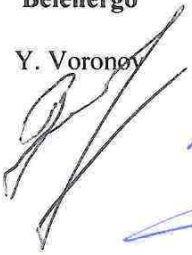


Signed on December 22, 2016 by parties to the agreement on the synchronous operation of power systems between Belenergo Group, AS Latvenergo, RAO UES of Russia, Eesti Energia AS, and Lietuvos Energija UAB dated 7 February 2001.

On behalf of
GPO
Belenergo

Y. Voronov



On behalf of
FGC UES
PJSC

A. Murov

Доверенность
№ 505-14 от 20.11.2014



On behalf of SO
UPS JSC

B. Ayuev

On behalf of
Elering AS

T. Veskimägi

Tami Veski

On behalf of AS
Augstsprieguma
tīkls

V. Boks



16. Jūlijs
№. 50VL00-07181

On behalf of
Litgrid AB

D. Virbickas

REGULATION
on the Planning of Electricity and Power
Exchanges in the Electrical Loop of
Belarus – Russia – Estonia – Latvia – Lithuania

This Regulation on the Planning of Electricity and Power Exchanges in the BRELL Electrical Loop (hereinafter “the regulation”) regulates the relationships between GPO Belenergo, FGC UES PJSC, SO UPS JSC, Elering AS, AS Augstsprieguma tīkls, and Litgrid AB (hereinafter “the Parties”) having signed this regulation with regard to the planning of repairs of cross-border power transmission lines and equipment of the 330–750 kV network, as well as the synchronous operational states in the Electrical Loop of Belarus – Russia – Estonia – Latvia – Lithuania (hereinafter “BRELL”).

1. General provisions

1.1. The purpose of the planning is the coordination of repairs of power transmission lines, electrical grid equipment of 330–750 kV of power systems of BRELL, and the verification of technical feasibility of the planned electricity (power) exchanges (net supply of electricity (power))¹ by power systems (PSs) of BRELL.

1.2. For the purposes of planning in accordance with the objectives of this regulation, the following PSs of BRELL shall be distinguished:

- the Latvian PS;
- the Lithuanian PS;
- the Estonian PS;
- the IPS (Integrated Power System) of Belarus;
- the UPS (United Power System) of Russia.

1.3. The planning of the PSs specified in clause 1.2. shall be performed by the following organizations (hereinafter “the Operators”):

- AS Augstsprieguma tīkls – the Latvian PS;
- Litgrid AB – the Lithuanian PS;
- Elering AS – the Estonian PS;
- RUP ODU – the IPS of Belarus;
- SO UPS JSC – the UPS of Russia.

1.4. Following the conditions of synchronous operation of the PSs of BRELL and the presence of controlled interconnections, the coordinated planning of synchronous operational states of the PSs of BRELL is necessary.

1.5. The planning of the electricity and power exchanges shall be performed for one year, month, and 24-hour period (day), as well as the repair schedules of power transmission lines and 330–750 kV electrical grid equipment shall be coordinated for one year and one month.

¹ Hereinafter the term “electricity (power) exchanges (net supply of electricity (power))” will be used in conformity with the provisions of the national laws of BRELL agreement Parties applying to the electric power industry.

1.6. In the process of verifying the technical feasibility of the planned electricity and power exchanges the following intersystem and cross-border interconnections (hereinafter “the controlled interconnections”) shall be checked:

- IPS of the Central region – IPS of the North-West Region;
- Leningrad PS – Estonian PS;
- Estonia, Pskov – Latvia;
- Latvian PS – Lithuanian PS;
- Lithuanian PS – IPS of Belarus;
- Lithuanian PS – Kaliningrad PS;
- IPS of the Central region – IPS of Belarus;
- IPS of Ukraine – IPS of Belarus.

1.7. Moscow time shall be used for planning of the operational states of the Parties’ PSs.

1.8. The Parties shall coordinate the repairs of power transmission lines and electrical grid equipment of the PSs of BRELL in accordance with the “LIST of dispatching objects of the IPS of Belarus, UPS of Russia, Estonian PS, Latvian PS, and Lithuanian PS in accordance with the dispatch control method” (hereinafter “the LIST”), which is Appendix 1 to the Regulation on the Operational Dispatch Control of the Synchronous Operation of the IPS of Belarus, UPS of Russia, Estonian PS, Latvian PS, and Lithuanian PS.

1.9. For the purposes of verifying the technical feasibility of the planned electricity and power exchanges, the values of net transfer capacity (hereinafter “NTC”) of the controlled interconnections of the PSs of BRELL, which are to be determined in accordance with Appendix 1 to this Regulation, shall be used.

1.10. RUP ODU shall be the Coordinator of annual planning, AS Augstsprieguma tīkls shall be the Coordinator of monthly planning, and SO UPS JSC shall be the Coordinator of daily planning.

1.11. Two types of Common BRELL grid models shall be developed for the purposes of load flow calculations:

1.11.1. base grid models (hereinafter “the BGM”) for the hours of the day agreed upon: on the basis of load flow check measurements, loads and voltage levels in electricity networks during the summer and winter season (in June and December);

1.11.2. updated grid models (hereinafter “the PS GMs”) developed on the basis of the BGM, taking into consideration the values of consumption, generation, and net electricity (power) flow of the power systems, as well as the electricity network topology specified for the period ahead.

1.12. The principles of the grid model of the BRELL power systems development, as well as the amending and updating procedure are specified in the “Rules of developing,

amending, and updating the grid model of BRELL power systems” (Appendix 2 to this Regulation) (hereinafter “the Rules”).

1.13. In the course of electricity exchanges (net supply) planning to/from the Baltic PS, the results of trading at Nord Pool exchange shall be taken into account, and the approaches adopted in Eurasian Economic Union shall be taken into consideration for electricity exchanges to and from the UPS of Russia and IPS of Belarus.

1.14. For data exchange in the process of daily planning, the Parties shall use the operational planning data web site of the “Information system for electricity export/import to foreign power systems” (hereinafter “ISEI”) of SO UPS JSC. The structure of the coordinated data exchange format shall be published in the information section of the ISEI web site. In the case of technology breakdowns of requests to the ISEI web site, the Parties shall use e-mail as a backup means of communication.

2. The planning of the power and electricity exchanges for upcoming year

2.1. The procedure of planning for upcoming year shall consist of the following stages:

- compilation of annual repair schedule of power transmission lines and 330–750 kV electrical grid equipment of the PSs of BRELL;
- preparation of initial data for the calculations of power system operational states;
- updating the PS GM;
- determination of NTC values of the controlled interconnections of BRELL;
- calculation of the power system operational states;
- assessment of the feasibility of the calculated power system operational states;
- communication of the results of planning process to the Parties.

2.2. Annual planning calculations shall be done for each month of the relevant year for the hour of the maximum loads of the typical working day and the hour of the minimum loads of the typical weekend day (Sunday).

2.3. The Coordinator of annual planning shall perform the following functions in the process of annual planning:

- updating the PS GM;
- calculation of the power system operational states;
- assessment of the feasibility of the calculated power system operational states;
- communication of the results of planning process to the Parties in accordance with the Rules.

2.4. The Operators and PJSC FGC UES shall perform the following functions in the process of annual planning:

- preparation of initial data for updating the PS GM and forwarding these data to the Coordinator of annual planning;

– determination of NTC values of the controlled interconnections and forwarding these values to the Coordinator of annual planning (to be provided by the Operator managing the mitigation of the normal operational state failure in the case of an overload of the particular interconnection in accordance with the “Instructions on the prevention and mitigation of the normal operational state failure in BRELL”).

2.5. Within the timeframes and in accordance with the procedure established in the Rules, the Parties shall exchange the data necessary for updating the PS GM for the purposes of annual planning.

2.6. The results of calculations for annual planning shall be communicated to the Parties in the amounts and formats agreed upon and within the timeframes established by the Rules.

3. The planning of the power and electricity exchanges for the upcoming month

3.1. The procedure of planning for upcoming month shall consist of the following stages:

- compilation of the monthly repair schedule of power transmission lines and 330–750 kV electrical grid equipment of the PSs of BRELL;
- preparation of initial data for the calculations of power system operational states;
- updating the PS GM;
- determination of NTC values of the controlled interconnections of BRELL;
- calculation of the power system operational states;
- assessment of the feasibility of the calculated power system operational states;
- development of the measures for returning the calculated power system operational states to the admissible range in case the parameters of the operational state deviate from the admissible range (the calculated values of active power flows in the controlled interconnections of BRELL exceed the values of NTC);
- communication of the results of planning process to the Parties in accordance with the Rules.

3.2. The monthly planning calculations shall be done for each hour of two typical 24-hour periods (days) of each week of the month planned for: the typical working day and the typical weekend day.

3.3. The Coordinator of monthly planning shall perform the following functions in the process of planning:

- updating the PS GM;
- calculation of the power system operational states;
- assessment of the feasibility of the calculated power system operational states;
- development of the measures for returning the calculated power system operational states to the admissible range in case the parameters of the operational state

deviate from the admissible range (the calculated values of active power flows in the controlled interconnections of BRELL exceed the values of NTC);

- communication of the results of the planning process to the Parties.

3.4. The Operators and PJSC FGC UES shall perform the following functions in the process of monthly planning:

- preparation of initial data for updating the PS GM and forwarding these data to the Coordinator of monthly planning;
- providing the Coordinator of monthly planning with information on the amount of reference emergency power reserves (REPR) and other reserves and their locations (the power system where the reserve is located to be specified);
- determination of NTC values of the controlled interconnections and forwarding these values to the Coordinator of monthly planning (to be provided by the Operator managing the mitigation of the normal operational state failure in case of an overload in the particular interconnection in accordance with the “Instructions on the prevention and mitigation of the normal operational state failure in BRELL”).

3.5. Within the timeframes and in accordance with the procedure established in the Rules, the Parties shall exchange the data necessary for updating the PS GM for the purposes of monthly planning.

3.6. The results of calculations for monthly planning shall be communicated to the Parties in the amounts and formats agreed upon and within the timeframes established by the Rules.

4. The daily planning of the power and electricity exchanges

4.1. The procedure of daily planning consists of the following stages:

- preparation of initial data;
- updating the PS GM;
- determination of NTC values of the controlled interconnections of BRELL;
- calculation of the power system operational states;
- assessment of the feasibility of the calculated power system operational states;
- communication of the results of planning process to the Parties in accordance with the Rules.

4.2. The calculations within the scope of daily planning shall be performed for each hour of the day planned for.

4.3. The Coordinator of daily planning shall perform the following functions in the process of planning:

- updating the PS GM;
- calculation of the power system operational states;
- assessment of the feasibility of the calculated power system operational states;

- in accordance with Appendix 5 to the Rules, making recommendations for returning the operational state of BRELL power systems to the admissible range in case calculated flows in one or several controlled interconnections exceed the NTC;
- communication of the results of planning process to the Parties.

4.4. The Operators and PJSC FGC UES shall perform the following functions in the process of daily planning:

- preparation of initial data for updating the PS GM and forwarding these data to the Coordinator of daily planning;
- determination of NTC values of the controlled interconnections and forwarding these values to the Coordinator of daily planning (to be provided by the Operator managing the mitigation of the normal operational state failure in case of an overload in the particular interconnection in accordance with the “Instructions on the prevention and mitigation of the normal operational state failure in BRELL”).

4.5. The daily planning consists of the following stages:

stage one – planning of power and electricity exchanges on day X-2 (two days ahead);

stage two – verifying the technical feasibility of the planned and forecast electricity (power) exchanges (net supply of electricity (power)) on day X-1 (one day ahead), taking into consideration the results of trading on the Russian market;

stage three – verifying the technical feasibility of the planned electricity (power) exchanges (net supply of electricity (power)) on day X-1, taking into consideration the results of trading on the Russian market and the Nord Pool market.

4.6. Within the timeframes and in accordance with the procedure established in the Rules, the Parties shall exchange the data necessary for updating the PS GM for the purposes of daily planning.

4.7. The results of calculations for daily planning shall be communicated to the Parties in the amounts and formats agreed upon and within the timeframes established by the Rules.

5. Confidentiality provisions

5.1 The integrity of confidential information, including the commercially classified information in the possession of the Parties of the Agreement, is regulated by a separate “Agreement on the protection of information confidentiality”, which shall remain valid for the whole period of validity of the contractual obligations of the Parties of the Agreement.

6. Using the ISEI web site

6.1 Each Operator of the PSs of BRELL shall appoint authorised personnel for working with the operational planning data web site ISEI.

6.2 SO UPS JSC shall provide the authorized personnel of each Operator of the PSs of BRELL with a login and a password for accessing the operational planning data web site ISEI. Each Operator of the PSs of BRELL shall be responsible for the security of the login and the password provided to the employees thereof.

6.3 SO UPS JSC shall provide secure individual access to the operational planning data web site ISEI.

7. Miscellaneous

7.1 Any amendments and supplements to this Regulation shall be made by mutual agreement of the Parties.

If necessary, the Committee of the power systems of BRELL may expeditiously introduce changes to Appendix 1 (Methodology of determination of the net transfer capacity of controlled interconnections of BRELL) and Appendix 2 (Rules of developing, amending, and updating the grid model of BRELL power systems) and approve such changes with self decision. Changes to Appendix 1 and Appendix 2 shall enter into force as of the moment of their approval by the decision of the Committee of the power systems of BRELL in the course of a meeting or by absentee decision. When changes to Appendix 1 and Appendix 2 are approved by the Committee of the power systems of BRELL, the secretariat of the Committee of the power systems of BRELL shall communicate the new revision of the Appendices to all BRELL dispatch centres by means of a formal letter within three working days after the changes have been approved.

7.2 The Parties shall resolve matters of dispute via negotiations between authorised representatives of the Parties.

The Regulation has been drawn up in 6 (six) copies in Russian and English, each being of equal legal force and of equal content in Russian and English. Each Party shall get one copy in Russian and one copy in English. In case of any difference, the Russian copy shall prevail.

Appendix 1

Appendix

to the “Regulation on the planning of electricity and power exchanges in the electrical loop of Belarus – Russia – Estonia – Latvia – Lithuania”

Methodology of determination of the net transfer capacity of controlled interconnections of BRELL

Table 1

Controlled interconnection name	Methodology of NTC determination
IPS of Belarus – IPS of the Central Region	$NTC = TTC$
IPS of Belarus – IPS of Ukraine	$NTC = TTC$
Leningrad PS – Estonian PS	$NTC = TTC$
Latvian PS – Lithuanian PS	$ATC = TTC_{N-1} + \sum_{m=1}^N k_{m}^{ij} \cdot P_m^{res} - P_{unplan}$
Lithuanian PS – IPS of Belarus	$NTC = TTC - TRM^*$ * <i>TRM</i> - transfer reliability margin (<i>TRM</i> = 0 megawatt before the approval of the methodology of <i>TRM</i> determination)
Lithuanian PS – Kaliningrad PS	$NTC = TTC - TRM^*$ * <i>TRM</i> - transfer reliability margin (<i>TRM</i> = 0 megawatt before the approval of the methodology of <i>TRM</i> determination)
Estonia, Pskov – Latvia	* -
IPS of the Central Region – IPS of the North-West Region	$NTC = TTC$

Note:

1. Total transfer capacity (TTC) in controlled interconnections shall be determined by the relevant Operators bilaterally (trilaterally) in accordance with the requirements of the “Methodological guidelines for the stability of the electrical loop of the power systems of Belarus, Russia, Estonia, Latvia, and Lithuania (BRELL)”.
2. * The NTC of the Estonia, Pskov – Latvia interconnection shall be coordinated by SO UPS JSC, Elering AS, and AS Augstsprieguma tīkls within the scope of a separate document.

to the “Regulation on planning of electricity and power exchanges in the electrical loop of Belarus – Russia – Estonia – Latvia – Lithuania”

Rules of developing, amending, and updating the grid model of BRELL power systems

1. Object and scope of the Rules

1.1 Object

These Rules of developing, amending, and updating the grid model of BRELL power systems (hereinafter “the Rules”) shall determine the following:

- principles of the PS GM preparation;
- procedure of amending the PS GM;
- procedure of updating the PS GM;
- procedure of data exchange for the purpose of annual, monthly, and daily planning.

1.2 Scope

The provisions of these Rules apply to the Operators of BRELL and PJSC FGC UES.

2. Preparation of the grid model

2.1 Determination of the grid model

The PS GM is an aggregation of data concerning the following:

- the equivalent circuit of electrical connections (hereinafter “the grid model diagram”) describing the power network topology and the parameters of its elements;
- parameters and conditions of active and reactive power consumption;
- parameters and conditions of generation equipment operation states;
- power system requirements;
- ranges of numbers of nodes for each of the power systems;
- numbers of nodes used for merging grid model diagrams, for each pair of neighboring power systems.

2.2 Requirements for the grid model diagram

2.2.1 General information

The dimensions of the grid model diagram, i.e. the number of nodes and branches (regardless of their “on” or “off” status) shall be determined in accordance with the requirements for adequate power flow modelling and electricity exchanges between the PSs of BRELL, as well as between the PS of BRELL and other power systems.

Adequate modelling shall be attained by means of reflecting all the 220–750 kV electric connections, as well as 110 kV transit and intersystem overhead lines in the grid model diagram.

The grid model diagram of BRELL power systems shall include:

- non-equivalent grid models of the power systems of Latvia, Lithuania, Estonia, and Belarus, as well as a fragment of the model of the UPS of Russia (the Leningrad, Pskov, Novgorod, Kaliningrad, Tver, and Smolensk power systems);
- equivalent fragments of the models of integrated power systems of Russia (the IPS of Ural, the IPS of the Central Region, the IPS of the mid-Volga Region, the IPS of the South Region);
- equivalent model of the power system of Ukraine.

Single-ended 110 kV substations located in the territory of the same PS can be modelled with the load value on the nearest transit node.

Modelling the connection of generators to the power system shall be performed by each Operator at their discretion.

The elements of the grid model diagram may have “on” or “off” status.

Common values shall be used in the grid model diagram as rated voltages for each of the power systems: 750 kV, 500 kV, 330 kV, 220 kV, 110 kV.

The swing node in the common grid model diagram shall be determined by the Coordinator of BGM development -SO UPS JSC.

2.2.2 Representation of generating nodes

The following parameters of generating nodes shall be set in the grid model diagram:

- power output;
- maximum and minimum reactive power;
- pre-set voltage.

2.2.3 Representation of load nodes

Active and reactive load in the nodes of the grid model diagram shall be determined by power that does not depend on voltage (the power is constant).

The modelling of active and reactive loads in the nodes of the grid model diagram by means of assigning additional branches is not allowed.

2.2.4 Representation of power transmission lines

The following parameters of power transmission lines shall be represented in the grid model diagram:

- active and reactive resistance, capacitive earth conductance in actual values (ohm and μS respectively);
- continuous current-carrying capacity in amperes (A).

2.2.5 Representation of transformers

The following parameters of transformers shall be represented in the grid model diagram:

- active and reactive resistance in actual values (ohm);
- transformer ratios;
- continuous current-carrying capacity in amperes (A).

2.2.6 Representation of shunt elements

Various variants of the representation of shunt elements (controlled and uncontrolled shunt reactors, capacitor banks, etc.) may be used for representation in the grid model diagram.

2.2.7 Representation of system requirements

The grid model diagram shall allow assigning values of the net transfer capacity or maximum allowed power flow in controlled interconnections.

2.3 Classification of PS GM parameters

All parameters of the grid model shall divide into three groups:

- conditional-constant parameters;
- conditional-variable (updatable) parameters;
- reference information.

Conditional-constant parameters shall comprise the data containing the following information:

- base topology of the grid model diagram, i.e. the set of components whose “on” or “off” status conforms with a normal power system scheme, and the parameters of its components related to the power network (active resistance, reactive resistance, transformer ratios, numbering of the nodes, and regions of the power system, etc.);
- active and reactive loads, corresponding to base cases, in the nodes.

Conditional-variable (updatable) parameters shall comprise the following data:

- changes in the topology of the grid model diagram in comparison to the base topology by means of switching branches, which does not result in changes in the identification numbers of the components;
- current generation capacity values of the main power plants of the PS;
- PS consumption;
- net electricity (power) flow of the PS.

Reference information shall comprise the following data:

- reference information about power plants, including the description of generating equipment characteristics and stating the numbers of nodes in the grid model diagram;
- reference information about power transformers with the voltage of 220 kV and above, stating their rated capacity and the numbers of connection nodes to the grid model diagram;
- a list of intersystem lines with the numbers of nodes and parameters of the relevant branches in the grid model diagram that are used for merging the grid model diagrams.

2.4 Compilation of the base grid models

2.4.1 General requirements

The Operators shall develop base power grid models of their PSs on the basis of processing load flow check measurements, loads, and voltage levels in electricity networks of the power systems twice a year (in winter and summer) for the purpose of compiling the BGM; the above models shall comprise a collection of the following objects and data:

- the base grid model diagram based on the base topology and containing generating and load values in generating and load nodes corresponding to the check measurements on the days and to the hours of the day agreed upon;
- reference information pursuant to clause 2.3.

The Operators shall take into account the following requirements in the development process of the BGM:

- the BGM shall include the grid models of the Latvian PS, Lithuanian PS, Estonian PS, IPS of Belarus, UPS of Russia, and IPS of Ukraine to the extent sufficient for modelling the operational states of the BRELL loop;
- a range of node numbers shall be assigned to each PS;
- for each pair of neighbouring power systems, a list of lines with the numbers of nodes that are used for merging the grid model diagrams shall be prepared.

2.4.2 Data exchange procedure

2.4.2.1. The Operators shall forward by e-mail to SO UPS JSC the base grid models of their power systems for the coordinated hours of the operational state of maximum and minimum winter loads, no later than 1 April of the year prior to the year planned for; and for the operational state of minimum and maximum summer loads, no later than 1 October of the year prior to the year planned for, in the following formats: Elering AS and Litgrid AB – *.xls (in accordance with Appendix 1), AS Augstsprieguma tikls – *.cdu, RUP ODU – *.rg2.

2.4.2.2. SO UPS JSC shall gather the BGMs in the format suitable for the software it uses and perform load flow calculations. In the case of errors determined in the process of

calculations, SO UPS JSC shall contact the relevant Operators for error elimination.

2.4.2.3. Having successfully completed load flow calculations, SO UPS JSC shall provide all Operators with the BGM for the operational state of maximum and minimum winter loads no later than 1 May of the year prior to the year planned for; and for the operational state of minimum and maximum summer loads, no later than 1 November of the year prior to the year planned for, in the following formats: Elering AS and Litgrid AB – *.xls (in accordance with Appendix 1), AS Augstsprieguma tikls – *.cdu, RUP ODU – *.rg2.

3. Procedure of changing the PS GM

Changing the conditional-constant parameters of the PS GM shall be regarded as changing the PS GM.

The reasons for introducing changes to the PS GM may be related to the following:

- a connection of new or dismantling (mothballing) of existing network and/or generating and/or consuming equipment – for changing the grid model diagram power network modelling part;
 - a necessity for continuous restriction of transfer capacity of new interconnections (not base interconnections) due to a change in the grid model diagram and/or network operational states – for introducing new base controlled interconnections;
 - changes in passport specifications of power generating units;
 - improvement of the grid model diagram for the purpose of level of detail increase by adding nodes and branches (corresponding to non-reduced equivalent circuits) to the grid model diagram, in particular, for 110 kV networks modelling or as the result of specifying the model equivalents;
 - identification of network or system constraints that are not presented in the PS GM;
 - specification of PS GM branch parameters.

Changes in the grid model may be initiated by any Operator of BRELL who shall inform the other Operators about the changes.

4. Procedure of updating the grid model

4.1 General requirements

Changing the conditional-variable parameters of the PS GM shall be regarded as updating the PS GM.

The PS GM shall be updated within the scope of annual, monthly, and daily planning of BRELL operational states.

4.2 Data exchange procedure for annual planning

4.2.1. SO UPS JSC shall prepare the BGM and send it to the Operators twice a year in accordance with clauses 2.4.2.1. – 2.4.2.3.

4.2.2. By 15th of August of the year prior to the year planned for, RUP ODU, PJSC FGC UES, Elering AS, AS Augstsprieguma tikls, and Litgrid AB shall provide one another with draft repair schedules of power transmission lines and primary equipment according to the LIST (including the start and end dates of the repairs).

4.2.3. By 15th of August of the year prior to the year planned for, SO UPS JSC shall provide the Operators with the draft repair schedule of power transmission lines and primary equipment at Smolensk Nuclear Power Plant (Smolensk NPP) for the calendar year planned for according to the LIST (including the start and end dates of the repairs).

4.2.4. By 25th of August of the year prior to the year planned for, RUP ODU, Elering AS, AS Augstsprieguma tikls, and Litgrid AB, having mutually agreed on the operating level, shall provide SO UPS JSC with repair schedules of power transmission lines and primary equipment for the calendar year planned for in accordance with the LIST (including the start and end dates of the repairs). Additionally, RUP ODU, Elering AS, AS Augstsprieguma tikls, and Litgrid AB shall forward to SO UPS JSC and PJSC FGC UES suggestions concerning the adjustment of repair schedules of power transmission lines and primary equipment (submitted by SO UPS JSC and PJSC FGC UES in accordance with clauses 4.2.2. and 4.2.3. of these Rules respectively).

4.2.5. By 1st of October of the year prior to the year planned for, SO UPS JSC shall forward by e-mail to the all BRELL Operators and PJSC FGC UES for approval the draft repairs schedule of power transmission lines and primary equipment for the calendar year planned for in accordance with the LIST (including the start and end dates of the repairs). If there are comments to the draft schedule provided by SO UPS JSC, the Operators shall submit to SO UPS JSC by 7 October of the year prior to the year planned for, suggestions concerning the changes in the planned timeframes of taking power transmission lines and primary equipment out of service for repairs, having previously coordinated the changes with the Operators dispatching/supervising the particular equipment according to the LIST.

4.2.6. By 15th of October of the year prior to the year planned for, SO UPS JSC shall confirm the repairs schedule of power transmission lines and primary equipment for the calendar year planned for in accordance with the LIST (including the start and end dates of the repairs) and forward it to the Parties.

4.2.7. By 1st of November of the year prior to the year planned for, the Operators shall forward by e-mail to the Coordinator of annual planning the following information concerning each month of the year planned for:

- planned values of electricity consumption and load capacity of consumers (MW) in the power system (and the separate region) divided by typical days (24 h periods) of the month: for the hour with the maximum load on the typical working day and for the hour with the minimum load on the typical weekend day (Sunday) in accordance with Appendix 2;

- planned values of the capacity of major power plants (MW) in the power system (and the separate region) divided by typical days (24 h periods) of the month: for the hour with the maximum load on the typical working day and for the hour with the minimum load on the typical weekend day (Sunday) in accordance with Appendix 2;

- NTC values of the controlled interconnections of BRELL, taking into account the repairs schedule of power transmission lines and primary equipment of BRELL forwarded by SO UPS JSC pursuant to clause 4.2.6. of these Rules (to be provided by the Operator managing the mitigation of the normal operational state failure in case of an overload in the particular interconnection in accordance with the “Instructions on the prevention and mitigation of the normal operational state failure in BRELL”).

4.2.8. By 1st of December of the year prior to the year planned for, the Coordinator of annual planning shall consolidate the following information and forward it to the Operators and to PJSC FGC UES by e-mail:

- the updated PS GMs for the coordinated hours of maximum load of the working day and hours of minimum load of the weekend day of each month of the year planned for in the following formats: *.cdu, *.rg2 and *.xls;

- NTC values of the controlled interconnections of BRELL submitted by the Operators pursuant to clause 4.2.7. of these Rules;

- results of the load flow calculations in BRELL for each month of the year planned for, taking into account the planned repairs of power transmission lines and primary equipment (pursuant to clause 4.2.6. of these Rules) restricting the transfer capacity of the controlled interconnections of BRELL. Main repairs schemes shall be determined on the basis of the data of clause 4.2.6. on the principle of selecting the schemes with the most complex combinations of repairs of generating and power network equipment. The selection of complex combinations shall be made across all the typical days of the relevant month of annual planning.

4.2.9. If the calculated power flows in controlled interconnections exceed the NTC, the Coordinator of annual planning shall communicate this fact to the Operators and PJSC FGC UES for the information to be taken into account in the process of preparing initial data at the stage of monthly planning.

4.3. Data exchange procedure for monthly planning

4.3.1. No later than 7th of the month prior to the month planned for, RUP ODU, PJSC FGC UES, Elering AS, AS Augstsprieguma tikls, and Litgrid AB shall provide one another with draft repairs schedules of power transmission lines and primary equipment according to the LIST (including the start and end dates of the repairs).

4.3.2. No later than 7th of the month prior to the month planned for, SO UPS JSC shall provide the Operators with the draft repairs schedule of power transmission lines and primary equipment at Smolensk NPP for the following month according to the LIST (including the start and end dates of the repairs).

4.3.3. No later than 11th of the month prior to the month planned for, RUP ODU, Elering AS, AS Augstsprieguma tikls, and Litgrid AB, having mutually agreed on the operating level, shall provide SO UPS JSC with repairs schedules of power transmission lines and primary equipment for the following month in accordance with the LIST (including the start and end dates of the repairs). Additionally, RUP ODU, Elering AS, AS Augstsprieguma tikls", and Litgrid AB shall forward to SO UPS JSC and PJSC FGC UES suggestions concerning the adjustment of the repairs schedules of power transmission lines and primary equipment (submitted by SO UPS JSC and PJSC FGC UES in accordance with clauses 4.3.1. and 4.3.2. of these Rules respectively).

4.3.4. No later than 20th of the month prior to the month planned for, SO UPS JSC shall forward by e-mail to the Operators and PJSC FGC UES for approval the draft repairs schedule of power transmission lines and primary equipment for the month planned for in accordance with the LIST (including the start and end dates of the repairs). In the case of comments to the draft schedule provided by SO UPS JSC, the Operators shall submit to SO UPS JSC by the 22nd of the month prior to the month planned suggestions concerning the changes in the planned timeframes of taking power transmission lines and primary equipment out of service for repairs, having previously coordinated the changes with the Operators dispatching/supervising the particular equipment according to the LIST.

4.3.5. No later than 24th of the month prior to the month planned for, SO UPS JSC shall confirm the repairs schedule of power transmission lines and primary equipment of BRELL for the month planned for in accordance with the LIST (including the start and end dates of the repairs) and forward it to the Operators and to PJSC FGC UES.

4.3.6. No later than 21st of the month prior to the month planned for, the Operators shall forward to the Coordinator of monthly planning by e-mail the following information concerning each week of the month planned for:

- expected hourly power consumption of the PS (MW) for the typical working day and the typical weekend day in accordance with Appendix 3;
- planned hourly load of the power plants for the typical working day and the typical weekend day in accordance with appendix 3;

- amounts and locations of REPR and other reserves (the power system where the reserve is located to be specified);

- NTC values of the controlled interconnections, taking into account the repairs schedule of power transmission lines and primary equipment of BRELL forwarded by SO UPS JSC pursuant to clause 4.3.4. of these Rules (to be provided by the Operator managing the mitigation of the normal operational state failure in case of an overload in the particular interconnection in accordance with the “Instructions on the prevention and mitigation of the normal operational state failure in BRELL”).

4.3.7. The Coordinator of monthly planning shall perform the following, on the basis of information received pursuant to clauses 4.3.4. and 4.3.6:

- calculations of the operational states of BRELL;
- development of the measures for returning the calculated operational states of the power system to the admissible range in case the parameters of the operational state deviate from the admissible range (the calculated values of active power flows in the controlled interconnections of BRELL exceed the values of NTC).

4.3.8. No later than 23rd of the month prior to the month planned for, the Coordinator of monthly planning shall forward to the Operators and to PJSC FGC UES the following by e-mail:

- the updated PS GMs for each hour of the typical working day and the typical weekend day of each week of the month planned for in the approved formats;
- amounts and locations of REPR and other reserves;
- NTC values of the controlled interconnections of BRELL;
- results of the load flow calculations in BRELL;
- in case the parameters of the operational state deviate from the admissible range (the calculated values of active power flows in the controlled interconnections of BRELL exceed the values of NTC): a list of the controlled interconnections of BRELL, in which violations have been discovered, and the measures for returning the operational states of the power system to the admissible range.

4.4. Data exchange procedure for daily planning

4.4.1. The planning process of power and electricity exchanges on day X-2 (stage one)

4.4.1.1. On a daily basis by 16:30 on day X-2, the Operators shall provide the Coordinator of daily planning with data for updating the PS GM for day X planned for in the form of sets of updated 24-hour data (from 00:00 to 23:00), including the following:

- hourly schedules of power consumption and generation in the amount according to the list in appendix 4;

- NTC of the controlled interconnections of BRELL (to be provided by the Operator managing the mitigation of the normal operational state failure in case of an overload in the particular interconnection in accordance with the “Instructions on the prevention and mitigation of the normal operational state failure in BRELL”);

- hourly schedules of electricity (power) exchanges (net supply of electricity (power)) of the PS in the amount according to the list in Appendix 4;

- hourly schedules of net electricity (power) flows of the PS (the deficiency of the power system will be regarded as the positive net power flows of the power system) in the amount according to the list in Appendix 4.

PJSC FGC UES shall provide the Coordinator of daily planning with hourly schedules of electricity (power) exchanges (net supply of electricity (power)) between the UPS of Russia and the power systems of Belarus and the Baltic States.

When publishing the data on the ISEI web site, the Operators and PJSC FGC UES shall verify them.

4.4.1.2. If the schedules of electricity (power) exchanges (net supply of electricity (power)) between the power system of Russia and the power systems of Belarus and the Baltic States have not been provided by the Operators (Operator) or are inconsistent with the data provided by PJSC FGC UES, the Coordinator of daily planning shall use the data provided by PJSC FGC UES.

4.4.1.3. If the data for updating the PS GM have not been provided by the Operator (Operators), the Coordinator of daily planning shall use the data from the latest coordinated schedule for all power systems, informing the Operators about using the substitute information.

4.4.1.4. The Coordinator of daily planning shall update the GM, using the data received pursuant to clause 4.4.1.1., and calculate the power system operational states for day X being planned for.

4.4.1.5. By 18:30 on day X-2, the Coordinator of daily planning shall communicate to the Operators of BRELL the results of the calculations of the operational state and the parameters of the PS GM:

- the updated PS GMs for each hour of the day planned for in the following formats: Elering AS and Litgrid AB – *.xls, AS Augstsprieguma tikls – *.cdu, RUP ODU – *.rg2 (in accordance with Appendix 1);

- NTC values of the controlled interconnections of BRELL;

- hourly values of net electricity (power) flows of the power systems of BRELL;

– recommendations on returning the operational state of the power systems of BRELL to the admissible range in case the calculated power flows in one or several controlled interconnections exceed the NTC, in accordance with Appendix 5.

4.4.1.6. The results of the calculations shall be used by the Operators of the Latvian PS, Lithuanian PS, Estonian PS, and the IPS of Belarus for the preliminary assessment of the load of the controlled interconnections of BRELL and determining net transfer capacities (NTC) for trading operations on the trading platforms of the Baltic States in order to prevent the overloading of controlled interconnections.

4.4.1.7. In the process of preparation data for updating the PS GM on day X-1, the Operators shall take into account the recommendations received in accordance with clause 4.4.1.5.

4.4.2. The planning of power and electricity exchanges on day X-1 (stage two)

4.4.2.1. On a daily basis by 10:30, the Operators and PJSC FGC UES shall provide the Coordinator of daily planning with the data specified in clause 4.4.1.1. of these Rules for the purpose of planning on day X-1.

When publishing the data on the ISEI web site, the Operators and PJSC FGC UES shall verify them.

4.4.2.2. If the schedules of electricity (power) exchanges (net supply of electricity (power)) between the power system of Russia and the power systems of Belarus and the Baltic States have not been provided by the Operators (Operator) or are inconsistent with the data provided by PJSC FGC UES, the Coordinator of daily planning shall use the data provided by PJSC FGC UES.

4.4.2.3. If the data for updating the GM have not been provided by the Operators, the Coordinator of daily planning shall use the data provided at the first stage of daily planning, informing the Operators of using the substitute information.

4.4.2.4. The Coordinator of daily planning shall update the PS GM, using the data received pursuant to clause 4.4.2.1., and calculate the power system operational states.

4.4.2.5. By 12:30, the Coordinator of daily planning shall communicate to the Operators and PJSC FGC UES the planned hourly schedules of electricity (power) exchanges (net supply of electricity (power)) between the power system of Russia and the power systems of Belarus and the Baltic States.

The total amount shall be the hourly schedule of net electricity (power) flows at the interconnection of export/import of the UPS of Russia.

4.4.2.6. By 16:00 of day X-1, the Coordinator of daily planning shall communicate to the Operators the results of the calculations of the operational state and the parameters of the PS GM:

- the updated PS GM for each hour of day X planned for in the following formats: Elering AS and Litgrid AB – *.xls, AS Augstsprieguma tikls – *.cdu, RUP ODU – *.rg2 (in accordance with Appendix 1);
- NTC values of the controlled interconnections of BRELL;
- hourly values of net electricity (power) flows of the power systems of BRELL corresponding to the planned hourly schedules of electricity (power) exchanges (net supply of electricity (power)) between the power system of Russia and the power systems of Belarus and the Baltic States (clause 4.4.2.5.);
- recommendations on returning the operational state of the power systems of BRELL to the admissible range in case the calculated power flows in one or several controlled interconnections exceed the NTC, in accordance with appendix 5.

4.4.3. The planning of power and electricity exchanges on day X-1 (stage three)

4.4.3.1. Planned hourly schedules of net electricity (power) flows of the power systems for the third stage of daily planning shall constitute the following:

- for the power systems of Lithuania, Latvia, and Estonia, hourly schedules of net electricity (power) flows obtained on the basis of the results of trading on the Nord Pool exchange;
- for the IPS of Belarus, the hourly schedule of net electricity (power) flows obtained on the basis of the calculation at the second stage of daily planning and adjusted on the basis of the results of trading on the Nord Pool exchange;
- the planned hourly schedule of net electricity (power) flows in the interconnection of export/import of the UPS of Russia will constitute the schedule obtained on the basis of the calculation at the second stage of daily planning in accordance with clause 4.4.2.5. of these Rules.

4.4.3.2. By 18:00 on day X-1, the Operators shall provide the Coordinator of daily planning with the data specified in clause 4.4.1.1. of these Rules, adjusted on the basis of the results of trading on the Nord Pool exchange, in the format agreed upon.

When publishing the data on the ISEI web site, the Operators and PJSC FGC UES shall verify them.

4.4.3.3. If the data for updating the PS GM have not been provided by the Operators, the Coordinator of daily planning shall use the data provided at the second stage of daily planning, informing the Operators about using the substitute information.

4.4.3.4. The Coordinator of daily planning shall update the PS GM, using the data received pursuant to clause 4.4.3.2., and calculate the power system operational states for day X being planned for.

4.4.3.5. By 23:40 on day X-1, the Coordinator of daily planning shall communicate to the Operators of BRELL the results of the calculations of the operational state and the parameters of the GM:

- the updated PS GM for each hour of day X planned for in the following formats: Elering AS and Litgrid AB – *.xls, AS Augstsprieguma tikls – *.cdu, RUP ODU – *.rg2 (in accordance with Appendix 1);

- NTC values of the controlled interconnections of BRELL;

- planned hourly schedules of net electricity (power) flows of the power systems of Belarus, Latvia, Lithuania, and Estonia corresponding to the data forwarded in accordance with clause 4.4.3.2.

4.4.3.6. If the calculated power flows of one or several controlled interconnections exceed the NTC, the Operators of the power systems of BRELL shall ensure preparedness for returning the operational state to the admissible range in accordance with Appendix 5.

Appendix 1
to the “Rules of developing, amending, and
updating the grid model of BRELL power
systems”

**FORMAT OF THE EXCHANGE FILE USED FOR THE DEVELOPMENT OF THE COMMON
GRID MODEL OF THE POWER SYSTEMS OF BRELL**

General provisions

The content and structure of the data of the file containing the parameters of the PS GM, including the parameters of the balanced power system operational state, (hereinafter “the exchange file”) shall be determined by the requirements of the “Rules of developing, amending, and updating the grid model of BRELL power systems”. The exchange file shall be a file in *.xls format consisting of a set of worksheets, each of which will contain data concerning one of the following groups of parameters of the grid model:

1. data concerning the nodes of the PS GM;
2. data concerning the branches of the PS GM;
3. data concerning the energy regions of the PS GM;
4. data concerning the units of power generating equipment.

The exchange file shall be used as a standardised means for exchanging the grid models of the power systems within BRELL prepared in various formats of software for the calculations of the established operational state and the planning of dispatch schedule.

Each item of the groups of parameters of the grid model listed above shall be described by a single row on one of the worksheets of the exchange file.

Data concerning the nodes

The data shall be entered on the worksheet “1- Nodes”.

1.	Node number	Numeric	Unique
2.	Node name	String	Latin or Russian characters <i>8 symbols are recommended</i>
3.	Node state	Numeric	0 – on, 1 – off
4.	Node type	Numeric	1 – Base (swing node) 0 – load or generator node

5.	Energy region	Numeric	
6.	Active load power	Numeric	MW
7.	Reactive load power	Numeric	MVAr
8.	Total active power of all generators operating in the node	Numeric	MW
9.	Total reactive power of all generators operating in the node	Numeric	MVAr
10.	Total minimum reactive power of all generators operating in the node	Numeric	MVAr
11.	Total maximum reactive power of all generators operating in the node	Numeric	MVAr
12.	Rated voltage	Numeric	kV
13.	Pre-set voltage module	Numeric	kV
14.	Calculated voltage module	Numeric	kV, <i>see comment 1</i>
15.	Calculated voltage angle	Numeric	degree, <i>see comment 1</i>
16.	Active shunt conductance	Numeric	μS , <i>see comment 2</i>
17.	Reactive shunt conductance	Numeric	μS , <i>see comment 2</i>
18.	Number of reactors	Numeric	<i>see comment 2</i>
19.	Conductance of one reactor	Numeric	μS , <i>see comment 2</i>

Comments:

1. Parameters 14 and 15 may be omitted.

2. Parameters 16, 17 and 18, 19 allow two methods of the modelling of shunt reactors in the node to be used: by setting the aggregate shunt in the node or the conductance of one reactor and the number of these (“minus” – capacitive conductance).

Data concerning the branches

The data shall be entered on the worksheet “2-Branches”.

No.	Parameter title	Value format		Note
1.	Start node number	Numeric		
2.	End node number	Numeric		

No.	Parameter title	Value format	Note
3.	Branch parallel connection number	Numeric	0 if none
4.	Branch status	Numeric	0 – on, 1 – off
5.	Resistance R	Numeric	Ohm see comment 2
6.	Resistance X	Numeric	Ohm see comment 2
7.	Earth conductance B	Numeric	μS see comment 2
8.	Earth conductance G	Numeric	μS see comment 2
9.	Real component of the TR	Numeric	0 if none, see comment 1
10.	Idle component of the TR	Numeric	0 if none
11.	Admissible current	Numeric	A
12.	Number of reactors at the beginning of the line	Numeric	0 if none, see comment 3
13.	Number of reactors at the end of the line	Numeric	0 if none, see comment 3
14.	Conductance of one reactor at the beginning of the line	Numeric	μS see comment 3
15.	Conductance of one reactor at the end of the line	Numeric	μS see comment 3

Comments:

1. This table provides information concerning both power transmission lines and transformers. The attribute of a transformer is the real component of the TR (transformer ratio – parameter 9). In the description of a transformer branch in software solutions, the node with the highest rated voltage is normally listed first, in which case the value of TR will be lower than one.

2. In the case of modelling of transformers, the values of parameters 5, 6, 7, and 8 are to refer to upper rated voltage.

3. Parameters 12, 14 and 13, 15 may be omitted, for example, if line reactors belong to the nodes of connection of a power transmission line and are pre-set in the form of a shunt in the description of the above nodes.

Data concerning the regions

The data shall be entered on the worksheet “3-Regions”.

No.	Parameter title	Value format	Note
	Region number	Numeric	
	Region name	String	Latin or Russian characters

Data concerning power generation units

The data will be entered on the worksheet “4-Power generation units”.

No.	Parameter title	Value format	Note
	Unit number	Numeric	
	Unit name	String	Latin or Russian characters
	The number of the node to which the unit belongs	Numeric	
	Total active power of all the generators operating in the node	Numeric	MW
	Constraint on maximum active capacity of generation	Numeric	MW, the data may not be provided
	Constraint on minimum active capacity of generation	Numeric	MW, the data may not be provided

* This table shall be used by SO UPS JSC for updating the active power of generation in the nodes of the grid model diagram.

Each power plant represented in the grid model diagram may be modelled by means of one or several units of power generation depending on the equivalent circuit of the power plant in the grid model diagram of the power system. Each power generation unit of the power plant corresponds to the set of generators of the power plant belonging to one node of the grid model diagram.

Example: if the diagram of the power plant is modelled with 3 nodes, to which different generators are connected, the number of power generation units of the particular power plant is 3.

Rules for developing the numbers of elements in the common grid model of BRELL

The GMs of the power systems within BRELL may feature selective numbering of nodes of the grid model diagram, energy regions, and power generation units. During the synthesis of the common grid model diagram of BRELL, the elements shall be renumbered in accordance with the following rules.

3.1. Rule for renumbering the nodes of the grid model diagram:

Node no. in BRELL = power system no. \times 100000 + node no. in the GM of the IPS (integrated power system),

where the number of the power system will be assigned as follows:

8 – Estonian PS	8 – Latvian PS	8 – Lithuanian PS
6 – IPS of Ukraine	7 – IPS of Belarus	

Thereat, it is expected that the numbers of nodes in the grid models of the power systems of Lithuania, Latvia, and Estonia are unique and are to be developed by the following rule:

Estonian PS:	below 330 kV	3,000–3,999; 7,000–7,999
	330 kV and above	6,600–6,699
Latvian PS:	below 330 kV	4,000–4,999; 8,000–8,999
	330 kV and above	67,000–67,999
Lithuanian PS:	below 330 kV	5,000–5,999; 9,000–9,999
	330 kV and above	6,800–6,899

Example: The number of a node which is 5,001 in the grid model of Latvian PS will look as follows in the common grid model of the power system of BRELL: $8 \times 100,000 + 5,001 = 805,001$.

3.2. Rule for renumbering energy regions:

Energy region no. in the PS GM = power system no. \times 100 + energy region no. in the GM of the IPS;

Thereat, limits apply to the values of region numbers in initial diagrams: the numbers cannot have a value of 100 or higher; it is also expected that the numbers of regions in the grid models of the power systems of Lithuania, Latvia, and Estonia are unique while the following rangers of numbers are permitted: 1–30 for Estonian PS, 31–60 for Latvian PS, and 61–99 for Lithuanian PS.

3.3. Rule for renumbering power generating units:

No. of the gen. unit in the PS GM = power system no. \times 1000 + no. of the gen. unit in the GM of the IPS;

Thereat, limits apply to the values of the numbers of power generating units in initial diagrams: the numbers cannot have a value of 1,000 or higher; it is also expected that the numbers of power generating units in the grid models of the power systems of Lithuania, Latvia, and Estonia are unique while the following rangers of numbers are permitted: 1–300 for Estonian PS, 301–600 for Latvian PS, and 601–999 for Lithuanian PS.

FORMAT FOR SUBMITTING UPDATED DATA FOR THE PERFORMANCE OF THE ANNUAL PLANNING PROCEDURE

General provisions

For the performance of the annual planning procedure within the timeframes established in clause 4.2.7. of these Rules, the Operators shall forward updated data to the Coordinator of annual planning.

The data shall be provided in an *.xls file consisting of a set of two worksheets, each of which shall contain the data for the hour with maximum load of the typical working day for each month of the year to be planned for and the data for the hour with minimum load of the weekend day of each month of the year planned for.

The list of data to be provided by SO UPS JSC is given in Table 1.

The list of data to be provided by Elering AS is given in Table 2.

The list of data to be provided by AS Augstsprieguma tikls is given in Table 3.

The list of data to be provided by Litgrid AB is given in Table 4.

November																			
December																			

Table 4. Data of Litgrid AB

Month	Hour of max. (min.) load	Consumption MW	Net MW	Aggregated generation, MW	Generation divided by power plants, MW						Total generation of other power plants	LitPol Link MW	NordBalt MW
					Lithuania Power Plant	Kruonis PSP (Pumped Storage Plant)	Vilnius CHPP	Kaunas CHPP	Total CHPPs	Total			
January													
February													
March													
April													
May													
June													
July													
August													
September													
October													
November													
December													

Note:
 1. Consumption is stated with LitPol Link and NordBalt excluded.
 2. Aggregated generation is stated with LitPol Link and NordBalt included.

Appendix 3
to the “Rules of developing, amending,
and updating the grid model of BRELL
power systems”

**FORMAT FOR SUBMITTING UPDATED DATA FOR THE PERFORMANCE
OF THE MONTHLY PLANNING PROCEDURE**

General provisions

For the performance of the monthly planning procedure within the timeframes established in clause 4.3.6. of these rules, the Operators shall forward updated data to the Coordinator of monthly planning.

The data shall be provided in an *.xls file. One worksheet shall contain 24-hour schedules of typical days for each week of the month planned for (4 working days and 4 weekend days).

The list of data to be provided by SO UPS JSC is given in Table 1.

The list of data to be provided by RUP ODU is given in Table 2.

The list of data to be provided by Elering AS is given in Table 3.

The list of data to be provided by Litgrid AB is given in Table 4.

Appendix 4
to the “Rules of developing, amending,
and updating the grid model of BRELL
power systems”

Table 1. List of data to be provided in the process of daily planning

Indicator	Indicator name on the ISEI web-site	Hourly schedule		
		1	...	24
IPS of Belarus				
Generation of Beryozovskaya PP-15 (unit 1)	Beryozovskaya PP-15 (unit 1)			
Generation of Beryozovskaya PP-15 (units 3,4)	Beryozovskaya PP-15 (units 3,4)			
Generation of Beryozovskaya PP-15 (GTP (Gas turbine plant) unit 3)	Beryozovskaya PP-15 (GTP unit 3)			
Generation of Beryozovskaya PP-15 (GTP unit 4)	Beryozovskaya PP-15 (GTP unit 4)			
Generation of Beryozovskaya PP-15 (CCGT-5,7)	Beryozovskaya PP-15 (CCGT (Combined cycle gas turbine unit)-5,7)			
Generation of Babruysk CHPP (TG (Turbine generator) 1–3)	Babruysk CHPP (TG 1–3)			
Generation of Gomel CHPP-26 (TG 1–3)	Gomel CHPP-26 (TG 1–3)			
Generation of Grodno CHPP-23 (TG 1,2)	Grodno CHPP-23 (TG 1,2)			
Generation of Grodno CHPP-23 (TG 3, 5)	Grodno CHPP-23 (TG 3, 5)			
Generation of Lukoml GRES-20 (units 1–10)	Lukoml GRES-20 (units 1–10)			
Generation of Minsk CHPP-3 (CCGT, TG 5–8)	Minsk CHPP-3 (CCGT, TG 5–8)			
Generation of Minsk CHPP-4 (units 1–3)	Minsk CHPP-4 (units 1–3)			
Generation of Minsk CHPP-4 (unit 4)	Minsk CHPP-4 (unit 4)			
Generation of Minsk CHPP-4 (units 5–6)	Minsk CHPP-4 (units 5–6)			
Generation of Minsk CHPP -5 (units 1–2)	Minsk CHPP-5 (units 1-2)			
Generation of Mogilev CHPP-21 (TG 1–4)	Mogilev CHPP-21 (TG 1–4)			
Generation of Mogilev CHPP-21 (TG 5)	Mogilev CHPP-21 (TG 5)			
Generation of Mazyrskaya CHPP-24 (TG 1)	Mazyrskaya CHPP-24 (TG 1)			
Generation of Mazyrskaya CHPP-24 (TG 2)	Mazyrskaya CHPP-24 (TG 2)			
Generation of Navapolatsk CHPP-14 (TG 1,2,4,7)	Navapolatsk CHPP-14 (TG 1,2,4,7)			
Generation of Navapolatsk CHPP-14 (TG 5,6)	Navapolatsk CHPP-14 (TG 5,6)			
Generation of Svietlahorsk CHPP-7 (TG 1,5)	Svietlahorsk CHPP-7 (TG 1,5)			

Indicator	Indicator name on the ISEI web-site	Hourly schedule		
		1	...	24
Generation of Svietlahorsk CHPP-7 (TG 3,4)	Svietlahorsk CHPP-7 (TG 3,4)			
Generation of Svietlahorsk CHPP-7 (TG 6)	Svietlahorsk CHPP-7 (TG 6)			
Net electricity (power) flows of the IPS of Belarus	Net of Belarus			
Consumption of the IPS of Belarus	Consumption of Belarus			
<i>Electricity (power) exchange of the IPS of Belarus (MW):</i>				
with the UPS of Russia	Russia – Belarus			
with the IPS of Ukraine	Ukraine – Belarus			
with the power systems of the Baltic States	Baltics – Belarus			
UPS of Russia (the data will be forwarded within the updated grid model)				
Generation of Smolensk NPP				
Generation of Kalinin NPP				
Generation of Leningrad NPP				
Generation of Kirishi PP				
Generation of Pskov PP				
Generation of Kaliningrad CHPP -2				
Generation of Konakovo PP				
Generation of Kursk NPP				
Generation of Leningrad power system				
Generation of Pskov power system				
Generation of Novgorod power system				
Generation of Kaliningrad power system				
Generation of Smolensk power system				
Consumption of Leningrad power system				
Consumption of Pskov power system				
Consumption of Novgorod power system				
Consumption of Kaliningrad power system				
Consumption of Smolensk power system				
Power system of ESTONIA				
Generation of Eesti Power Plant	Estonian PP			
Generation of Balti Power Plant	Baltic PP			
Generation of Iru CHPP	Iru CHPP			

Indicator	Indicator name on the ISEI web-site	Hourly schedule		
		1	...	24
Power flow of ESTLINK-1	ESTLINK-1			
Power flow of ESTLINK-2	ESTLINK-2			
Net electricity (power) flows of the power system of Estonia	Net of Estonia			
Consumption of the power system of Estonia	Consumption of Estonia			
<i>Electricity (power) exchange of the power system of Estonia (MW):</i>				
with the UPS of Russia	Russia – Estonia			
Power system of LATVIA				
Generation of Riga HPP	Riga HPP			
Generation of Pļaviņas HPP	Pļaviņas HPP			
Generation of Kegums HPP-1	Kegums HPP-1			
Generation of Kegums HPP-2	Kegums HPP-2			
Generation of Riga CHPP-1	Riga CHPP-1			
Generation of Riga CHPP-2	Riga CHPP-2			
Generation of TPP (Thermal Power Plant) Imanta	TPP Imanta			
Net electricity (power) flows of the power system of Latvia	Net of Latvia			
Consumption of the power system of Latvia	Consumption of Latvia			
<i>Electricity (power) exchange of the power system of Latvia (MW):</i>				
with the UPS of Russia	Russia – Latvia			
Power system of LITHUANIA				
Generation of Mažeikiai Power Plant	Mažeikiai PP			
Generation of Lithuania Power Plant	Lithuania PP			
Generation of Kruonis PSP	Kruonis PSP			
Generation of Vilnius Power Plant-2	Vilnius PP-2			
Generation of Vilnius Power Plant-3	Vilnius PP-3			
Generation of Kaunas HPP	Kaunas HPP			
Generation of Kaunas Power Plant	Kaunas PP			
Power flow of LitPol Link	LitPol Link			
Power flow of NordBalt	NordBalt			
Net electricity (power) flows of the power system of Lithuania	Net of Lithuania			

Indicator	Indicator name on the ISEI web-site	Hourly schedule		
		1	...	24
Consumption of the power system of Lithuania	Consumption of Lithuania			
<i>Electricity (power) exchange of the power system of Lithuania (MW):</i>				
with the UPS of Russia (without the Kaliningrad power system)	Lithuania – Russia			
with the Kaliningrad power system	Lithuania – Amber			
with the IPS of Belarus	Lithuania – Belarus			

Appendix 5
to the “Rules of developing, amending,
and updating the grid model of BRELL
power systems”

List of measures for returning the operational state to the admissible range in case there are violations of the admissible parameters in the operational states of BRELL at the stage of daily planning and operational state management

Measures for returning the operational state to the admissible range in case there are violations of the admissible parameters in the operational states of BRELL at the stage of daily planning and operational state management		Applicability in power systems (Yes/No)	
		Daily planning stage	Operational state management
Measure type	Measure title		
I. Changing the network topology	Changing the power network topology for the optimisation of power flows, which is not related to the repairs of power transmission lines, equipment and devices (taking out of operation for reserve shutdown/bringing into operation from reserve shutdown).	Yes	Yes
		Use may be restricted due to the conditions of voltage levels, the repairs diagram, power flows, etc.	
	Bringing power transmission lines, equipment and devices being repaired into operation within the timeframe of emergency preparedness	Yes	Yes
		No more than twice per month for each power system of BRELL	
	Cancellation of planned repairs of power transmission lines, equipment, and devices	Yes	Yes
		Depends on the nature of the works to be performed and on whether the repairs can be postponed (the opportunity for repairs is to be ensured within 2 month after cancellation).	Restricted by the moment of making the decision to take equipment out of service for repairs on day X.
II. Changing net generation	A commercial transaction of purchasing electricity from the neighbouring control area for the prevention of line overloading (emergency assistance)	No	Yes