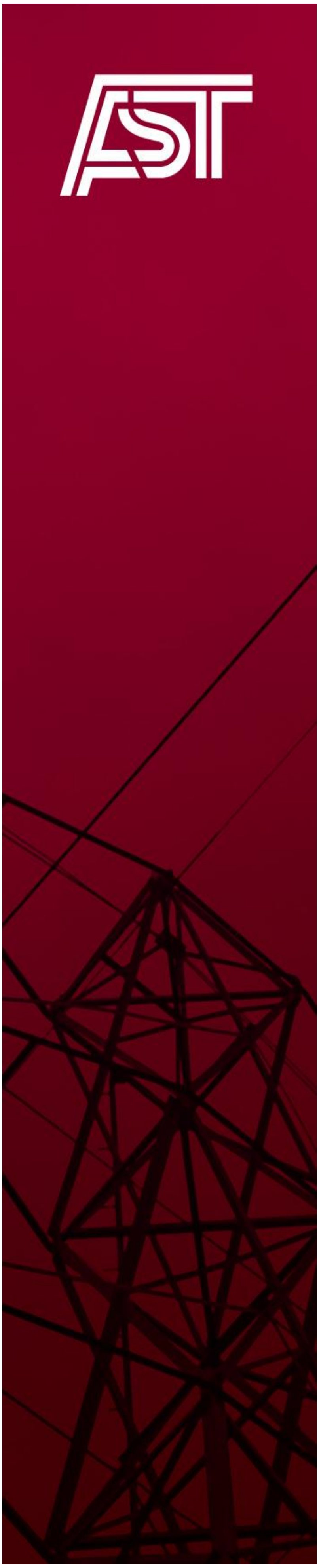

Annual statement of transmission system operator for the year 2014

Riga – 2015

The Report is prepared in accordance with the Regulation No. 322 "Regulations on the TSO's annual statement" by Latvian Cabinet of Ministers from April 25, 2006, taking into account "Energy Development Guidelines for years 2007-2016 in Latvia" approved by the Latvian Cabinet of Ministers.

1. Electricity and power demand in the country last year

1.1. Electricity consumption (including losses) by week for year 2014.

Total annual energy consumption including losses equals 7 217 099 MWh.

Table 1.

Week	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Consumption, MWh	139243	151540	162964	177234	178751	163263	158206	151581
Week	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Consumption, MWh	149068	146851	141412	142987	139004	139233	137276	128669
Week	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Consumption, MWh	123891	120842	129988	126769	127685	122331	124340	122657
Week	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
Consumption, MWh	123030	114546	119665	125462	124517	125004	127468	129418
Week	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Consumption, MWh	127110	125783	126599	127915	129103	128435	133037	134815
Week	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**
Consumption, MWh	139101	142360	146278	144237	142765	146728	147866	158825
Week	**49**	**50**	**51**	**52**				
Consumption, MWh	164820	157229	154855	144343				

1.2. Maximum winter peak load and minimum summer load.

Minimum load:	458 MW	24.06.2014.	06.00
Maximum load:	1316 MW	31.01.2014.	11.00

1.3. System load in control measurement days (24 hours).

Table 2

2014	**June 24th.**	**January 31st.**
h	**MWh**	**MWh**
01:00	565	868
02:00	537	820
03:00	515	805
04:00	488	800
05:00	460	812
06:00	458	857
07:00	465	985
08:00	479	1150
09:00	518	1249

10:00	566	1309
11:00	606	1316
12:00	626	1305
13:00	627	1267
14:00	621	1283
15:00	624	1273
16:00	618	1257
17:00	612	1256
18:00	621	1289
19:00	634	1276
20:00	638	1229
21:00	648	1189
22:00	651	1115
23:00	637	1024
00:00	607	935
Total	**13 821**	**26 669**

2. Electricity and power demand in the coming years (minimum forecast period - 10 years), including the annual electricity consumption and peak loads by scenarios

Maximum power system load is calculated (normalized) based on the Latvian Ministry of Economics submitted Latvian GDP growth forecast to average regulatory outdoor temperature during winter period (December-February) -3.5°C (Table 3). Changes in outdoor temperature also changes the maximum load. Electricity consumption of the system is forecasted for two scenarios - conservative and optimistic.

Table 3

Year	Annual consumption for conservative scenario	Annual consumption for optimistic scenario	Peak load
	GWh	GWh	MW
2015	7229	7601	1345
2016	7274	7729	1367
2017	7324	7864	1391
2018	7384	7981	1417
2019	7404	8109	1444
2020	7471	8205	1473
2021	7495	8327	1502
2022	7568	8410	1534
2023	7607	8528	1567
2024	7662	8636	1598
2025	7707	8764	1630

3. Generation and consumption compliance rating during the reporting period and forecast for the future years (minimum forecast period - 10 years)

3.1. Annual power consumption and possible sources of power supplies

Electricity and electrical power balances as well as electricity consumption forecast is developed for two scenarios:

- **Scenario A "Conservative development"**: generating capacity development that takes into account the power plants, which are placed in service or closed in accordance with the information in possession of transmission system operator (hereinafter referred to as – TSO);

- **Scenario B "Optimistic development"**: This forecast takes into account the future development of the base power stations, whose commissioning, according to information available to the TSO, is regarded as possible.

In **B Scenario** additional to Scenario A until year 2024, due to transmission infrastructure construction and public support for electricity produced from renewable energy sources a wind, biomass, biogas and solar power development is predicted. New high-power base power station development in Latvia for next 10 years is not planned.

Note: *Power plant output is presented in net values and takes into account the power station planned annual maintenance schedules.*

Assumptions and explanations for the tables:

1) Daugava cascade hydropower plants (hereinafter - the Daugava HPP) multi-annual average net output according to the statistical data are 2700 GWh per year.

2) In 2010, a five-party agreement of BRELL ring between the Estonian, Latvian, Lithuanian, Russian and Belarusian TSO provides for the mutual provision of emergency reserves from the beginning of the realization and up to 12 hours. Emergency reserve for Latvia provides BRELL five-party agreement on a common emergency reserve maintenance for each of the parties involved, maintaining 100 MW each, which consists of the sum of 500 MW. Taking into consideration the largest generating unit load in Latvia, Latvian power system needs of the emergency reserve is ensured according to the maximum generating units planned load, i.e. up to 442 MW (RigaCHP2 largest unit). The available power reserves in Latvia is 100MW, and other missing power amount 342MW from neighbouring power systems can be received only 12 hours.

3) On 2014 a terminated agreement on emergency replacement reserve provision between from “Latvenergo” AS and “Augstsprieguma tikls” AS (reserve capacity is 100 MW) has been signed, because in summer period the complicated power system modes are expected and the necessity for additional power reserve is necessary.

4) Power system regulation reserve assessed as 6% of the system peak load and 10% of the installed wind power station capacity for winter day peak load.

5) For power balance monthly assessment it is necessary to account water inflow for DaugavaHPPs in Daugava river. For “Conservative development” (A) January least average inflow since 2000 has been in 2003 (150 m^3/s, which corresponds to 270 MW of power for covering peak demand). In “Optimistic development” (B) inflow for DaugavaHPPs is assumed m^3/s, which corresponds to 400 MW power equivalent.

[6] Installed capacities of power stations in the tables are presented, including their own self-consumption (gross), but the rest of the tables are shown excluding self-consumption (net). Gross output is the total capacity of the power station developed by all main generator units and generators for self-consumption. Net power output is gross output minus the power of the self-consumption equipment required for feeding power and power losses in transformers.

[7] Wind power installed capacity and net capacity for conservative scenario assumed on the basis of the information report "Latvian Republic Action for renewable energy in the European Parliament and of the Council of 23 April 2009 Directive 2009/28/EC on the promotion of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC by 2020", in the optimistic scenario – based on technical requirements for producers issued by Latvians transmission system operator "Augstsprieguma tikls" AS and Latvian distribution system operator "Sadales tikls" AS.

[8] In the conservative scenario, biomass and biogas power plant capacity assessed on the basis of the information presented in the report "Latvian Republic Action for renewable energy in the European Parliament and of the Council of 23 April 2009 Directive 2009/28/EC on the promotion of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC by 2020", but in the optimistic scenario – based on technical requirements for producers issued by "Augstsprieguma tikls" AS and "Sadales tikls" AS.

[9] Starting from 2015 in electricity balance tables RigaCHP1 and RigaCHP2 power generation is assessed as possible, for both RigaCHPs developing the maximum possible amount of electricity in annual terms. For possibility of co-generation stations to receive compulsory payment for installed capacity according to Cabinet of Ministers Regulations No 221 "Regulations on electricity production and pricing with cogeneration stations" the utilization time of co-generation power stations or a separate equipment installed in them must be at least 1200 hours per year.

[10] In power demand tables hourly production by DaugavaHPPs is shown taking into account system balancing and emergency reserves.

Installed capacities (bruto) of power stations, MW

Table 4

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Power stations with installed capacity above 40 MW [6)]	**1**	**2609**	**2631**	**2653**	**2661**	**2661**	**2661**	**2661**	**2661**	**2661**	**2661**	**2661**
Including: Daugava HPPs	*1.1*	*1536*	*1558*	*1580*	*1588*	*1588*	*1588*	*1588*	*1588*	*1588*	*1588*	*1588*
Riga CHP1	*1.2*	*144*	*144*	*144*	*144*	*144*	*144*	*144*	*144*	*144*	*144*	*144*
Riga CHP2	*1.3*	*881*	*881*	*881*	*881*	*881*	*881*	*881*	*881*	*881*	*881*	*881*
Imanta CHP	*1.4*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*	*48*
Installed capacity of small power stations (conservative scenario)	**2**	**348**	**380**	**411**	**443**	**494**	**506**	**631**	**691**	**752**	**813**	**737**
Including: Natural gas co-generation stations	*2.1*	*124*	*126*	*128*	*130*	*131*	*133*	*135*	*137*	*139*	*141*	*143*
Hydro power stations	*2.2*	*29*	*29*	*29*	*29*	*30*	*30*	*30*	*30*	*31*	*31*	*31*
Wind power stations [7)]	*2.3*	*71*	*91*	*110*	*130*	*150*	*169*	*189*	*227*	*265*	*302*	*340*
Onshore	*2.3.1.*	*71*	*91*	*110*	*130*	*150*	*169*	*189*	*209*	*228*	*248*	*267*
Offshore	*2.3.2.*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*18*	*36*	*55*	*73*
Biomass power stations [8)]	*2.4*	*58*	*62*	*66*	*70*	*74*	*78*	*82*	*86*	*90*	*94*	*98*
Biogas power stations [8)]	*2.5*	*66*	*71*	*77*	*83*	*88*	*94*	*99*	*105*	*110*	*116*	*122*
Solar power stations	*2.6*	*0.4*	*0.86*	*1.14*	*1.42*	*1.70*	*1.98*	*2.27*	*2.55*	*2.83*	*3.11*	*3.39*
Installed capacity of small power stations (optimistic scenario)	**3**	**365**	**420**	**474**	**569**	**651**	**734**	**688**	**758**	**981**	**1056**	**1136**
Including: Natural gas co-generation stations	*3.1*	*126*	*128*	*131*	*133*	*136*	*138*	*141*	*143*	*145*	*148*	*150*
Hydro power stations	*3.2*	*29*	*29*	*30*	*30*	*30*	*30*	*31*	*31*	*31*	*31*	*31*
Wind power stations [7)]	*3.3*	*73*	*99*	*124*	*150*	*175*	*224*	*272*	*321*	*370*	*418*	*467*
Onshore	*3.3.1.*	*73*	*99*	*124*	*150*	*175*	*201*	*226*	*252*	*277*	*303*	*328*
Offshore	*3.3.2.*	*0*	*0*	*0*	*0*	*0*	*23*	*46*	*69*	*92*	*115*	*138*
Biomass power stations [8)]	*3.4*	*59*	*69*	*79*	*89*	*99*	*108*	*118*	*128*	*138*	*148*	*158*
Biogas power stations [8)]	*3.5*	*69*	*77*	*86*	*94*	*103*	*111*	*120*	*128*	*137*	*145*	*154*
Solar power stations	*3.6*	*0.5*	*1.66*	*2.53*	*3.39*	*4.26*	*5.12*	*5.99*	*6.85*	*7.72*	*8.58*	*9.44*

Latvian power system balance for Scenario A winter peak load hours, MW (neto)

Table 5

Years		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Maximum load	**1**	**1345**	**1367**	**1391**	**1417**	**1444**	**1473**	**1502**	**1534**	**1567**	**1598**	**1630**
Power stations with installed capacity above 40 MW	**2**	**2560**	**2582**	**2604**	**2611**	**2611**	**2611**	**2611**	**2611**	**2611**	**2611**	**2611**
Including: Daugava HPPs	*2.1*	*1528*	*1550*	*1572*	*1580*	*1580*	*1580*	*1580*	*1580*	*1580*	*1580*	*1580*
Riga CHP1	*2.2*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*
Riga CHP2	*2.3*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*
Imanta CHP	*2.4*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*
Small power stations	**3**	**324**	**354**	**384**	**414**	**444**	**475**	**505**	**553**	**601**	**650**	**699**
Including: Natural gas co-generation power stations	*3.1*	*113*	*114*	*116*	*118*	*119*	*121*	*123*	*125*	*126*	*128*	*130*
Hydro power stations	*3.2*	*28*	*28*	*28*	*28*	*28*	*28*	*28*	*28*	*28*	*29*	*30*
Wind power stations	*3.3*	*70*	*90*	*109*	*129*	*148*	*168*	*187*	*224*	*262*	*299*	*337*
Onshore	*3.3.1.*	*70*	*90*	*109*	*129*	*148*	*168*	*187*	*206*	*226*	*245*	*265*
Offshore	*3.3.2.*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*18*	*36*	*54*	*72*
Biomass power stations	*3.4*	*53*	*56*	*60*	*64*	*67*	*71*	*75*	*78*	*82*	*85*	*89*
Biogas power stations	*3.5*	*60*	*65*	*70*	*75*	*80*	*85*	*90*	*95*	*100*	*105*	*111*
Solar power stations	*3.6*	*0.4*	*0.77*	*1.03*	*1.28*	*1.53*	*1.79*	*2.04*	*2.29*	*2.54*	*2.80*	*3.05*
Available capacities for peak load and reserve guaranteeing	**4**	**1472**	**1481**	**1491**	**1500**	**1509**	**1519**	**1528**	**1539**	**1550**	**1561**	**1573**
Including: Daugava HPPs [5)]	*4.01*	*270*	*270*	*270*	*270*	*270*	*270*	*270*	*270*	*270*	*270*	*270*
Riga CHP1	*4.02*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*
Riga CHP2	*4.03*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*
Imanta CHP	*4.04*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*
Natural gas co-generation power stations	*4.05*	*79*	*80*	*81*	*82*	*84*	*85*	*86*	*87*	*88*	*90*	*91*
Hydro power stations	*4.06*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*
Wind power stations	*4.07*	*7*	*9*	*11*	*13*	*15*	*17*	*19*	*22*	*26*	*30*	*34*
Biomass power stations	*4.08*	*37*	*39*	*42*	*45*	*47*	*50*	*52*	*55*	*57*	*60*	*62*
Biogas power stations	*4.09*	*42*	*45*	*49*	*53*	*56*	*60*	*63*	*67*	*70*	*74*	*77*
Solar power stations	*4.10*	*0.21*	*0.31*	*0.41*	*0.51*	*0.61*	*0.71*	*0.82*	*0.92*	*1.02*	*1.12*	*1.22*
Power system emergency reserve [2)]	**5**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Power system regulating reserve [4)]	**6**	**88**	**91**	**94**	**98**	**101**	**105**	**109**	**115**	**120**	**126**	**131**
Total reserve in Latvia	**7=5+6**	**188**	**191**	**194**	**198**	**201**	**205**	**209**	**215**	**220**	**226**	**231**
Power deficit	**8=4-1-7**	**-60**	**-77**	**-95**	**-115**	**-137**	**-160**	**-183**	**-210**	**-237**	**-263**	**-289**
Power adequacy	**9=(4-7)/1**	**96%**	**94%**	**93%**	**92%**	**91%**	**89%**	**88%**	**86%**	**85%**	**84%**	**82%**

Latvian power system balance for Scenario B winter peak load hours, MW (neto)

Table 6

Years		**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Maximum load	**1**	**1345**	**1367**	**1391**	**1417**	**1444**	**1473**	**1502**	**1534**	**1567**	**1598**	**1630**
Power stations with installed capacity above 40 MW	**2**	**2560**	**2582**	**2604**	**2611**	**2611**	**2611**	**2611**	**2611**	**2611**	**2611**	**2611**
Including: Daugava HPPs	*2.1*	*1528*	*1550*	*1572*	*1580*	*1580*	*1580*	*1580*	*1580*	*1580*	*1580*	*1580*
Riga CHP1	*2.2*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*
Riga CHP2	*2.3*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*
Imanta CHP	*2.4*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*
Small power stations	**3**	**330**	**374**	**418**	**463**	**508**	**575**	**643**	**710**	**777**	**845**	**913**
Including: Natural gas co-generation power stations	*3.1*	*113*	*114*	*116*	*118*	*119*	*121*	*123*	*125*	*126*	*128*	*130*
Hydro power stations	*3.2*	*28*	*28*	*28*	*28*	*28*	*28*	*28*	*28*	*28*	*29*	*30*
Wind power stations	*3.3*	*72*	*98*	*123*	*148*	*173*	*222*	*270*	*318*	*366*	*414*	*462*
Onshore	*3.3.1.*	*72*	*98*	*123*	*148*	*173*	*199*	*224*	*249*	*274*	*300*	*325*
Offshore	*3.3.2.*	*0*	*0*	*0*	*0*	*0*	*23*	*46*	*69*	*91*	*114*	*137*
Biomass power stations	*3.4*	*54*	*63*	*72*	*81*	*90*	*99*	*108*	*116*	*125*	*134*	*143*
Biogas power stations	*3.5*	*63*	*70*	*78*	*86*	*94*	*101*	*109*	*117*	*124*	*132*	*140*
Solar power stations	*3.6*	*0.52*	*1.50*	*2.28*	*3.05*	*3.83*	*4.61*	*5.39*	*6.17*	*6.94*	*7.72*	*8.50*
Available capacities for peak load and reserve guaranteeing	**4**	**1605**	**1620**	**1636**	**1652**	**1668**	**1686**	**1704**	**1722**	**1740**	**1758**	**1776**
Including: Daugava HPPs [5)]	*4.01*	*400*	*400*	*400*	*400*	*400*	*400*	*400*	*400*	*400*	*400*	*400*
Riga CHP1	*4.02*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*	*139*
Riga CHP2	*4.03*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*	*850*
Imanta CHP	*4.04*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*	*42*
Natural gas co-generation power stations	*4.05*	*79*	*80*	*81*	*82*	*84*	*85*	*86*	*87*	*88*	*90*	*91*
Hydro power stations	*4.06*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*	*6*
Wind power stations	*4.07*	*7*	*10*	*12*	*15*	*17*	*22*	*27*	*32*	*37*	*41*	*46*
Biomass power stations	*4.08*	*38*	*44*	*50*	*56*	*63*	*69*	*75*	*82*	*88*	*94*	*100*
Biogas power stations	*4.09*	*44*	*49*	*55*	*60*	*65*	*71*	*76*	*82*	*87*	*93*	*98*
Solar power stations	*4.10*	*0.29*	*0.60*	*0.91*	*1.22*	*1.53*	*1.84*	*2.16*	*2.47*	*2.78*	*3.09*	*3.40*
Power system emergency reserve [2)]	**5**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Power system regulating reserve [4)]	**6**	**88**	**92**	**96**	**100**	**104**	**111**	**117**	**124**	**131**	**137**	**144**
Total reserve in Latvia	**7=5+6**	**188**	**192**	**196**	**200**	**204**	**211**	**217**	**224**	**231**	**237**	**244**
Power deficit	**8=4-1-7**	**72**	**62**	**49**	**35**	**19**	**2**	**-16**	**-36**	**-58**	**-78**	**-98**
Power adequacy	**9=(4-7)/1**	**105%**	**105%**	**104%**	**102%**	**101%**	**100%**	**99%**	**98%**	**96%**	**95%**	**94%**

Possible power balance for Scenario A (annual values), GWh

Table 7

Scenario A

Years		**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Energy demand	**1**	**7229**	**7274**	**7324**	**7384**	**7404**	**7471**	**7495**	**7568**	**7607**	**7662**	**7707**
Output in power stations with installed capacity above 40 MW	**2**	**9120**	**9227**	**9238**	**9247**	**9250**	**9253**	**9066**	**8969**	**8969**	**8969**	**8969**
Including: Daugava HPPs [1)]	*2.1*	*2384*	*2491*	*2502*	*2511*	*2514*	*2517*	*2520*	*2523*	*2523*	*2523*	*2523*
Riga CHP1 [9)]	*2.2*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*
Riga CHP2 [9)]	*2.3*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*
Imanta CHP	*2.4*	*290*	*290*	*290*	*290*	*290*	*290*	*100*	*0*	*0*	*0*	*0*
Small power stations	**3**	**1618**	**1705**	**1792**	**1879**	**1967**	**2054**	**2142**	**2247**	**2353**	**2458**	**2566**
Including: Natural gas co-generation power stations	*3.1*	*733*	*744*	*755*	*766*	*777*	*788*	*799*	*810*	*821*	*831*	*842*
Hydro power stations	*3.2*	*83*	*83*	*83*	*83*	*83*	*84*	*84*	*85*	*85*	*86*	*89*
Wind power stations	*3.3*	*70*	*90*	*109*	*129*	*148*	*168*	*187*	*224*	*262*	*299*	*337*
Onshore	*3.3.1.*	*70*	*90*	*109*	*129*	*148*	*168*	*187*	*206*	*226*	*245*	*265*
Offshore	*3.3.2.*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*18*	*36*	*54*	*72*
Biomass power stations	*3.4*	*343*	*366*	*390*	*414*	*437*	*461*	*484*	*508*	*532*	*555*	*579*
Biogas power stations	*3.5*	*389*	*422*	*455*	*488*	*521*	*554*	*587*	*620*	*653*	*685*	*718*
Solar power stations	*3.6*	*0.16*	*0.23*	*0.31*	*0.38*	*0.46*	*0.54*	*0.61*	*0.69*	*0.76*	*0.8*	*0.9*
Possible annual export/import	**4=(2+3)-1**	**3510**	**3658**	**3706**	**3742**	**3812**	**3837**	**3713**	**3648**	**3714**	**3765**	**3828**
Possible spring flood period export	**5**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**
Annual adequacy	**6=(2+3-5)/1**	**142%**	**143%**	**144%**	**144%**	**145%**	**145%**	**143%**	**142%**	**142%**	**143%**	**143%**

Possible power balance for Scenario B (annual values), GWh

Scenario B *Table 8*

Years		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy demand	**1**	**7601**	**7729**	**7864**	**7981**	**8109**	**8205**	**8327**	**8410**	**8528**	**8636**	**8764**
Output in power stations with installed capacity above 40 MW	**2**	**9120**	**9227**	**9238**	**9247**	**9250**	**9253**	**9066**	**8969**	**8969**	**8969**	**8969**
Including: Daugava HPPs [1)]	*2.1*	*2384*	*2491*	*2502*	*2511*	*2514*	*2517*	*2520*	*2523*	*2523*	*2523*	*2523*
Riga CHP1 [9)]	*2.2*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*	*494*
Riga CHP2 [9)]	*2.3*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*	*5952*
Imanta CHP	*2.4*	*290*	*290*	*290*	*290*	*290*	*290*	*100*	*0*	*0*	*0*	*0*
Small power stations	**3**	**1664**	**1822**	**1980**	**2139**	**2297**	**2490**	**2683**	**2876**	**3069**	**3262**	**3457**
Including: Natural gas co-generation power stations	*3.1*	*733*	*744*	*755*	*766*	*777*	*788*	*799*	*810*	*821*	*831*	*842*
Hydro power stations	*3.2*	*66*	*66*	*66*	*66*	*67*	*67*	*68*	*68*	*68*	*69*	*71*
Wind power stations	*3.3*	*108*	*146*	*184*	*222*	*260*	*332*	*404*	*477*	*549*	*621*	*693*
Onshore	*3.3.1.*	*108*	*146*	*184*	*222*	*260*	*298*	*336*	*374*	*412*	*450*	*488*
Offshore	*3.3.2.*	*0*	*0*	*0*	*0*	*0*	*34*	*69*	*103*	*137*	*171*	*206*
Biomass power stations	*3.4*	*349*	*407*	*465*	*524*	*582*	*640*	*699*	*757*	*816*	*874*	*932*
Biogas power stations	*3.5*	*407*	*457*	*507*	*558*	*608*	*658*	*708*	*759*	*809*	*859*	*909*
Solar power stations	*3.6*	*0.7*	*1.5*	*2.3*	*3.1*	*3.8*	*4.6*	*5.4*	*6.2*	*6.9*	*7.7*	*8.5*
Possible annual export/import	**4=(2+3)-1**	**3182**	**3320**	**3355**	**3404**	**3438**	**3538**	**3422**	**3435**	**3510**	**3595**	**3662**
Spring flood period export	**5**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**
Annual adequacy	**6=(2+3-5)/1**	**135%**	**136%**	**136%**	**136%**	**136%**	**137%**	**135%**	**135%**	**135%**	**136%**	**136%**

Power demand and possible sources of guaranteeing, hourly balance for Scenario A (peak load), MW

Scenario A

Year 2016. January, Wednesday of the third week. Working day peak load

Table 9

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
01:00	139	487	42	39	45	80	6	9	0.00	0	0	848
02:00	139	435	42	39	45	80	6	9	0.00	0	0	795
03:00	139	418	42	39	45	80	6	9	0.00	0	0	778
04:00	139	411	42	39	45	80	6	9	0.00	0	0	771
05:00	139	422	42	39	45	80	6	9	0.00	0	0	783
06:00	139	466	42	39	45	80	6	9	0.00	0	0	826
07:00	139	609	42	39	45	80	6	9	0.00	0	0	970
08:00	139	765	42	39	45	80	6	9	0.00	38	0	1164
09:00	139	850	42	39	45	80	6	9	0.31	75	12	1297
10:00	139	850	42	39	45	80	6	9	0.31	79	41	1331
11:00	139	850	42	39	45	80	6	9	0.31	54	62	1327
12:00	139	850	42	39	45	80	6	9	0.31	29	69	1309
13:00	139	850	42	39	45	80	6	9	0.31	20	18	1250
14:00	139	850	42	39	45	80	6	9	0.31	30	30	1271
15:00	139	850	42	39	45	80	6	9	0.31	48	19	1278
16:00	139	850	42	39	45	80	6	9	0.31	60	9	1279
17:00	139	850	42	39	45	80	6	9	0.00	70	45	1326
18:00	139	850	42	39	45	80	6	9	0.00	78	78	1367
19:00	139	850	42	39	45	80	6	9	0.00	77	56	1344
20:00	139	850	42	39	45	80	6	9	0.00	42	52	1304
21:00	139	850	42	39	45	80	6	9	0.00	21	38	1269
22:00	139	837	42	39	45	80	6	9	0.00	0	0	1197
23:00	139	727	42	39	45	80	6	9	0.00	0	0	1088
00:00	139	572	42	39	45	80	6	9	0.00	0	0	932

Scenario A

Year 2020. January, Wednesday of the third week. Working day peak load

Table 10

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
01:00	139	516	42	50	60	85	6	17	0.00	0	0	914
02:00	139	460	42	50	60	85	6	17	0.00	0	0	857
03:00	139	441	42	50	60	85	6	17	0.00	0	0	839
04:00	139	434	42	50	60	85	6	17	0.00	0	0	831
05:00	139	446	42	50	60	85	6	17	0.00	0	0	844
06:00	139	493	42	50	60	85	6	17	0.00	0	0	890
07:00	139	648	42	50	60	85	6	17	0.00	0	0	1045
08:00	139	819	42	50	60	85	6	17	0.00	31	7	1254
09:00	139	850	42	50	60	85	6	17	0.71	61	88	1398
10:00	139	850	42	50	60	85	6	17	0.71	65	121	1434
11:00	139	850	42	50	60	85	6	17	0.71	44	138	1430
12:00	139	850	42	50	60	85	6	17	0.71	24	139	1410
13:00	139	850	42	50	60	85	6	17	0.71	17	81	1346
14:00	139	850	42	50	60	85	6	17	0.71	25	97	1370
15:00	139	850	42	50	60	85	6	17	0.71	40	89	1377
16:00	139	850	42	50	60	85	6	17	0.71	49	81	1378
17:00	139	850	42	50	60	85	6	17	0.00	58	124	1429
18:00	139	850	42	50	60	85	6	17	0.00	65	161	1473
19:00	139	850	42	50	60	85	6	17	0.00	64	137	1448
20:00	139	850	42	50	60	85	6	17	0.00	34	124	1405
21:00	139	850	42	50	60	85	6	17	0.00	17	103	1367
22:00	139	850	42	50	60	85	6	17	0.00	0	42	1290
23:00	139	774	42	50	60	85	6	17	0.00	0	0	1172
00:00	139	607	42	50	60	85	6	17	0.00	0	0	1005

Scenario A

Year 2025. January, Wednesday of the third week. Working day peak load

Table 11

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
01:00	139	560	42	62	77	91	6	34	0.00	0	0	1011
02:00	139	497	42	62	77	91	6	34	0.00	0	0	948
03:00	139	477	42	62	77	91	6	34	0.00	0	0	928
04:00	139	469	42	62	77	91	6	34	0.00	0	0	920
05:00	139	482	42	62	77	91	6	34	0.00	0	0	933
06:00	139	534	42	62	77	91	6	34	0.00	0	0	985
07:00	139	706	42	62	77	91	6	34	0.00	0	0	1157
08:00	139	850	42	62	77	91	6	34	0.00	19	68	1388
09:00	139	850	42	62	77	91	6	34	1.22	37	208	1547
10:00	139	850	42	62	77	91	6	34	1.22	39	245	1587
11:00	139	850	42	62	77	91	6	34	1.22	27	254	1583
12:00	139	850	42	62	77	91	6	34	1.22	14	244	1561
13:00	139	850	42	62	77	91	6	34	1.22	10	178	1490
14:00	139	850	42	62	77	91	6	34	1.22	15	199	1516
15:00	139	850	42	62	77	91	6	34	1.22	24	198	1524
16:00	139	850	42	62	77	91	6	34	1.22	30	194	1525
17:00	139	850	42	62	77	91	6	34	0.00	35	246	1581
18:00	139	850	42	62	77	91	6	34	0.00	39	290	1630
19:00	139	850	42	62	77	91	6	34	0.00	38	264	1603
20:00	139	850	42	62	77	91	6	34	0.00	21	234	1555
21:00	139	850	42	62	77	91	6	34	0.00	10	202	1513
22:00	139	850	42	62	77	91	6	34	0.00	0	126	1427
23:00	139	846	42	62	77	91	6	34	0.00	0	0	1297
00:00	139	661	42	62	77	91	6	34	0.00	0	0	1112

Power demand and possible sources of guaranteeing, hourly balance for Scenario B (peak load), MW

Scenario B

Year 2016. January, Wednesday of the third week. Working day peak load

Table 12

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs 10)	Import	Load
01:00	139	478	42	44	49	80	6	10	0.00	0	0	848
02:00	139	426	42	44	49	80	6	10	0.00	0	0	795
03:00	139	409	42	44	49	80	6	10	0.00	0	0	778
04:00	139	402	42	44	49	80	6	10	0.00	0	0	771
05:00	139	413	42	44	49	80	6	10	0.00	0	0	783
06:00	139	457	42	44	49	80	6	10	0.00	0	0	826
07:00	139	601	42	44	49	80	6	10	0.00	0	0	970
08:00	139	694	42	44	49	80	6	10	0.00	101	0	1164
09:00	139	731	42	44	49	80	6	10	0.60	197	0	1297
10:00	139	753	42	44	49	80	6	10	0.60	208	0	1331
11:00	139	827	42	44	49	80	6	10	0.60	130	0	1327
12:00	139	850	42	44	49	80	6	10	0.60	89	0	1309
13:00	139	826	42	44	49	80	6	10	0.60	54	0	1250
14:00	139	822	42	44	49	80	6	10	0.60	79	0	1271
15:00	139	781	42	44	49	80	6	10	0.60	127	0	1278
16:00	139	752	42	44	49	80	6	10	0.60	158	0	1279
17:00	139	772	42	44	49	80	6	10	0.00	185	0	1326
18:00	139	791	42	44	49	80	6	10	0.00	207	0	1367
19:00	139	771	42	44	49	80	6	10	0.00	203	0	1344
20:00	139	825	42	44	49	80	6	10	0.00	110	0	1304
21:00	139	845	42	44	49	80	6	10	0.00	55	0	1269
22:00	139	828	42	44	49	80	6	10	0.00	0	0	1197
23:00	139	718	42	44	49	80	6	10	0.00	0	0	1088
00:00	139	563	42	44	49	80	6	10	0.00	0	0	932

Scenario B

Year 2020. January, Wednesday of the third week. Working day peak load *Table 13*

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
01:00	139	480	42	69	71	85	6	22	0.00	0	0	914
02:00	139	424	42	69	71	85	6	22	0.00	0	0	857
03:00	139	405	42	69	71	85	6	22	0.00	0	0	839
04:00	139	398	42	69	71	85	6	22	0.00	0	0	831
05:00	139	410	42	69	71	85	6	22	0.00	0	0	844
06:00	139	457	42	69	71	85	6	22	0.00	0	0	890
07:00	139	612	42	69	71	85	6	22	0.00	0	0	1045
08:00	139	821	42	69	71	85	6	22	0.00	0	0	1254
09:00	139	815	42	69	71	85	6	22	1.84	148	0	1398
10:00	139	850	42	69	71	85	6	22	1.84	149	0	1434
11:00	139	850	42	69	71	85	6	22	1.84	145	0	1430
12:00	139	850	42	69	71	85	6	22	1.84	125	0	1410
13:00	139	850	42	69	71	85	6	22	1.84	61	0	1346
14:00	139	850	42	69	71	85	6	22	1.84	85	0	1370
15:00	139	827	42	69	71	85	6	22	1.84	115	0	1377
16:00	139	800	42	69	71	85	6	22	1.84	143	0	1378
17:00	139	828	42	69	71	85	6	22	0.00	168	0	1429
18:00	139	850	42	69	71	85	6	22	0.00	190	0	1473
19:00	139	830	42	69	71	85	6	22	0.00	185	0	1448
20:00	139	850	42	69	71	85	6	22	0.00	122	0	1405
21:00	139	850	42	69	71	85	6	22	0.00	84	0	1367
22:00	139	850	42	69	71	85	6	22	0.00	7	0	1290
23:00	139	738	42	69	71	85	6	22	0.00	0	0	1172
00:00	139	571	42	69	71	85	6	22	0.00	0	0	1005

Scenario B

Year 2025. January, Wednesday of the third week. Working day peak load *Table 14*

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
01:00	139	489	42	100	98	91	6	46	0.00	0	0	1011
02:00	139	426	42	100	98	91	6	46	0.00	0	0	948
03:00	139	406	42	100	98	91	6	46	0.00	0	0	928
04:00	139	398	42	100	98	91	6	46	0.00	0	0	920
05:00	139	411	42	100	98	91	6	46	0.00	0	0	933
06:00	139	463	42	100	98	91	6	46	0.00	0	0	985
07:00	139	634	42	100	98	91	6	46	0.00	0	0	1157
08:00	139	742	42	100	98	91	6	46	0.00	75	48	1388
09:00	139	780	42	100	98	91	6	46	3.40	147	95	1547
10:00	139	805	42	100	98	91	6	46	3.40	156	100	1587
11:00	139	850	42	100	98	91	6	46	3.40	106	101	1583
12:00	139	850	42	100	98	91	6	46	3.40	57	129	1561
13:00	139	850	42	100	98	91	6	46	3.40	40	74	1490
14:00	139	850	42	100	98	91	6	46	3.40	59	81	1516
15:00	139	842	42	100	98	91	6	46	3.40	95	61	1524
16:00	139	806	42	100	98	91	6	46	3.40	118	76	1525
17:00	139	832	42	100	98	91	6	46	0.00	139	89	1581
18:00	139	850	42	100	98	91	6	46	0.00	155	103	1630
19:00	139	830	42	100	98	91	6	46	0.00	153	98	1603
20:00	139	850	42	100	98	91	6	46	0.00	83	100	1555
21:00	139	850	42	100	98	91	6	46	0.00	41	100	1513
22:00	139	850	42	100	98	91	6	46	0.00	0	55	1427
23:00	139	775	42	100	98	91	6	46	0.00	0	0	1297
00:00	139	590	42	100	98	91	6	46	0.00	0	0	1112

Power demand and possible sources of guaranteeing, hourly balance for Scenario A (minimum load), MW

Scenario A
June 2020 – minimum load

Table 15

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
00:00	90	313	0	50	60	85	6	17	0.00	0	0	619
01:00	90	282	0	50	60	85	6	17	0.00	0	0	588
02:00	90	258	0	50	60	85	6	17	0.00	0	0	564
03:00	90	228	0	50	60	85	6	17	0.00	0	0	535
04:00	90	198	0	50	60	85	6	17	0.00	0	0	504
05:00	90	195	0	50	60	85	6	17	0.00	0	0	502
06:00	90	203	0	50	60	85	6	17	0.00	0	0	509
07:00	90	211	0	50	60	85	6	17	0.00	7	0	525
08:00	90	232	0	50	60	52	6	17	0.71	61	0	568
09:00	90	239	0	50	60	58	6	17	0.71	101	0	620
10:00	90	258	0	50	60	60	6	17	0.71	123	0	664
11:00	90	279	0	50	60	54	6	17	0.71	130	0	686
12:00	90	288	0	50	60	72	6	17	0.71	105	0	687
13:00	90	285	0	50	60	72	6	17	0.71	101	0	680
14:00	90	281	0	50	60	72	6	17	0.71	109	0	684
15:00	90	285	0	50	60	72	6	17	0.71	98	0	677
16:00	90	291	0	50	60	85	6	17	0.71	73	0	671
17:00	90	329	0	50	60	85	6	17	0.71	44	0	680
18:00	90	358	0	50	60	85	6	17	0.71	30	0	695
19:00	90	371	0	50	60	85	6	17	0.00	22	0	699
20:00	90	386	0	50	60	85	6	17	0.00	17	0	710
21:00	90	395	0	50	60	85	6	17	0.00	11	0	713
22:00	90	391	0	50	60	85	6	17	0.00	0	0	698
23:00	90	359	0	50	60	85	6	17	0.00	0	0	665

Scenario A

June 2025 – minimum load *Table 16*

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
00:00	90	325	0	62	77	91	6	34	0.00	0	0	685
01:00	90	291	0	62	77	91	6	34	0.00	0	0	651
02:00	90	264	0	62	77	91	6	34	0.00	0	0	624
03:00	90	232	0	62	77	91	6	34	0.00	0	0	592
04:00	90	198	0	62	77	91	6	34	0.00	0	0	558
05:00	90	195	0	62	77	91	6	34	0.00	0	0	555
06:00	90	204	0	62	77	91	6	34	0.00	0	0	564
07:00	90	214	0	62	77	91	6	34	0.00	7	0	581
08:00	90	237	0	62	77	65	6	34	1.22	55	0	628
09:00	90	278	0	62	77	46	6	34	1.22	92	0	686
10:00	90	300	0	62	77	52	6	34	1.22	112	0	735
11:00	90	311	0	62	77	59	6	34	1.22	118	0	759
12:00	90	304	0	62	77	91	6	34	1.22	95	0	760
13:00	90	300	0	62	77	91	6	34	1.22	92	0	753
14:00	90	297	0	62	77	91	6	34	1.22	99	0	757
15:00	90	299	0	62	77	91	6	34	1.22	89	0	749
16:00	90	315	0	62	77	91	6	34	1.22	66	0	742
17:00	90	352	0	62	77	91	6	34	1.22	40	0	753
18:00	90	381	0	62	77	91	6	34	1.22	27	0	769
19:00	90	394	0	62	77	91	6	34	0.00	20	0	774
20:00	90	410	0	62	77	91	6	34	0.00	16	0	786
21:00	90	419	0	62	77	91	6	34	0.00	10	0	789
22:00	90	412	0	62	77	91	6	34	0.00	0	0	772
23:00	90	376	0	62	77	91	6	34	0.00	0	0	736

Power demand and possible sources of guaranteeing, hourly balance for Scenario B (minimum load), MW

Scenario B
June 2020 – minimum load

Table 17

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
00:00	100	267	0	69	71	85	6	22	0.00	0	0	619
01:00	100	236	0	69	71	85	6	22	0.00	0	0	588
02:00	100	212	0	69	71	85	6	22	0.00	0	0	564
03:00	100	182	0	69	71	85	6	22	0.00	0	0	535
04:00	90	171	0	69	71	75	6	22	0.00	0	0	504
05:00	90	171	0	69	71	73	6	22	0.00	0	0	502
06:00	92	171	0	69	71	79	6	22	0.00	0	0	509
07:00	107	164	0	69	71	79	6	22	0.00	7	0	525
08:00	96	177	0	69	71	64	6	22	1.84	61	0	568
09:00	97	214	0	69	71	38	6	22	1.84	101	0	620
10:00	95	235	0	69	71	41	6	22	1.84	123	0	664
11:00	96	245	0	69	71	45	6	22	1.84	130	0	686
12:00	100	259	0	69	71	54	6	22	1.84	105	0	687
13:00	100	255	0	69	71	54	6	22	1.84	101	0	680
14:00	100	262	0	69	71	44	6	22	1.84	109	0	684
15:00	100	253	0	69	71	57	6	22	1.84	98	0	677
16:00	100	249	0	69	71	79	6	22	1.84	73	0	671
17:00	100	288	0	69	71	79	6	22	1.84	44	0	680
18:00	100	317	0	69	71	79	6	22	1.84	30	0	695
19:00	100	331	0	69	71	79	6	22	0.00	22	0	699
20:00	100	346	0	69	71	79	6	22	0.00	17	0	710
21:00	100	355	0	69	71	79	6	22	0.00	11	0	713
22:00	100	351	0	69	71	79	6	22	0.00	0	0	698
23:00	100	318	0	69	71	79	6	22	0.00	0	0	665

Scenario B

June 2025 – minimum load

Table 18

h	Riga CHP1	Riga CHP2	Imanta CHP	Biomass	Biogas	Gas fuelled co-generation	Small HPP	Wind power	Solar power	Daugava HPPs [10)]	Import	Load
00:00	60	284	0	100	98	91	6	46	0.00	0	0	685
01:00	60	250	0	100	98	91	6	46	0.00	0	0	651
02:00	60	223	0	100	98	91	6	46	0.00	0	0	624
03:00	60	190	0	100	98	91	6	46	0.00	0	0	592
04:00	42	175	0	100	98	91	6	46	0.00	0	0	558
05:00	39	175	0	100	98	91	6	46	0.00	0	0	555
06:00	48	175	0	100	98	91	6	46	0.00	0	0	564
07:00	60	173	0	100	98	91	6	46	0.00	7	0	581
08:00	60	168	0	100	98	91	6	46	3.40	55	0	628
09:00	60	190	0	100	98	91	6	46	3.40	92	0	686
10:00	60	218	0	100	98	91	6	46	3.40	112	0	735
11:00	60	236	0	100	98	91	6	46	3.40	118	0	759
12:00	60	260	0	100	98	91	6	46	3.40	95	0	760
13:00	60	256	0	100	98	91	6	46	3.40	92	0	753
14:00	60	253	0	100	98	91	6	46	3.40	99	0	757
15:00	60	256	0	100	98	91	6	46	3.40	89	0	749
16:00	60	271	0	100	98	91	6	46	3.40	66	0	742
17:00	60	308	0	100	98	91	6	46	3.40	40	0	753
18:00	60	337	0	100	98	91	6	46	3.40	27	0	769
19:00	60	353	0	100	98	91	6	46	0.00	20	0	774
20:00	60	369	0	100	98	91	6	46	0.00	16	0	786
21:00	60	378	0	100	98	91	6	46	0.00	10	0	789
22:00	60	371	0	100	98	91	6	46	0.00	0	0	772
23:00	60	335	0	100	98	91	6	46	0.00	0	0	736

3.2. Information on energy cross-border trade amounts for 2014.

Table 19

	Amounts of energy trade (MWh)
Import	5 339 679
Eksport	3 023 388

3.3. TSO evaluation for the time periods of insufficient power adequacy and suggestions for power supply guarantee in forcoming years (i.e. generation development on certain locations, demand side management, new infrastructure creation).

Power system of Latvia is operating together with power systems of Estonia and Lithuania according to the principles of “Nord Pool Spot” electricity market of Nordic countries, where balance of energy demand and supply is regulated under the electricity market principles. Latvian TSO, as the institution responsible for the Latvian power system reliability, provides the market transactions within the Latvian bidding area, the continuous power balance between the Latvian consumption and generation, as well as control and publishes the available interconnection capacity for trade with the neighboring power systems. Since the European Union's Energy Action Plan 2050 was adopted, which states that the generation development and national capacity adequacy should be focused on areas with renewable energy potential, to stimulate the reduction of CO2 emissions and greenhouse effect gas emission reduction, as well as contribute to a more efficient, competitive power generation development, the base capacity adequacy within the territory of one country is not necessarily an indication of adequacy of generating capacity, but it must be evaluated in complex with the available transmission capacities to/from the country or region. In normal operation modes Latvian power system transfer capacities with neighboring power systems are sufficient for provision of forecasted electricity imports/exports, with the exception of the Estonian-Latvian cross-section where there capacity is insufficient, and the cross-section for 70.41% of the time was loaded for 100% of its capacity during the whole year 2014, creating additional restrictions on the power system parties. Nevertheless, operating under above mentioned conditions during the previous years there have not been situations where a Latvian consumers or regions has had to be restricted due to insufficient generating capacity or insufficient capacity on interconnectors with Lithuania, Estonia and Russia. Until now, working synchronously with the Russian integrated power system / united power system (IPS/UPS) Latvian TSO in all operation modes has been able to provide the required power (consumption) transmission within the Latvian electricity transmission system, regardless of the operational status of generating units within the territory of the Latvia. At the same time, analyzing the adequacy of capacity of national and regional level, the generating capacity of the Latvian power system is not sufficient to cover the Latvian power system peak load and ensure Latvian power system operation regardless of external conditions, especially in emergency situations caused by the cross-border transfer capacity reductions.

Analyzing power security for the coming years, in the conservative scenario (A) from the power (MW) supply security analysis tables (Table 5) one can observe that the generating capacity is insufficient to cover the Latvian electricity peak load and to provide the system control and safety requirements for the winter months, not only now when RigaCHP2 second unit has already been implemented (439 MW), but also in time period until 2025, when the planned new wind power development with a net capacity of 337 MW has been planned. It is planned that 72 MW of total net capacity of wind power could be covered by the off-shore wind parks, the pace of development of which is currently difficult to predict. Taking into account the slow development of wind power during the years 2012 to 2014, conservative scenario (A) assumed the off-shore wind farm development could begin no earlier than in 2022 (the minimum wind farm construction period is approx. 5 years, research and national authorization granting the construction of off-shore wind parks about 2 years), as well as the development of wind farm capacity could be approximately for 100 MW less than it was planned for 2014. Throughout the considered study period (2015-2025) adequacy is in the range of 82-96%, which indicates that the current generating capacity is insufficient to cover current consumption, as well as in the time period until 2025 capacity deficit is increasing from 60 MW to 289 MW. In Conservative scenario (A), the demand for electricity can be covered for 100% of the duration for year 2015, because of all the Latvian power plants together are able to cover the electricity consumption (Table 7).

Based on the Latvian TSO forecast, the European Transmission System Operator for Electricity (ENTSO-E) and the Baltic TSO market research as well as analysis of "Nord Pool Spot" markets, such electricity generation at RigaCHP-1 and CHP-2 natural gas fueled power plants is unlikely for economic reasons. While working at the electricity market principles, CHP-1 and CHP-2 could be producing about 30% of the maximum possible output in annual terms, but when operating in isolation from the neighboring power systems and ensuring the power balance in Latvia, RigaCHP-1 and RigaCHP- 2 from year 2015 could be able to produce the amount of electricity specified in the tables, that would be the maximum possible output.

In the optimistic scenario (B) the power (MW) supply security analysis tables (Table 6) shows that the Latvian power system is able to provide for the load from year 2015 to 2020. During this period the excess capacity is approx. 72 MW, which indicates that it is possible to export power to neighboring power systems. After 2020 the Latvian power system is at a power deficit of approx. 100 MW during the period considered. This means that the Latvian power system during this period will not be able to cover the peak load and provide for the system control and safety requirements. In the optimistic scenario (B), it is assumed that the off-shore wind farm development could begin gradually as early as 2020, after the introduction of the Kurzeme Ring 3rd stage into operation, the first experimental wind turbines (23 MW) in the Baltic Sea coast could be realized, as well as wind power development will proceed faster. In the optimistic scenario (B) guarantee of electricity will be sufficient for the whole study period (135-137%), which means that Latvia will be able to help cover the balance of power for neighboring power systems. In the optimistic scenario (B), increasing the wind power share of the Latvian electricity system will increase the need for regulatory reserve provisions and to achieve it, the Latvian TSO will need more actively to integrate in the Nordic / Baltic TSO balancing market and is more likely to realize its own reserve capacity power plant projects.

Analyzing the winter peak load covering for the daily period in scenario (A), we can conclude that in 2016 the Latvian electricity system will be unable to cover the daily load curve for the peak load day and will need to import about 80 MW from 9:00 to 21:00 from neighboring power systems, or to disable the less important consumers (Table 9). In 2020 Latvian electricity system for covering the peak load would need to import 161 MW at the time range from 08:00 to 21:00 (Table 10) and in 2025 to cover the peak load it will be required to import 290 MW in the time interval from 08:00 to 21:00 (Table 11). In the optimistic scenario (B) Latvian TSO will be able to fully cover the daily load of year 2016 (Table 12) and year 2020 (Table 13) and, if necessary, will be able to export power to neighboring power systems. From 2021 a small power deficit develops in the Latvian electricity system and for 2025 it will increase to approximately 130 MW (Table 14).

In order to cover the daily minimum load in the conservative scenario (A) for the year 2020 the need to reduce the Riga TPP-1 capacity to 90 MW appears as well as the need to regulate the RigaCHP-2 output as well as the production at the distributed small natural gas co-generation plants (Table 15). This adjustment is necessary in order to ensure operation of all power plants during a minimum daily load, and ability of them to cover the daily peak load. For the year 2025 RigaCHP-1 operates at a constant power of 90 MW and output at the small natural gas cogeneration plants is regulated, together with the Riga TPP-2 (Table 16). In the optimistic scenario (B), when the increased amount of power is available from renewable energy sources for the year 2020 RigaCHP-1 and CHP-2 capacity needs to be controlled, as well as capacity from small gas CHPs (Table 17). In the optimistic scenario (B) of the 2025 CHP-1 operates at 60 MW and from. 4:00 to 6:00 its output power is reduced in order to ensure the daily peak load and low load coverage. During the study period the distributed cogeneration power plants are working at full capacity and are not regulated, but regulation of the capacity is provided by RigaCHP-1 and RigaCHP-2, since these stations according to the market principles are the price forming stations and electricity produced by them is the most expensive. Renewable energy sources are used in full capacity, so their output power is not regulated or is regulated only when strictly necessary (Table 18).

3.4. Information on required and available emergency reserve capacities, replacement reserves (MW) and amount of reserve utilisation in 2014.

Table 20

Month	Max required	Available		Replacement reserve (replace BRELL emergency reserve after 12h)	Utilised emergency reserve
		In Latvia	BRELL agreement, till 12h		
	MW	MW	MW	MW	MWh
January	400	100	400	100	25.833
February	400	100	400	100	111.667
March	400	100	400	100	173.333
April	400	100	400	100	549.999
May	400	100	400	100	897.833
June	400	100	400	100	3259.002
July	400	100	400	100	3347
August	400	100	400	100	0
September	400	100	400	100	0
October	400	100	400	100	713.334
November	400	100	400	100	116.667
December	400	100	400	100	36.667

3.5. TSO conclusions on generation capacity and power availability for the needs of power supply providing for Latvian consumers

The “The General position for development of Energy in Latvia in 2007-2016” (Cabinet of Ministers of Latvia Order Nr.571) shows that in year 2016 the Latvian electricity grid has to achieve a 100% rate. Table 5 shows that in 2015 the Conservative development scenario (A) capacity self-sufficiency of Latvian power system is reaching approximately 96% but of the electricity supply (Table 7) - 142%. In the optimistic scenario (B) coverage with capacity is to reach 100% from 2015 to 2020, which points to the fact that the Energy Development Guidelines will be met in the above-mentioned interval of time (Table 6). In

Optimistic scenario (B) the amount of electric energy produced in the time interval from 2015 to 2025 will be approximately 135 to 137%.

The new base power plant commissioning in Latvia and in Baltic States until 2025 are not expected because according to the information provided by Latvian Ministry of Economics for the long-term planning period, large capacity base power projects in Latvia are not expected and the "Energy Strategy 2030" provides for the development only for market conditions for those project that are economically justified regional low carbon based power projects, and refusing of direct state aid for new base capacity projects. Latvian participation (investor status) in the Visaginas NPP project realization is supported from the Latvian government only if the project will be technically and economically justified. In addition to direct investment in this power plant additional investments would be required for capacity reservation arrangements to ensure generating activity of the planned power plant, under normal and emergency modes. This type of investment is required from the Baltic TSO`s. In 2014 Lithuanian TSO "Litgrid AB" in cooperation with the Latvian and Estonian TSO conducted a study on the possibility of integrating high-capacity power plant in Lithuanian transmission system and the results of the investigation revealed the problems with reservation of this type of power plant for various operation modes in the Baltic power system, as well as discrepancies were found by the Latvian TSO regarding reservation for generating unit in other countries TSO license area.

According to the information available at the "Augstsprieguma tikls" AS construction of new big power nuclear power plants takes place in Belarus and the Kaliningrad region. Realization of the 1-st unit of Belarus NPP intended for the Belarusian electricity consumers' needs, with an installed capacity of 1200 MW is expected for year 2018 and commissioning of the second block with a similar installed power, which is mainly intended for export, is expected in 2020. Commissioning of the unit 2 depends on the outcome of the dialogue of Belarusian part with neighboring power systems on reinforcement options in the power transmission network. Similar situation is also with development of a nuclear power plant in the Kaliningrad region, which is intended for the export of electricity to the Baltic countries and Central Europe. The project with installed capacity of 1200 MW per unit has an expected implementation period up to 2021. According to information available at "Augstsprieguma tikls" AS, Kaliningrad nuclear power plant is planned to be developed with two generation units with a total capacity of 2400 MW by year 2023. Implementation of the project in any scenario requires serious reinforcements for both internal Kaliningrad transmission network and powerful interconnection developments with neighboring power systems, which are currently controversial. Analyzing the Baltic power systems development and trading possibilities during the last year it can be concluded that such a large number of nuclear power stations in the Baltic States and around the Baltic region is not necessary.

The potential interest in the future from renewable energy producers in most part may be related to the utilization of the Baltic Sea offshore wind potential and construction of wind farms in Kurzeme coast. Taking into account the experience of previous years, plant construction time, commissioning of Kurzeme Ring transmission infrastructure project last stage, the current situation with the technical regulations issued to the electricity generators, as well as the currently existing Latvian legislative shortcomings in the field of renewable energy, system operators have no reason to believe that the submitted generation development applications will be realized fully. In this regard, TSO believes that the real number of power plants built, and power installed will be considerably less than indicated in the applications issued and more intense power development is expected not earlier than after 5-7 years, but there is no access to such criteria by which to objectively assess and control planned power plant construction processes.

Information received from electricity consumers (both large - connected to the transmission network and small - connected to the distribution network) on the development plans in Latvia show very conservative development for the next ten years.

4. Transmission system adequacy for demand and maintenance quality

4.1. TSO conclusions on the power transmission system adequacy for the tasks of energy transmission and the ability to provide noninterrupted functioning of the power system in outage of one of the systems units and activities (individually and jointly with other transmission system operators) for the reliable operation of the transmission system for the coming years (minimum forecast period - 10 years)

From year 2010, the Latvian transmission network can no longer provide the energy demand of Latvian electricity users with adequate power reserves during normal operation conditions, due to the significantly reduced transmission capacity in cross-section of Estonia - Latvia and Russia – Latvia. The reason of this is that the "Elering" AS (Estonian TSO) through long-term research with the help from specialists in the Nordic countries in several border crossing and internal 330 kV transmission lines discovered an increased and even critical wire sag. In addition to that closure of the last generating unit at the Ignalina NPP the transmission network has lost significant voltage source and a large generation unit, which previously reduced electricity imports to the Baltic States and the relieving of internal and external cross sections of transmission networks of the Baltic States. The situation improved in 2013 with the commissioning of the RigaCHP-2 second unit with an installed capacity of 450 MW. RigaCHP-2 second cogeneration unit works mostly only during the winter season (heating season) when the city of Riga has the heat load demand. Due to the Latvian, Estonian and Russian (Pskov region) transmission grid characteristics, historically Estonian, Latvian and Russian cross-section is technically indivisible. Due to the above mentioned, the cross section with the technical transmission capacity of 1150 MW towards the Latvia is reduced to 900 MW and towards the Estonia to 850 MW at an outdoor temperature of 0 ° C and below the 700 MW in Latvian direction and 750 MW in Estonian direction at outdoor temperatures 25 ° C, taking into account the existing reserve capacities, as well as wire thermal constraints during the summer. Due to the market situation and the requirements each country of the divided cross sections with the neighboring countries, the cross-section distribution of 2/3 between Estonia and Latvia and 1/3 between Latvia and Russia has been implemented. In order to eliminate these shortcomings, in the period from year 2018 to 2030 the "Elering" AS plans to invest additional sources to its budget to begin transmission line reconstruction to eliminate issues with wire sag and proximity violations. This transmission capacity restrictions (mentioned above) in system emergency or repair modes do not provide for faultless power system functioning after a fault in one of the system objects and severely handicap Latvian and Lithuanian, as well as in some cases the Kaliningrad region's ability to import electricity from the cheapest electricity price areas - Estonia and the Nordic countries, as a result in Lithuania and Latvia average electricity price is higher than in Estonia and Nordic countries. After Ignalina NPP closure, loading on the cross-section between Russia and Belarus has increased, and during the repair and emergency modes transmission power there is limited, resulting in problems with electricity supplies from Russia and Belarus.

Latvian transmission network loading increased from October of 2013, when Estonian-Finnish second DC connection Estlink2 was put into operation and Latvian and Lithuanian (mostly) energy traders increased the trading amounts of electricity from the Nordic countries. These measures worsened the situation even further in the cross-section of Estonia-Latvia.

For elimination of restrictions on the Estonian-Latvian cross-section in addition to the Estonian transmission line reconstruction measures the decision on the construction of the third Estonian-Latvian interconnection by year 2020 is made, which will increase the cross-sectional transmission capacity and provide for smooth functioning of electricity transmission system not only in normal but also in emergency and repair modes.

Electricity transmission capacity on the Latvian-Lithuanian cross-section is sufficient and creates no additional problems for the transportation of electricity hence for the time being does not require additional measures to improve the situation.

4.2. Information about the planned system interconnections (minimum forecast period - 10 years)

With EC co-financing support on August 26, 2014 the second stage of the Kurzeme Ring 330 kV Grobiņa-Ventspils project has been commissioned. Realization of this project has been started in 2010. New 330 kV transmission line Grobiņa - Ventspils is a continuation of a large infrastructure project in Latvia named Kurzeme Ring, which will increase the security of energy supply in Latvia, particularly in Kurzeme region, and will provide an opportunity to connect potential wind power development projects to the transmission network, especially in coastal areas and the sea coast. Full operational functionality of the Kurzeme Ring will be reached with the final stage construction from Ventspils to Riga, because it will provide bilateral power supply to all of the 330 kV substations, corresponds the requirements of security of electricity supply and the technical policy of the Latvian TSO.

Kurzeme Ring 3rd stage, 330 kV power transmission line Ventspils-Tume-Imanta, commissioning is expected in the end of 2019. In 2013, with the European co-financing the Environmental Impact Assessment (hereinafter - EIA) and the transmission line route study for this project have been finalised. "Ventspils-Tume-Imanta" line project is included in the Latvian electricity transmission system 10-year development plan, the Pan-European transmission network 10-year development plan, as well as projects of common interest (hereinafter - PCI) in the first list under European Commission Regulation Nr.1391/2013 from October 14, 2013 and is a candidate for inclusion in the 2nd PCI list, which is planned to be approved by the end of year 2015. Based on the inclusion of the project in the 1st PCI list, as well as jointly submitted application by "Augstsprieguma tikls" AS and Latvian transmission system owner "Latvijas elektriskie tikli" AS for project co-financing from EU grants, on November 21, 2014 the European Commission decided (Commission Decision C (2014) 8580) to co-finance the project "Ventspils-Tume-Imanta" from the Connecting Europe Facility (CEF) fund. Awarded co-financing amounts to 45% of the total project cost. In May 2015, the Grant Agreement has been signed between AS "Augstsprieguma tikls"and the European Innovation and Network Executive Agency, which is delegated by EC for energy sector co-financed projects management and realization. In May 2015 "Augstsprieguma tikls" AS has launched the procurement procedure for "Ventspils-Tume-Imanta" 110 kV line reconstruction, by augmenting it with a 330kV line.

The whole the Kurzeme Ring project will provide the necessary infrastructure for wind farm development in Kurzeme region, will connect the two largest (western and central) Latvian production and consumption areas, as well as facilitate possible transit flow increase for the new 700 MW DC connection between Sweden and Lithuania ('NordBalt "project).

In cooperation with the Estonian transmission system operator and Latvian transmission system owner third Estonian-Latvian electricity interconnection development between the 330 kV substations - Killing-Nomme in Estonia and Latvian RigaCHP-2 is going on. This interconnection will increase the available interconnector capacity between the Latvian and Estonian electricity systems and eliminate bottlenecks in the Estonian-Latvian cross-section, which currently restricts electricity trade volume between the Baltic and Nordic countries. Estonian-Latvian third interconnection is included in the Latvian and Estonian electricity transmission system 10-year development plan, the Pan-European 10-year development plan of the transmission network, as well as it being included in the 1st PCI list and is a candidate for inclusion in the second PCI list. Estonian-Latvian third interconnection project is considered one of the most important projects in the whole Baltic Sea region, because of the increased capacity the Estonian-Latvian cross-section of up to 500/600 MW for normal operation scheme and to 300/500 MW in isolated operation of the region.

Based on the importance of the project for whole Baltic Sea region, project status in 1st PCI list, as well as "Augstsprieguma tikls" AS, "Elering" AS and "Latvijas elektriskie tikli" AS jointly submitted application for EU co-financing, on November 12, 2014 the European Commission decided to (Commission Decision C (2014) 8580) co-finance the project "Estonian-Latvian third interconnection" from the CEF funds. Awarded co-financing amounts is 65% of the total project cost in the Latvian and Estonian territories.

In year 2014 with the co-financing of European Commission TEN-E support, continuation of the EIA study and power line right of way for the third Estonian-Latvian interconnection has been started, as well as public consultations with local authorities and the public on the possible transmission line route variants in Latvian territory. Due to the densely populated areas in the Riga region and great resistance from local municipalieties at the end of 2014 the cooperation with the European railway project promoters in Latvia "Rail Baltica" has been started with the possibility to find a common, more environmental friendly corridor for railway and electricity transmission lines. Currently detailed technical studies and an environmental impact assessment of a Latvian sector of new railway line "RailBaltica" is going on. The study aims to identify the exact location of the planned railway line in the territory of Latvia and to make the necessary preparations for the research of the railway line construction design, land purchases and construction process. Currently, work is underway on a common route fine-tuning areas where it is planned to build the common rail and power line projects. Technical studies and an environmental impact assessment within the framework of cooperation with all interested stakeholders, including "Augstsprieguma tikls" AS, in search for mutually beneficial solutions to the railway line and the new 330 kV lines relative positions (transmission line locating parallel to the planned "Rail Baltica "route in the section Saulkrasti - RigaCHP-2) and the Rail Baltica powering issues. EIA report approval for the Project is scheduled in the middle of 2016 after that is expected the start of project realisation. Estonian-Latvian third interconnection project is expected to be commissioned by 2020.

On 1st of August, 2014 "Augstsprieguma tikls" AS, "Elering" AS and "Latvijas elektriskie tikli" AS signed a Memorandum of Understanding (MoU), in which all parties agreed on the development of interconnection and reciprocal obligations of its implementation.

Realizing the requirements of a common Baltic Prime Ministers of 11 June 2007 Communique and, based on prepared common Baltic TSO study “On synchronization of Baltic electricity system into the EU internal electricity market” results, completed in October 2013, in 2014 the work on the synchronization project of the Baltic power systems with Continental Europe and desynchronisation from the Russian power system has been continued. In November 2014, the Baltic TSOs prepared the "Synchronization project" road map, in which parties agreed on the “syncronisation” scenario through Lithuania and Poland with two AC interconnections LitPol Link1 and LitPol Link2. In January 2014 responsible ministers of the energy sector in the Baltic countries signed the "Declaration on Baltic energy supply security", where they politically supported the Baltic synchronization with mainland Europe, and reducing energy dependence on Russia and increase the reliability of the electricity sector in the European Union. In 2014 Lithuanian and Polish TSO’s launched a research for the track route for the second interconnector LitPol link 2. Development of this interconnection is challenged by crossings of nature reserves, as well as by lack of sufficient network infrastructure on Polish territory. This situation, as well as the future of the Kaliningrad power system operating status can create problems for the entire development of the project, so the Latvian and Estonian TSOs do not exclude the possibility of the Baltic electricity system synchronization with the Nordic power systems. At present, the European Commission has established a working group on this issue, which will continue work with possible "syncronisation" on the higher political decision. "Synchronization project" is supported from the European Commission and could be co-financed under CEF funds.

In October 2013 the second DC interconnector between Estonia and Finland (Estlink2) with transmission capacity of 650 MW has been started on operation, and officially commissioned in February 2014. Interconnection has been co-financed by the European Commission. This new interconnection increased amount of electricity purchased from the Nordic countries by Latvian and Lithuanian electricity traders as well as the increased loading of the networks and the volume of transit through the Latvian electricity transmission system. Until January 2016 interconnection between Lithuania and Sweden (NordBalt) with 700 MW of transmission capacity is expected to be commissioned, thus providing a more complete integration of transmission networks of the Baltic States with the Nordic transmission grids and electricity market integration in the Nordic market. Lithuanian and Polish TSO plans to realize a DC interconnection LitPol Link 1 with 500 MW of transmission capacity (stage 1) until the end of 2015 and with a total 1000 MW of transmission capacity (2nd stage) by 2020. Along with the opening of the electricity market the Baltic countries have more opportunities to buy or sell electricity from/to the neighboring countries.

In 2014 the work on the possible development scenarios for synchronization of transmission network in the Baltic countries with continental Europe is continuing, as well as solutions to increase capacity in the Baltic region in the North - South direction were sought for. In this regard, project "Baltic Corridor" has been studied. "Baltic Corridor" is a project whose mission is to increase the total transmission capacity through the Baltic States for ~ 600 MW. This project is supported by the Latvian, Lithuanian and Estonian transmission system operators. The project will provide adequate infrastructure for the Baltic countries' energy independence from the Russian power system and will serve as a prerequisite for the successful Baltic power system synchronization with the continental European power systems.

One of the Baltic Corridor projects is RigaHPP - RigaCHP2 connection, which will provide the Estonian-Latvian third interconnection full functionality during repairs and outages in Riga region transmission network, improve reconstructed RigasCHP-2 power outcome options as well as in the regional level will play an essential role in the capacity increase for Baltic region in North - South direction. The project should be realized by 2020, when Estonian-Latvian third interconnector is expected to be commissioned.

Under the "Baltic Corridor" project Latvia has also intended to reinforce the 330 kV network through reconstructions of 330 kV transmission line Tartu (EE) - Valmiera (LV) and Tsirguliina (EE) - Valmiera (LV) thus providing the capacity increase in the cross-section between Latvia and Estonia. These transmission lines have been built in 60-ties and 70-ies of the last century (by Soviet Union), and the construction standards of these lines no longer meets current operational requirements, such as the capacity differences between winter and summer seasons interfere with optimal and efficient electricity market. These lines are to be completely replaced with new, high-capacity lines, to ensure a higher total transmission capacity of the Baltic region in the North - South direction. Both lines are planned to reconstruction after the Estonian - Latvian third 330kV interconnection commissioning and the estimated project implementation time is until year 2024.

All of the above mentioned "Baltic Corridor" projects are included in the Latvian and ENTSO-E Pan-European 10-year network development plans, as well as are candidates for inclusion in the 2nd PCI list and will candidate for EU co-financing under the CEF program. In the The 2nd PCI list the Baltic corridor project will be combined with the synchronization project because the two projects have one goal - to provide the Baltic transmission network reinforcement for further synchronous operation with continental Europe.

4.3. TSO conclusions on the electricity transmission system reliability and adequacy of all consumers to provide secure power supply in the previous year and the following years (minimum forecast period - 10 years)

Realization of the projects mentioned in the paragraph 4.2 will ensure the reliable operation of the transmission network, the power consumption and generation adequacy, stable operation of power stations and electricity transit through Latvia and the Baltic countries. At present, major problems of the electricity system operation are caused by transmission capacity reduction in cross-section between Estonia and Latvia, where, together with cross-border capacity increasing activities in the long term, one of the possible solutions is to encourage all Latvian and Lithuanian power plants to participate in the "Nord Pool Spot" electricity market and promote the electricity market liquidity. Increased competition and the development of new capacity will reduce the price of electricity in the Baltic region, as well as reduce the impact on the import of electricity from Russia.

330 kV and 110 kV transmission network is planned to be reconstructed, modernized and developed, according to the electricity transmission system development plan developed by "Augstsprieguma tikls" AS and approved by the Public Utilities Commission. Above mentioned plan is published in the AST and PUC websites. In parallel with the development of 330 kV transmission network, the 110 kV transmission network has also to be developed, especially in places where the requirements of reliability n-1 criterion are not realised. In 110 kV network planned 110 kV substation reconstructions are proposed, as well as the planned replacement of aged transformers. In addition to the completed 330 kV loop network around Riga, in Riga region it is necessary to reconstruct the 110 kV substations and improve the 110 kV network in order to increase security of energy supply.

4.4. Existing generation capacities, greater than 1 MW.

Latvian power system power stations with installed capacity above 1 MW:

Table 21

No	Station name	Installed capacity (MW)
	Natural gas co-generation stations	
1	B-Energo SIA	1.998
2	Biosil SIA	1.998
3	BK Enerģija	3.9
4	Daugavpils siltumtīkli PAS	5.955
5	Dienvidlatgales īpašumi SIA	1.998
6	DLRR Enerģija SIA	1.698
7	Energy & Communication, AS	3.9
8	LATNEFTEGAZ SIA	3.986
9	RB Vidzeme SIA	1.998
10	Rēzeknes siltumtīkli SIA	5.572
11	Dobeles enerģija SIA	2.172
12	Fortum Jelgava, SIA	3.996
13	Līvbērzes enerģija, SIA	1.644
14	WINDAU, SIA	3.8
15	Elektro bizness SIA	3.6
16	Energoapgādes tīkli 1 SIA	2.97
17	Mārupes siltumnīcas SIA	1.99
18	Olainfarm enerģija AS	2
19	Olenergo AS	3.12
20	Residence Energy, AS	1.24
21	SABIEDRĪBA MĀRUPE, SIA	2
22	Sal-Energo, SIA	3.99
23	VANGAŽU SILDSPĒKS, SIA	2.746
24	Zaļā dārzniecība SIA	1.999
25	Biznesa centrs Tomo SIA	1
26	Rīgas siltums AS	2.895
27	RTU Enerģija SIA	1.56
28	Uni-enerkom, SIA	1.98
29	LIEPĀJAS ENERĢIJA, SIA	4
30	SALDUS SILTUMS, SIA	1.3
31	VALMIERAS ENERĢIJA, AS	4
32	Juglas jauda, SIA	14,9
	Biomass and biogas power stations	
1	AD Biogāzes stacija, SIA	1.96
2	Agro Iecava, SIA	1.95
3	Conatus BIOenergy, SIA	1.96
4	Bioenerģija-08, SIA	1.98
5	Biodegviela, SIA	2
6	BIO ZIEDI, SIA	1.998
7	DAILE AGRO, SIA	1
8	Getliņi EKO, BO SIA	5.24
9	Grow Energy, SIA	1.996
10	KŅAVAS GRANULAS, SIA	1.956

11	LIEPĀJAS RAS, SIA	1.45
12	RIGENS, SIA	2.096
13	Zaļā Mārupe, SIA	1
14	GRAANUL INVEST, SIA	6.492
15	Krāslavas nami, SIA	1
16	Liepājas Enerģija, SIA	2.5
17	GAS STREAM	1
18	BIO FUTURE, SIA	1
19	Pampāļi, SIA	1
20	EcoZeta, SIA	1.4
21	Saldus enerģija,SIA	1.862
22	BIOEninvest, SIA	1
23	Priekules Bioenerģija, SIA	2.4
24	Piejūras energy, SIA	2.2
25	Agro Lestene, SIA	1.5
26	OŠUKALNS, SIA	1.4
27	Zemgales enerģijas parks, SIA	1.3
28	Fortum Jelgava SIA	23,82
29	RĪGAS SILTUMS AS	4.6
30	Agrofirma Tērvete AS	2
31	Zaļās zemes enerģija SIA	1
32	International Investments SIA	1
33	SM Energi SIA	1.1
34	Enefit power un Heat Valka SIA	2.4
35	Latsaule SIA	1.07
36	Betula Premium SIA	1.9
37	Incukalns Energy SIA	3.999
38	Graanul Pellets Energy SIA	3.99
39	PREIĻU ENERĢĒTIKA SIA (Seces koks SIA)	1.15
40	JE Enerģija SIA	1
Wind power stations		
1	Baltnorvent, SIA, Alsungas VES	2
2	BK Enerģija, SIA	1.95
3	Enercom Plus, SIA	2.75
4	Impakt, SIA Užavas VES	1
5	Lenkas energo, SIA Lenkas VES- 1	2.745
6	VĒJA PARKS 10, SIA	1.8
7	VĒJA PARKS 11, SIA	1.8
8	VĒJA PARKS 12, SIA	1.8
9	VĒJA PARKS 13, SIA	1.8
10	VĒJA PARKS 14, SIA	1.8
11	VĒJA PARKS 15, SIA	1.8
12	VĒJA PARKS 16, SIA	1.8
13	VĒJA PARKS 17, SIA	1.8
14	VĒJA PARKS 18, SIA	1.8
15	VĒJA PARKS 19, SIA	1.8
16	VĒJA PARKS 20, SIA	1.8
17	WINERGY, SIA	20.7

18	Silfs V SIA	1
19	Rietumu elektriskie tīkli, SIA	1.6
20	AS Latvenergo, Ainažu VES	1.2
Hydro power stations		
1	Spridzēnu HES, SIA	1.2
Latvenergo power stations		
1	Kegums HPP	240.1
2	Riga HPP	402
3	Plavinas HPP	894
4	RigaCHP1	144
5	RigaCHP2	881

4.5. Actions during maximum demand or supply deficit periods

In the event of the deficit of power and energy in Latvian territory and in the neighbouring countries to cover the consumption of the Latvian power system, the TSO will be forced to limited or disable from the network a certain number of consumers in order to balance the power consumption and the generation in Latvian power system. In this case, the TSO will act according to Latvian legislation and will inform the Ministry of Economy of the problem of ensuring the balance of power.

On behalf of „Augstsprieguma tīkls” AS

Chairman of the Board V. Boks