it has been gradually improved amending regulation, removing administrative barriers (permissions and other unnecessary documentation) and allocating investment support.

The very late amendments of the Law on Renewables enable renewable prosumers to use electricity for their own needs at different locations, using net metering principle – production and consumption sites can be different. Also new amendments provide opportunity to have a part of power plant in a power plant farm (e.g. 3kW solar panel in bigger solar farm). Such improvements should induce prosumers in multi apartment buildings.

Smart meters roll-out in electricity sector:

In the National Energy Independence Strategy there are set main directions and tasks for achieving the electricity objectives. It is envisaged to roll-out the electricity smart meters by 2023.

As it is stated above it is foreseen that already from 1st January 2023 all household consumers will be de-regulated, including vulnerable consumers. It should be noted that the implementation of smart electricity meters is an integral part of the full de-regulation of the retail electricity supply market for household customers. However, the implementation of the phasing out of retail price regulation is not

strictly bound with the introduction of smart meters. These two processes are performed in parallel. Delays in smart metering deployment will not affect deregulation – deregulated groups of users will be able to use all common benefits of deregulation and smart metering after smart meters being installed. The end-date for regulated retail prices (1st January 2023) will not change in case of delays of introduction of smart meters.

The Distribution System Operator (ESO) has conducted smart metering deployment cost benefit analysis (CBA) where 4 alternatives of smart meter deployment were assessed: (I) for 100% commercial and household consumers through 4 years period, (II) for 80% of commercial and household consumers through 4 years period, (III) for 100% commercial and household consumers through 10 years period and (IV) for all commercial and household consumers who consume more than 1000 kWh per year through 4 years period.

Currently, results of the CBA and the investments needed for roll-out of electricity smart meters are discussed with National Regulatory Authority. The net CBA result of the IV's alternative revealed being the most beneficial and it was submitted to National Regulating Authority for endorsement. Therefore, ESO is planning to deploy smart meters from 2020 to the end of 2023 for household consumers who consume more than 1000 kWh per year. Thus, it would be installed smart meters to customers, that cover around 90 percent of all electricity consumed, already in 2023.

It is not planned to systematically deploy smart meters for customers consuming less than 1000 kWh per year till the end of 2023. All the remaining consumers will be provided with the smart meters in the later phase, beginning from 2024. However, according to the recast Electricity Directive Article 21 such customers may be entitled with smart meter on request, while bearing the associated costs.

It is worth to mention that all equipment for smart metering including and electricity metering will meet with requirements and regulation of local and European norms and laws. This principle is established in ToR of smart meters in smart metering procurement process. Functionalities of smart metering solution in Lithuania will be implemented and launched in iterations. There are foreseen two major stages: implementation of basic Smart Metering Information System functionality and implementation of full functionality and integrations with legacy systems. It is expected that full functionality will be deployed no later than end of the 2023.

Basic system functionality is needed for mass roll-out of smart meters and will cover:

- Plug&Play functionality to automate meters deployment;
- Data Collection in PUSH and PULL methods;
- remote parametrisation / firmware upgrade;
- operational dashboards for data collection, events and communication;
- data aggregation, validation and preparation for Billing (meter-to-cash process).

Full system functionality will cover all other features like:

- remote power connect/disconnect;
- collection of Last Gasp (power outage notifications) events to DMS;
- complex event processing;
- consumption data visualisation in consumer portal;
- metering point information to call centre;
- low voltage network visualisation by metering point for operational use;

- automated processes for consumer move-in/ move-out, parameterisation and workforce orders creation;
- generation of needed reports and analytics.

According to the provisions of Article 20 of the Directive availability of validated consumption data, captured in 15 minutes intervals, for the consumers will be ensured via consumer portal and updated at least once per day. In addition, metering time resolution is aligned with the imbalance settlement period in Lithuanian market which will be shifted from hourly to 15 minutes interval in upcoming years. Also, integrations with data collection and sharing platform (Data Hub) through which data will be available for market processes are foreseen. With regards to the provision for near real-time data all smart meter will have DSMR P1 ports which will enable consumption data provision to the devices of consumers and (or) third parties designated by the consumer if needed.

DSR participation in electricity markets:

Currently, DSR services can be provided by consumers in a wholesale market (day ahead and intraday). Likewise, consumers are able to provide services from a variety of standard products existing in balancing and ancillary service markets. Consumers with flexibility capabilities in wholesale day-ahead market can use products to reduce consumption if the price reaches certain threshold limits (e.g. Nord Pool – flexi orders). While in intraday market consumers can adjust their positions using regular bids by selling/buying energy against all other market participants. In balancing and ancillary services markets demand-side response service providers are treated in the same way as other service providers. Therefore, before providing any demand-response related services, the provider must follow standard rules and acquire applicable licenses. Conditions for entering balancing market is structured in a non-discriminatory manner where legal entity must meet standard requirements and have technical capabilities specified in balancing products. The obligations to be met apply to both generation and consumption modes in accordance with the same balancing products specifications. Demand-side response can be represented individually by large consumers, while aggregation of small consumers can only be performed within own Balance responsible party's portfolio limiting aggregator's potential resource pool. Established concept of the market design foresees independent aggregator as a separate entity and enable to pool flexibility resources without permission of the consumer's suppliers and its energy sourcing and provides mechanism for financial remuneration to independent aggregator for provided flexibility services. Lithuania is also considering to re-examine all possible measures in order to increase the deployment of price-based demand response.

Price limits:

Price cap for day-ahead market is 3000 EUR/MWh which is in line with the ACER decision on Harmonised maximum and minimum clearing prices for single day-ahead coupling in accordance with Article 41(1) of CACM Regulation.

Price cap for intra-day market is 9999 EUR/MWh which is in line with the ACER decision on Harmonised maximum and minimum clearing prices for single intraday coupling in accordance with Article 54(1) of CACM Regulation.

Price cap for mFRR balancing energy market is 5000 EUR/MWh pursuant to national terms and conditions for Balance service providers as defined in Baltic balancing market rules applied in

Estonia, Latvia and Lithuania. This limit was introduced taking into account principles in the Nordic region, therefore today same mFRR balancing energy price limits are applied in the Baltic and Nordic areas. Maximum price for mFRR balancing energy market since the start of Baltic balancing market was 345 EUR/MWh.

Considering implementation of Electricity Balancing guideline (EBGL) and introduction of European standard mFRR balancing energy products, Baltic TSOs considers removal of maximum mFRR balancing energy price limit. Thus, Baltic Balancing service providers could compete with European BSPs without predefined limits for mFRR balancing energy prices.

Removal of maximum mFRR balancing energy price shall be performed in coordinated manner between Baltic countries TSOs and could be expected until 2022-2023.

Imbalance settlement prices and administrative balancing shortage prices:

Imbalance settlement is harmonized in the Baltic region starting from 1 of January 2018. Imbalance settlement includes single portfolio and single pricing model with marginal control energy price in accordance with Electricity Balancing Guideline (EBGL). Planned amendments of the imbalance settlement are related to implementation of 15 min imbalance settlement period according to EBGL requirements and will be implemented in a coordinated manner in Baltic countries in 2021. Additional changes of imbalance settlement model are foreseen in respect of implementation of aFRR balancing energy market until 2025 and change of TSO financial neutrality mechanism in respect of TSO-TSO settlement mechanisms in Continental Europe due to Baltic countries synchronization with Continental Europe until 2025.

During preparation for synchronization with Continental Europe period measures for fulfilment of frequency quality requirements for Lithuania and Baltic balance (ACE) control will be introduced to comply with frequency control quality requirements as required by Art. 131 of System Operation Guideline (SOGL). In order to support the fulfilment of frequency control quality requirements it is foreseen that additional incentives could be foreseen in the imbalance pricing to ensure right incentives for BRPs to keep the balance.

Following aspects can be considered:

- Shortage pricing function taking into account the level of activated balancing reserves for balancing.
- Special provisions in case of disconnection of consumption due to frequency and balance control where determination of final imbalance price should include value of the lost load (VoLL).

Detailed imbalance pricing and settlement model will be developed considering previously mentioned features and consulted with the stakeholders. New imbalance pricing and settlement methodology which could include scarcity mechanism is expected to be implemented until 2025.

Shortage pricing function is not directly related to synchronization with Continental Europe, but it is considered as matter of consequence of this process. Main principle of shortage pricing is to identify moments when shortage of volume of reserve capacity occurs and to generate price signals and incentives for market participants. Currently in Lithuania, as well as in other Baltic countries, balancing services are ordered only to eliminate emergency situations while for control of balancing

deviations balancing energy bids are used. The basic preconditions to introduce shortage pricing are established balancing market processes (FCR, mFRR and aFRR) and functional balancing markets. Established balancing market processes would enable TSO`s to control balancing deviations by using available balancing capacities without any exceptions. Thereby it would be possible objectively assess whether all balancing capacities are used up and shortage pricing principles must be actuated. Balancing market processes (FCR, mFRR and aFRR) and balancing capacities are planned to be implemented gradually until 2025 therefore shortage pricing is also planned to be introduced until 2025.

FCR balancing capacity market:

Due to Baltic countries synchronization with Continental Europe proper amount of FCR reserve capacity within area of Lithuania is required to be assured. It is expected that FCR capacity market should be established following the requirements in EBGL and regulation on internal market for electricity. It is foreseen that Lithuanian FCR capacity market should be designed taking into account best existing practices in Europe, in particular, Continental Europe FCR cooperation which includes cross zonal exchange of FCR.

Considering that currently there is no operational FCR capacity market in Lithuania, the primary objective, in order to fulfil the requirements for synchronization with Continental Europe, for Lithuanian FCR capacity market is to ensure that SOGL requirement to maintain required FCR volume is met.

Participation in the Continental Europe FCR cooperation requires to have common cross zonal capacity border with neighbouring country (in this case Poland) which is participating in the FCR cooperation. As soon as there will be neighbouring country with operation of FCR cooperation, possibilities for Lithuania joining the cooperation should be evaluated.

Joining the Continental Europe FCR cooperation or creation of alternative regional FCR cooperation platform should be further analysed while evaluating the regulatory framework in different countries in order to ensure non-discriminatory conditions and equal regulatory aspects for BSPs to participate in regional FCR capacity market.

mFRR balancing energy market:

Lithuanian TSO, together with Baltic TSOs, participates in the implementation project of EU platform for mFRR – MARI (Article 20 of EBGL). Platform should be implemented and made operational 30 months after approval of implementation framework. Lithuanian TSO in cooperation with Baltic TSOs develops the local implementation roadmap which shall include changes to the current balancing market with the objective to use EU platform mFRR – MARI for activation of mFRR balancing energy from the date when the future EU platform mFRR becomes operational.

Foreseen roadmap for local implementation of EU platform for mFRR – MARI:

- Proposal for Balancing market and imbalance settlement rules provided for public consultation until 2020 Q2.
- Balancing market and imbalance settlement rules are finalized until 2020 Q4.
- Amendments to terms and conditions for BRPs and BRPs until 2021 Q4.
- Technical implementation and testing 2021-2022.

- Go-live at the date when EU platform for mFRR becomes operational 2022.

aFRR balancing energy market:

Baltic countries synchronization with Continental Europe requires creation of aFRR control process and aFRR balancing energy market. It is foreseen that aFRR balancing energy market shall be established according to requirements of future EU platform for aFRR – Picasso – (Article 21 of EBGL). This platform should be implemented and made operational 30 months after approval of implementation framework for EU platform aFRR Picasso. The estimated go-live date could be in 2023.

Lithuanian TSO in cooperation with Baltic TSOs is developing the local implementation roadmap which shall include creation of aFRR balancing energy market with the objective to use EU platform aFRR until the synchronization of Baltic states with Continental Europe.

Foreseen roadmap for implementation of EU platform for aFRR – Picasso:

- aFRR balancing energy market concept provided for public consultation until 2020 Q2.
- aFRR balancing energy market concept finalized until 2020 Q4.
- aFRR balancing market rules provided for public consultation until 2020 Q1.
- aFRR balancing energy market rules finalized until 2021 Q3.
- Amendments to terms and conditions for BRPs and BRPs until 2022 Q4.
- Technical implementation and testing 2022-2024.
- Go-live until 2025.

Synchronization with the Continental European Networks:

Political Roadmap implementing the synchronization of the Baltic States' electricity networks with the Continental European Network via Poland was signed by President of the European Commission, together with President of Lithuania and Prime Ministers of Estonia, Poland and Latvia on 20th June 2019 (https://europa.eu/rapid/press-release_IP-19-3337_en.htm).

In this document all sides agreed inter alia to mandate Baltic States‘ system operators – with assistance of the European Commission and ENTSO-E – to aim at finalizing the technical de-synchronization agreement with Russian and Belorussian system operators, and identifying required measures, if any, to ensure the continued security of the Kaliningrad region electricity system and necessary system services, in a scenario of no cross-border transmission capacity available for trade flows after the de-synchronization process, as already officially communicated by the Baltic TSOs to the Russian and Belorussian system operators in March 2019. This means that no imports of electricity from Russia and Belorussia into Baltic electricity market are foreseen after the Baltic States grids synchronization with Continental European Networks.

Planned measures to improve the electricity market functioning in Lithuania

In this respect, Lithuania is making the following commitments with regard to the electricity market related measures implementation in Lithuania, in order to improve the investment signals sent by the Lithuanian market:

a) Any strategic change in the energy sector should be made in order to ensure maximum assistance, to the consumers in a de-regulated market. In this context, both the de-regulation

of the retail electricity supply market and the implementation of smart meters program related to this process should be carried out in synchronized phases, primarily focusing on the most active segment of electricity consumers, i.e. consumers consuming electricity at least 1000 kWh per year and then to other electricity consumers.

b) As of 1 June 2020, Lithuania introduced legal changes in order to enable staged full de-regulation of electricity supply for households. Thus, it is foreseen that the public supply of electricity for regulated prices shall be terminated to the following consumers in three stages within the following timeline: 1) from 1 January 2021 – to all household consumers whose actual electricity consumption on the site from 1 June 2019 to 31 May 2020 is not less than 5 000 kWh, also for household consumers whose objects are connected to medium-voltage electricity networks except for certain exclusive group of consumers (as prescribed by the Electricity Law) and for vulnerable consumers; 2) from 1 January 2022 – to all household consumers whose actual electricity consumption on the site from 1 June 2020 to 31 May 2021 is not less than 1 000 kWh except for certain exclusive group of consumers (as prescribed by the Electricity Law) and vulnerable consumers; 3) from 1 January 2023 – to all other household consumers to whom electricity is supplied for the regulated public price of electricity. Full market opening will activate a competition in electricity market and thus, more values will be created for the end customer who will benefit by having a fair electricity price, new products and services.

   It is foreseen that after the contracts with public supplier will be phased-out and, if a consumer will not have a new contract with the independent supplier until the end of the phasing out date, the service of warranty supply by the distribution system operator will be provided. However, all consumers with warranty supply shall be subject to the supply price, which shall be calculated by applying the coefficient of 1.25 to the average price of the power exchange formed in the Lithuanian price area during the previous reporting month.

   Additionally, it will be ensured that after the six months period if the consumer will further stay with this incumbent supplier, the supplier will be free to set its price in relation to such consumer (except vulnerable consumers).

c) A closely linked part of the full de-regulation of the retail electricity supply market for household customers is the implementation of smart electricity meters. Lithuania is planning that roll-out of electricity smart meters will be implemented in phases, starting with the most energy-consuming customers – all commercial and household consumers who consume more than 1000 kWh per year. By the end of 2023 smart meters to the most energy consuming electricity customers, that cover around 90 percent of all electricity consumed, will be installed. In the later phase starting from 2024, all the consumers will be provided with the smart meters.

d) In order to enable electricity consumers to be active and well-informed market participants, to enable independent electricity suppliers to offer new products and services for the consumers and thus foster the competition between the independent electricity suppliers, Lithuania is planning to create and implement a centralized electricity consumption data collection and sharing platform (Data Hub) for energy market participants. In the first stage, the objective is to prepare the data sharing standard and to introduce it by modifying current IT systems by the end of 2020. It was decided to develop basic Data Hub features at this stage. The second stage, to establish full scope data sharing platform until the end of 2023.

e) By 1 January 2021, a separate independent aggregator role will be introduced, meaning that they will be eligible to participate in the wholesale and balancing market, and/ or ancillary

services, among other existing market participants. Instead of current limits (a single supplier or individual consumer) for aggregation portfolios, a separate independent aggregation will allow aggregators to expand their balancing portfolios and aggregate consumers not be limited to a single supplier's perimeter.

f) As of 1 January 2021, Lithuania will introduce amendments of the imbalance settlement related to implementation of 15 min imbalance settlement period according to EBGL requirements. Amendments will be implemented in a coordinated manner in Baltic countries.
g) By 1 January 2025, Lithuania will introduce additional changes of imbalance settlement model in respect of implementation of aFRR balancing energy market and change of TSO financial neutrality mechanism in respect of TSO-TSO settlement mechanisms in Continental Europe due to Baltic countries synchronization with Continental Europe. Planned changes include changes in respect of inclusion of costs and income from exchange of aFRR balancing energy and unintentional power exchange on synchronous profile with Continental Europe. As required by EBGL Art. 55 imbalance price for negative imbalance shall be not less than weighted average price for positive activated balancing energy from FRR and RR.
h) Lithuania commits to apply no price caps other than the technical price limits as determined according to Article 30(2) EBGL, at the latest by the time of Lithuania's participation in the future EU platform for mFRR.
i) Lithuania commits to participating in the future EU platform for mFRR at the date of the platform becomes operational.
j) Lithuania commits to take necessary steps to introduce the scarcity pricing function in common Baltic Balancing market as soon as possible but no later than Lithuania's participation in the EU platform for mFRR. Moreover, Lithuania commits to evaluate the possibilities to apply scarcity pricing function not only to balancing responsible parties but also to balancing supplier parties and commits to evaluate the possibilities to increase balancing energy prices to the Value of Lost Load when the system runs out of reserves.
k) Lithuania commits to participating in the future EU platform for aFRR at the date of synchronization with Continental Europe at the latest.
l) Lithuania commits to participating in the future EU platform for imbalance netting at the date of synchronization with Continental Europe at the latest.
m) Lithuania commits to consider possibilities for participation in initiatives for the joint procurement of FCR resources as soon as there will be neighbouring country with existing FCR cooperation.
n) Lithuania commits together with the Baltic TSOs to establish the Load Frequency Control (LFC) Block in Baltic region at the latest by the date of synchronization with Continental Europe. Moreover, Lithuania commits to take necessary steps to enter into FRR exchange and sharing agreement with TSOs of neighbouring LFC Blocks.
o) Lithuania commits to remove peak load reserve from the market no later than the start of the main capacity mechanism auction.
p) By 1 July 2022, Lithuania commits to strive for establishing a regional coordination centre in accordance with Article 34 to 47 of the Electricity Regulation (EU) 2019/943.
q) Lithuania commits to timely communicate to market participants on evolution of future interconnection capacity as soon as decisions on such development would be taken.