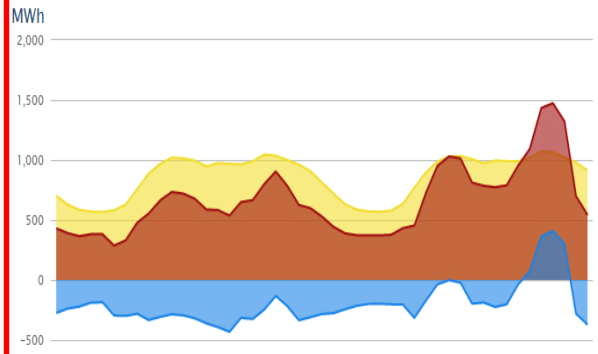
Possibilities and potential of Latvian TSO of operation and development of wind energy in Latvia

Main business of AST

Transmission system operation and maintenance

Electricity market reliable and effective operation



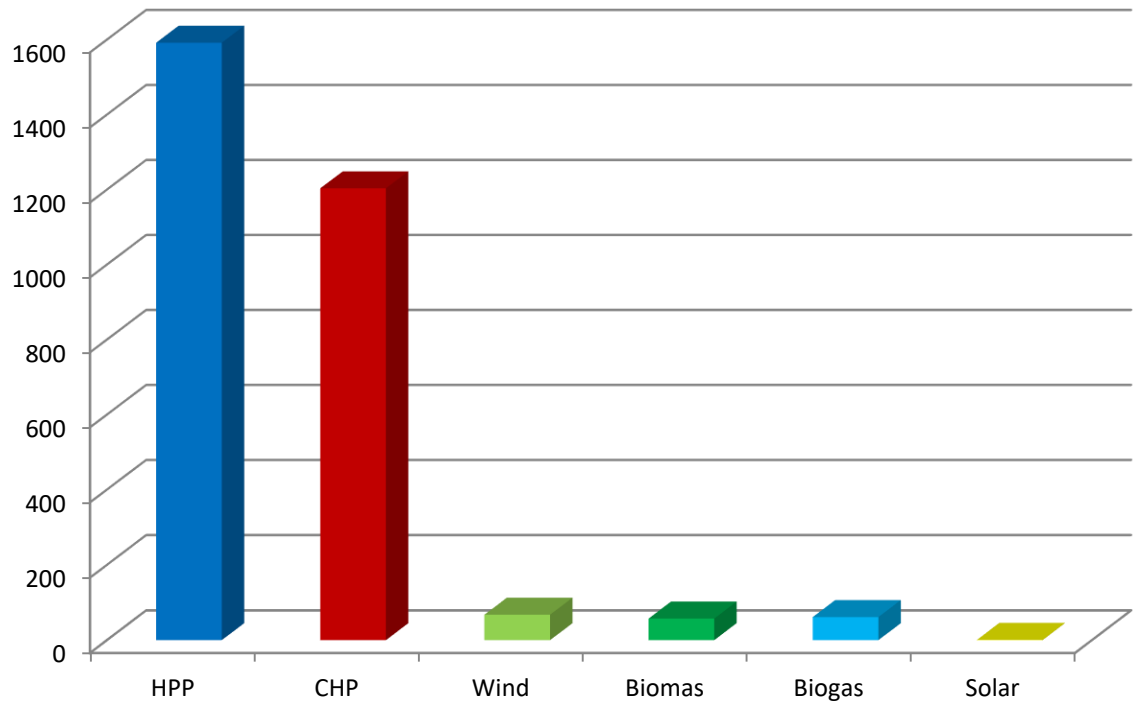
Balance of the system

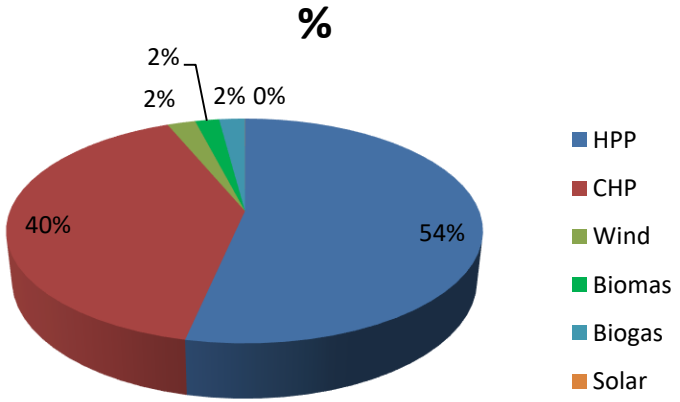
Power system integration and development

Grid Users

- 19 electricity transmission service Clients
  - 5 thermal power plants (incl. 4 CHP-s and 1 Biomass)
  - 3 hydro power plans
  - 1 wind farm
  - 4 major customers
  - 6 distribution network companies
- 6 connections with neighboring countries
  - 2 AC connections with Estonia
  - 4 AC connections with Lithuania
  - 1 AC connection with Russia

Total installed capacity in Latvia





HPP	1592	53%
CHP	1203	40%
Wind	68	2%
Biomas	57	2%
Biogas	61	2%
Solar	0.604	0%
Total	**2982**	**100%**

Main TSO activities for reliable electric supply for short-term and long-term

- **Operation of transmission system during electricity market conditions**
  - ✓ Network service agreement between TSO and energy producer;
  - ✓ Balance of power system of Latvia under electricity market conditions, for power supply reliability.
- **Development plan of transmission network**
  - ✓ New transmission lines construction;
  - ✓ Reconstruction of existing substations of transmission system;
  - ✓ Analysis of transmission network sufficiency;
- **Latvian power system adequacy forecast**
  - ✓ Latvian electrical power system forecast for 10 year period, taking into account development plans of electricity producers;
  - ✓ Analysis of several development scenarios.

Annual adequacy forecast, prepared by TSO

Scenario A “Conservative development”

- Generation forecast is prepared, taking into account operation of the gas burning power stations, operating mainly in co-generation modes during the winter periods.
- Development of wind power stations, bio-mass, bio-gas, small scale gas co-generation and solar generation stations is planned based on assumption, that development of each above mentioned generation type can be affected by possible changes in governmental support schemes.

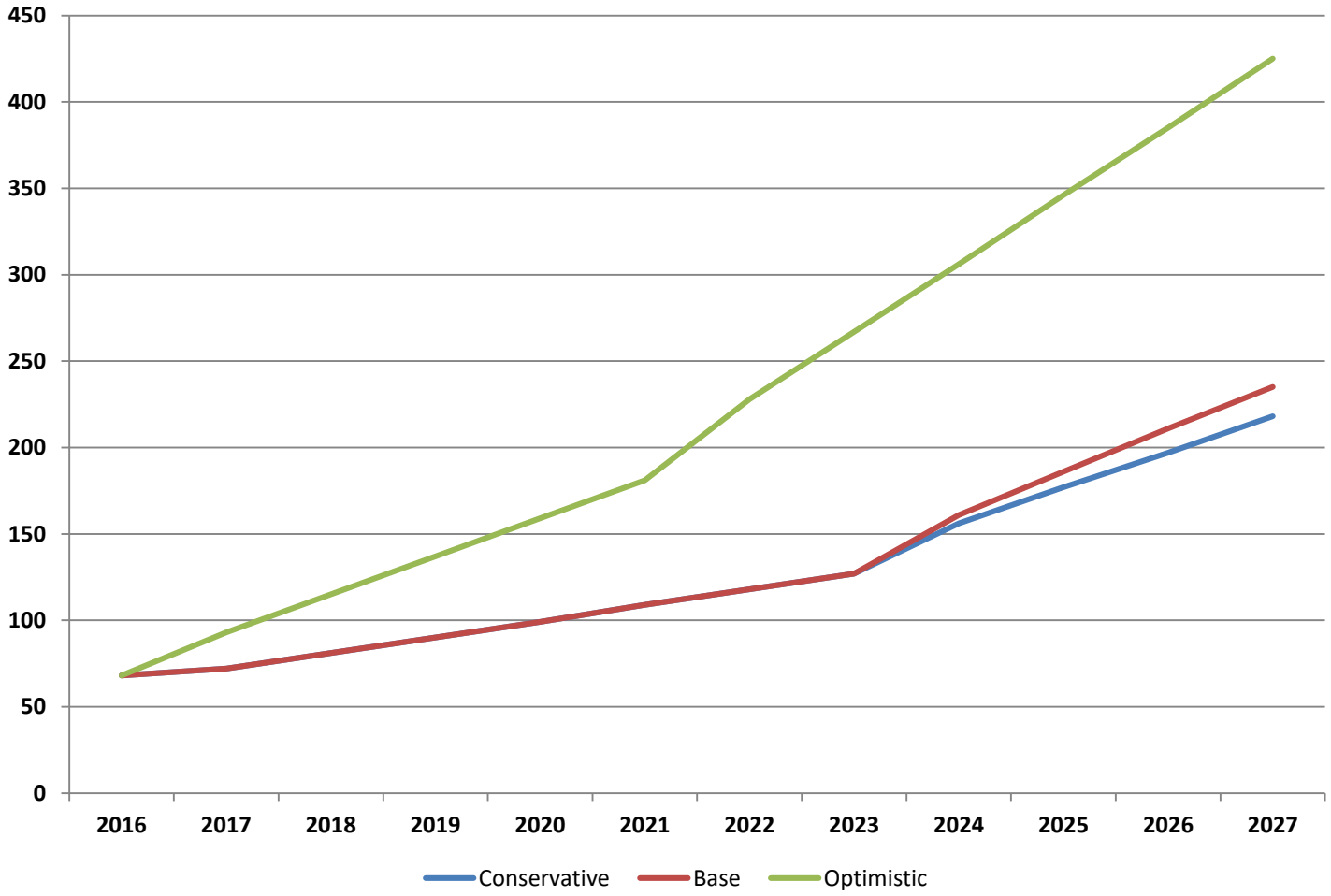
Scenario B “Base scenario”

- Generation forecast planned for commissioning or de-commissioning based on the information supplied by all power system users to the TSO.
- Production of the Daugava HPP cascade and Riga CHP’s is planned based on the annual average production.
- Development of the wind power stations, bio-mass and bio-gas stations, small gas co-generation stations and solar power stations is based on historical development data for each type of generation in Latvia at moderate economy development in the country.

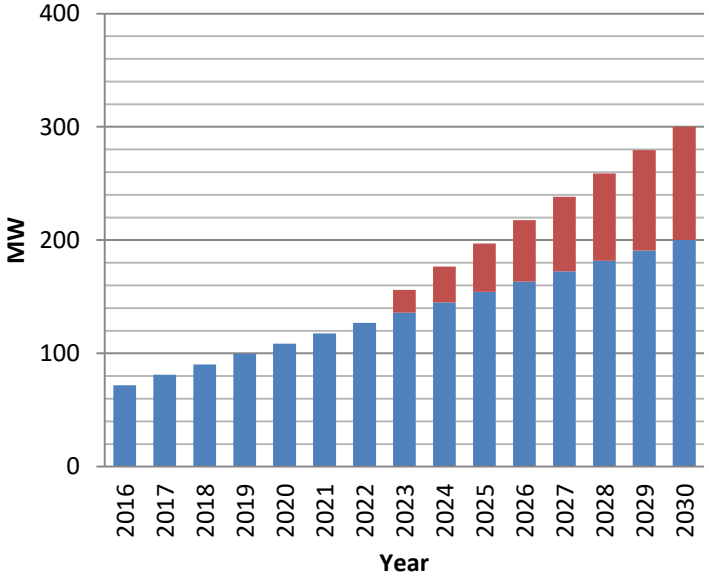
Scenario EU “Optimistic development”

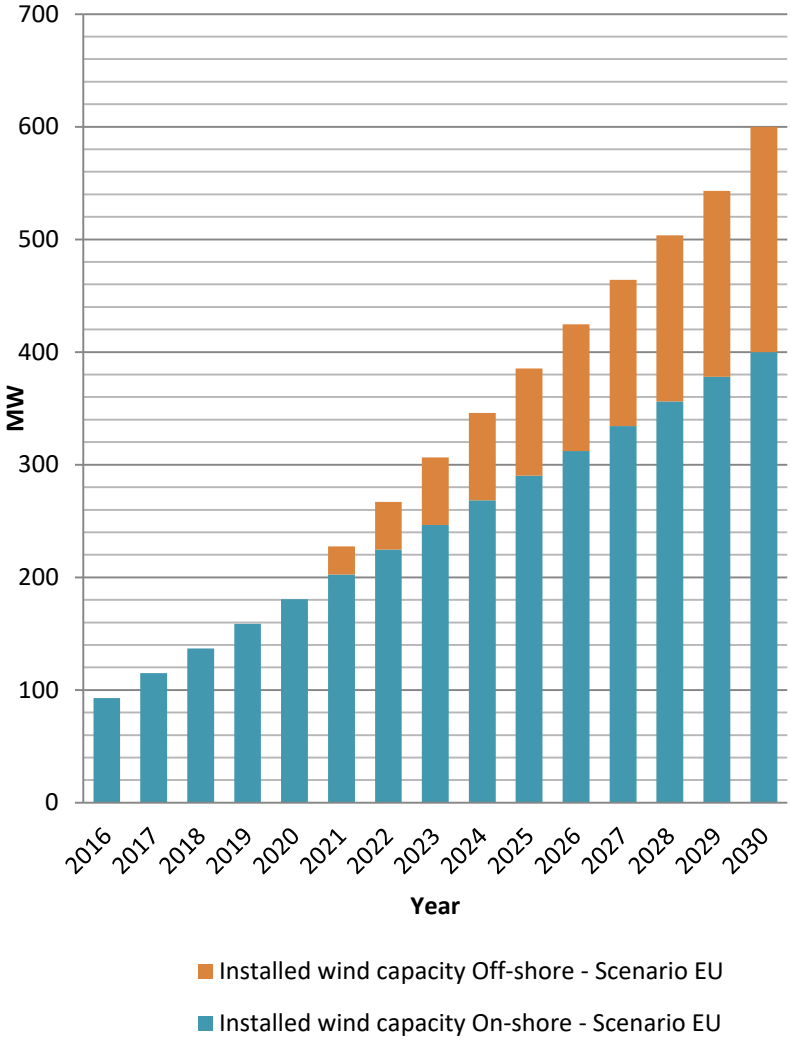
- Generation forecast is based on GDP increase forecast for Latvia, submitted by the Ministry of Economy, taking into account expected generation and load increase, necessary to achieve the development goals for 2020 and 2030 by EU, based on "Energy Development Guidelines for years 2016-2020 in Latvia".
- Based on EU 2020 forecast
- Possible future power stations are taken into account, commissioning of which are possible based on the information available at TSO.
- Development of wind, solar, bio-mass and bio-gas power stations is much faster, due to stronger governmental support and wider transmission system infrastructure development.

Installed wind capacity forecast, prepared by TSO



Installed wind capacity in Conservative scenario A and Optimistic scenario EU

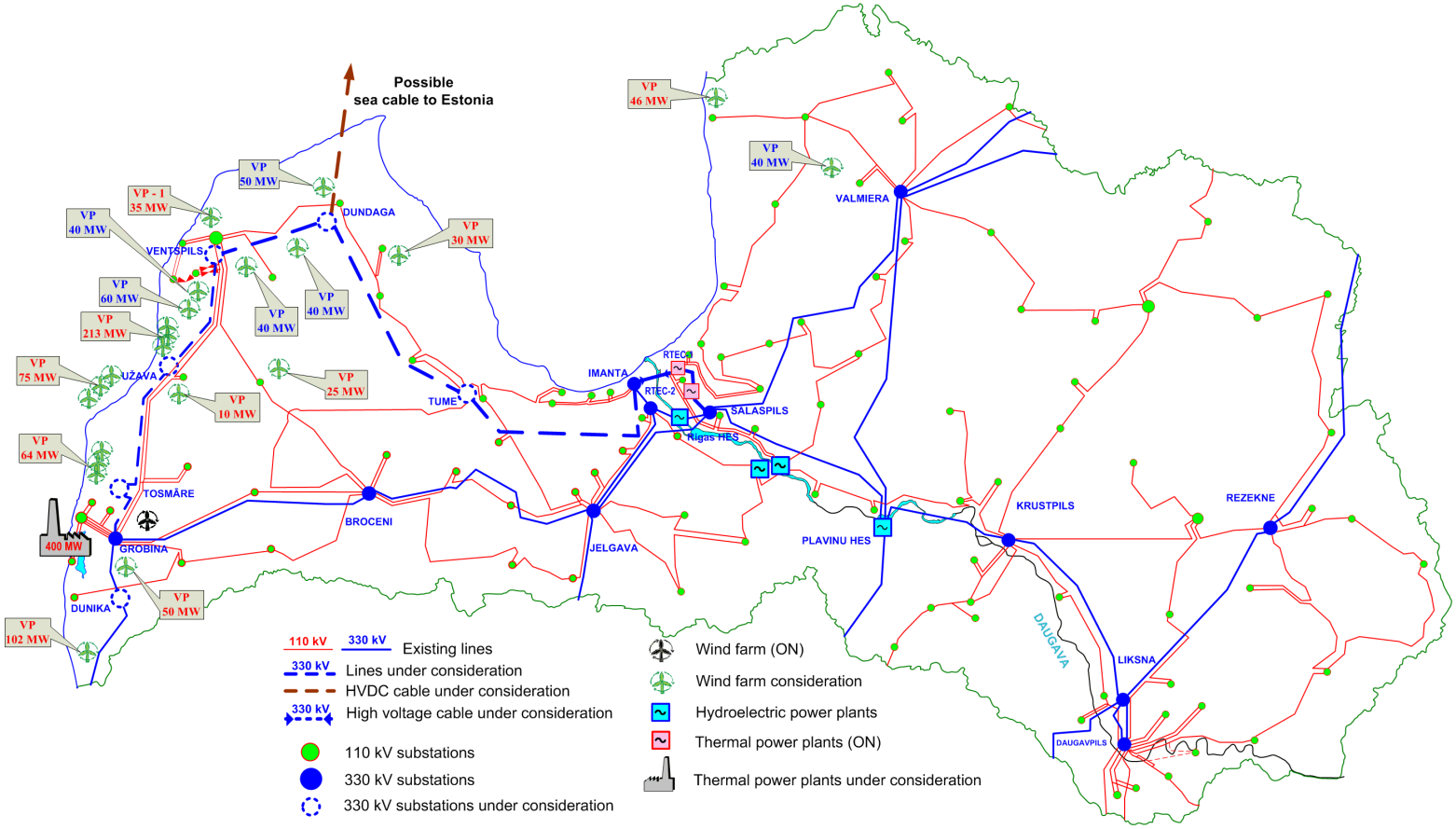




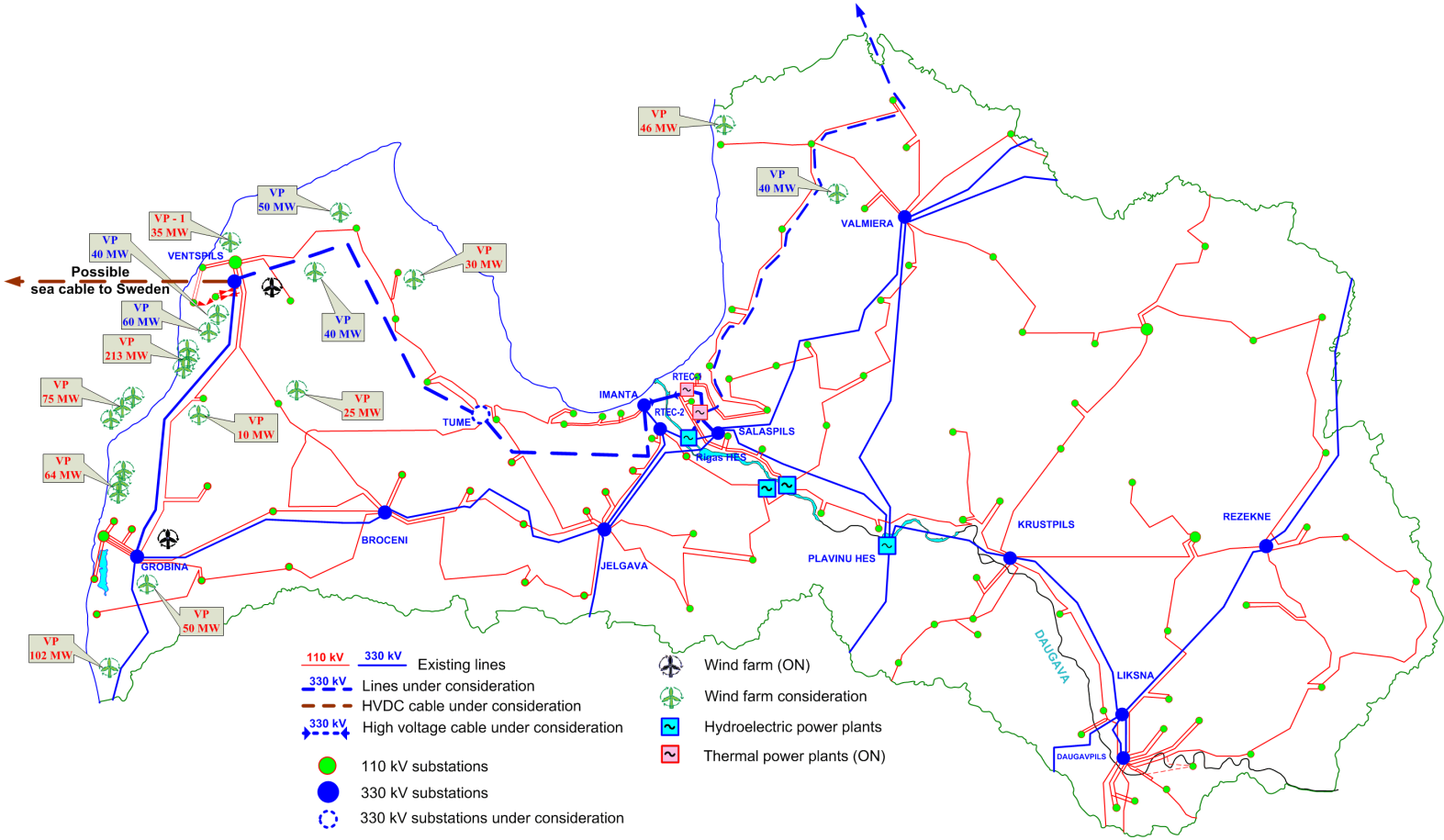
Wind producers connections possibilities to the power network

- **Existing wind installed capacity**
  - ✓ 67.8 MW – total installed capacity
  - ✓ 20.7 MW – connected to the transmission network
  - ✓ 47.1 MW – connected to the distribution network
- **Connections possibilities**
  - ✓ Distribution network – with installed capacity less than 10 MW
  - ✓ 110 kV transmission network – with installed capacity 10-100 MW
  - ✓ 330 kV transmission network – with installed capacity more than 100 MW
- **Costs of construction**
  - ✓ Technical requirements, prepared by AST to connect new producer (or increase existing capacity) for nearest HV substation (110kV-330kV)
  - ✓ Connection to the nearest substation has to be constructed by developer resources

AST development plans in 2008



Existing situation with transmission network development



Connection possibilities to transmission network

- Possibilities of connection more than 800MW on-shore and off-shore
- Off-shore wind connection is possible to the new constructed 330 kV transmission lines “Kurzeme Ring” and third EE-LV interconnection
- Connections are possible to the nearest existing 110 kV or 330 kV substation
- Connection to the nearest substation has to be constructed by developer resources
- Technical requirements (TR) for construction issued by TSO for 2 year period. If during this period, developer has not sign the realization agreement with TSO after 2 years TR will lose validity
- Balancing agreement with TSO or with other balance provider, who has balance agreement with TSO

Conclusion

- Transmission network in Latvia is developing according to the TSO technical policy and taking into account possible development plans of wind and other energy producers
- Wind development in Latvia depends on internal legislation and support scheme of RES
- Wind development in Latvia is very slow in compare with other Baltic countries
- Technical possibilities for RES connection to the transmission network in Latvia are sufficient
- TSO is responsible for the network development, but producer for connection development to the transmission network

Thank you for attention

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