TECHNICAL SPECIFICATION

1. CONCEPTS AND ABBREVIATIONS

1.1. **Buyer** – UAB „Ignitis grupės paslaugų centras“.

1.2. **Supplier** – an economic entity who is a natural person, private or public legal entity, another organisation or division thereof or a group of such persons, whom the Buyer concludes the Contract.

1.3. **Contract** – The agreement concluded between the Supplier and the Buyer regarding the object of the purchase.

1.4. **Software** – Energy market modelling and simulation software PLEXOS.

1.5. **Goods** – Energy market modelling and simulation software PLEXOS and the initial electrical system data set.

1.6. **User of goods** - An employee of the Buyer or authorized person of Buyer who works with the Software.

2. PURCHASE OBJECT

2.1. Energy market modelling and simulation software PLEXOS license and the initial electrical system data set subscription.

3. SCOPE OF THE OBJECT OF PROCUREMENT

3.1. The quantities of Goods are presented in Table No. 1:

Table No. 1

Seq. No.	Object of procurement	Quantity, set	I (first) stage	II (second) stage
1	Energy market modelling and simulation software PLEXOS license and the initial electrical system data set subscription	1	12 (twelve) months from the term set in 6.1 clause of the Technical specification	12 (twelve) months from I (first) stage ending date

4. PLACE OF DELIVERY OF CONTRACTUAL OBLIGATIONS

4.1. Software license activation keys/codes and the initial data set of the electrical system must be provided remotely no later than 1 (one) working day and installed on the computer system of the User of goods no longer than 7 (seven) working days after signing the Contract.

5. REQUIREMENTS FOR PROCUREMENT OBJECT

5.1. Description of the current situation

5.1.1. The Ignitis group of companies (hereinafter - the Group) has a necessity for electricity market modeling and simulation tool, in which the User of goods could change all (or some) parameters of the electricity system in case of need. The Group uses different electricity market forecasting tools that provide electricity market prices for a defined period of time. Available forecasting tools are not flexible and do not have the ability to change the electrical system parameters according to the latest market situation.

5.1.2. The Group participates in the electricity and gas markets, so a Software is needed allowing to analyze the electricity and gas markets and perform simulations for the combined scenario of the electricity and gas market (Sector-coupling).

5.1.3. The Group uses the business data analysis tool PowerBI, which is why it is necessary to integrate the Goods with this tool in order to share the results of simulations and analyzes in the Group.

5.2. Description of the procurement object

5.2.1. The energy market modelling and simulation software PLEXOS must meet the following conditions:

5.2.1.1. The Software must work properly on the Microsoft Windows platform.

5.2.1.2. The Software must have an ability to analyze the listed market sectors - electricity and gas - and perform a joint optimization solution at the same time, in one market simulation (sector-coupling).
5.2.1.3. The structure of the Software must be object-oriented, allowing the User of goods to create new optimization constraints or variables, if they are not in the Software's constraints and variables library.
5.2.1.4. The Software must be based on the mathematical principles of optimization calculation (unit-commitment, Mixed Integer Programming).
5.2.1.5. The Software must apply deterministic and/or stochastic calculation principles for the modeling of renewable generation sources.
5.2.1.6. The Software must be able to generate profiles of wind, solar generation and energy demand using a Monte Carlo stochastic method enabling generation or demand uncertainty estimation and produce results of aggregated profiles.
5.2.1.7. The Software must support market area, regional and nodal calculations and must not be limited in its complexity (e.g. the electrical system can be modeled down to low voltage levels).
5.2.1.8. The Software must model the Elspot and balancing electricity market mechanisms.
5.2.1.9. The Software must simulate short-term and long-term scenarios and not functionally limit the time range of the simulation. Regardless of the time range of the simulated scenario, the PI must use a single optimization solution that does not require data set adaptation.
5.2.1.10. The size of the output set of the Software simulation should not be limited.
5.2.1.11. The Software must allow stochasticity to be applied to every simulation variable that has uncertainty.
5.2.1.12. The Software has to model not only classical (thermal, nuclear power plants, etc.) and renewable (wind, solar power) generation sources, but also new technologies, including but not limited to batteries, electric vehicle grid, hydrogen production by electrolysis.
5.2.1.13. The Software must identify planned and unplanned power plant maintenance periods based on historical repair schedules or use Monte Carlo, stochastic methods.
5.2.1.14. The Software must support hourly, sub-hourly resolution of the results, and enable the User of goods to change the resolution of the results depending on the time range of the simulation.
5.2.1.15. Fuel modeling is performed using fuel contracts and fuel economic, technical and availability constraints. For power plants using two types of fuel, it must be possible to model both types of fuel separately.
5.2.1.16. The Software must support the Application Programming Interface with Python, SQL tools and support integration with the business data analysis tool Microsoft PowerBI. Also, must be capable to import/export files in Extended Markup Language (.xml), Excel (.xlsx), PSSE (pti/.raw), or CIM (.xml, .rdf) formats.
5.2.1.17. The Software must not limit the solution algorithms and must offer at least two different solution engine solvers.
5.2.2. The initial electrical system data set must meet the following conditions:
5.2.2.1. The initial data set of the electrical system must include the information necessary for the modeling of generation sources and their technical parameters, sources of electricity demand, fuel and CO2 emissions, and electricity transmission lines.
5.2.2.2. The data set must include Baltic state (Lithuania, Latvia, Estonia), Poland and Finland countries. The data must be grouped for each electricity market zone of the country.
5.2.2.3. The data set must be validated by the Supplier's experts, organized in the format suitable to the Software, not requiring additional changes by the User of goods, and ready for use immediately after the Software is installed.
5.2.2.4. Scandinavian countries (except the countries listed in point 5.2.2.2) having connections with the countries of the Baltic region must be modeled with the market price of that country, according to which the power flow with the countries of the Baltic region is determined. Connections with other countries bordering the countries specified in point 5.2.2.2 must be modeled according to hourly historical import and export data.
5.2.2.5. During the subscription period of the Goods, the Goods support must be provided in accordance with the standard conditions and procedures established by the Goods Supplier, which are applied to the extent that they do not conflict with this Technical specification, the terms of the Contract and the provisions of public procurement of the Republic of Lithuania and related legal acts[1].

6. PROCEDURE AND TERMS OF EXECUTION OF CONTRACTUAL OBLIGATIONS

6.1	The beginning of the I (first) stage subscription of the Goods	From the date of installation of Software license activation keys/codes and the initial data set of the electrical system in the computer system of the User of goods, but no longer than 7 (seven) working days from the date of signing the Contract
6.2	Activation codes are submitted	Yes, no later than within 1 (one) working day from the signing of the Contract

6.3. The Supplier undertakes the responsibility to grant a license to the Buyer of the Goods from the beginning of I (first) stage to the end of I (first) stage:
6.3.1. The Supplier must provide activation keys/codes that allow access to necessary manufacturer knowledge bases, version updates, support portals, or other pages as determined by the Supplier's technical specification or similar documentation as necessary for the maintenance of the Goods during the validity of the Contract.
6.3.2. During I (first) stage, the Supplier must apply a 2 (two) month opt-out period for the subscription of Goods, after which the Buyer, if the Software does not meet expectations, has the opportunity to withdraw from the obligations of the Contract by notifying the Supplier in writing 30 (thirty) days before the end of the opt-out period;
6.3.3. The opt-out period is included in the subscription term of I (first) stage;
6.3.4. During I (first) stage, the Supplier must organize 4 (four) hours of basic remote training for the User of goods, which must include all functions required for independent installation, administration, testing and configuration of the Software without the Supplier's help;
6.3.5. During I (first) stage, the Supplier must organize 24 (twenty-four) hours of remote training for the User of goods on the priority topics identified by him:
6.3.5.1. The training shall be organized in the form of a 1-hour seminar with a question session. Training services must be provided remotely.
6.3.5.2. If necessary, by agreement of the parties and without additional payment, training can be organized at the Supplier's office.
6.3.6. During I (first) stage, the Supplier must provide an additional 80 (eighty) hours of consulting services to the User of goods to consult on specific simulations.
6.4. After the end of I (first) stage, the Supplier undertakes the responsibility to rent the Goods for another 12 (twelve) months, i.e. during the period of II (second) stage.
6.5. During the validity of the Contract, the Supplier must provide consulting assistance to the User of goods on general issues of the use of the Software, solving problematic situations that have arisen:
6.5.1. The Buyer has the right to receive an answer by phone to questions related to the operation of the Software, the answers which do not require additional analysis of the Software data and are not related to the expansion of functionality specifically for the Buyer;
6.5.2. The Buyer has the right to receive an answer by e-mail or other means agreed by the parties to any questions related to the operation of the Software;
6.6. During the term of the Contract, the Buyer must install updates of the Software versions, which include the Software versions released by the manufacturer, which are necessary to ensure the proper operation of the Software i.e., installing patches or fix packs.
6.7. The Software, when used in accordance with the manufacturer's requirements and procedures, must perform in all material respects as described in the manufacturer's documentation.

7. PAYMENT CONDITIONS

7.1. During the 2 (two) month opt-out period of subscribing the Goods, the Buyer is not obliged to pay for the Goods. If after the end of the opt-out period, the Buyer continues subscribing the Goods, the Buyer pays the full price of the I (first) stage of the Goods subscription.

7.2. The Buyer pays the Supplier for I (first) stage Goods subscription after the end of the opt-out period within 30 (thirty) calendar days from the date of receipt of the invoice and at the beginning of the II (second) stage Goods subscription within 30 (thirty) calendar days from the date of receipt of the invoice.

7.3. The Supplier submits an invoice for the first stage of the Goods subscription no later than within 2 (two) working days from the end of the 2 (two) month opt-out period of the Goods.

7.4. In the course of the Contract, invoices are issued only electronically. Electronic invoices complying with the European standard for electronic invoicing, the reference of which was published on the 16th of October 2017. October 16 Commission Implementing Decision (EU) 2017/1870 on the publication of the reference of the European Electronic Invoicing Standard and the list of syntax in accordance with Directive 2014/55 /EU of the European Parliament and of the Council (OJ 2017 L 266, p. 19) (hereinafter referred to as the European Electronic Invoicing Standard) are provided by the means chosen by the Supplier. Electronic invoices that do not comply with the European standard for electronic invoicing may only be submitted using the 'E. account'.

8. DOCUMENTS PROVIDED WITH THE DELIVERED GOODS

8.1. The supplier must provide access to the manufacturer's portal, which contains the technical requirements and instructions for use of the Goods and which explains in detail the rights of the user of the Goods.