

PRIMORSKY REGION LEGISLATIVE ASSEMBLY

DEVELOPMENT OF ENERGY SECTOR IN PRIMORSKY REGION

Speaker:

**Deputy Chairman of the Legislative Assembly of
Primorsky Region**

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Power Industry Situation in the Far Eastern Federal District of the Russian Federation

Current Situation in FEFD Power Industry

At present the power industry in the Far Eastern Federal District of the Russian Federation (FEFD) is characterized by the following topical issues:

- high depreciation and obsolescence of power generating equipment and network facilities;
- shortfall and weakness of electric connections under condition of the remoteness of the large power plants from the main consumption areas;
- high electrical and heat power dissipations;
- current system of energy and heat tariff setting does not allow to cover completely the costs for technical re-equipment and capital funds reconstruction as well as to meet economically justified expenses;
- up to 70% of the cost of electric power production accounts for fuel costs.

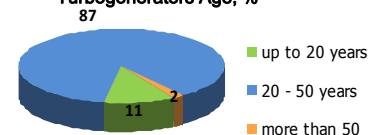
Technical Condition of Energy Facilities in FEFD Territory

More than 80% of power station generating facilities went through their rated service life.

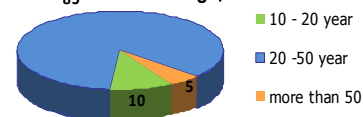
Units to be replace:
Turbogenerators of total capacity - 1600 MW (20%),
Boilers of steam capacity – 7400 t/h (21%).

61% of electric networks and 66% of heat networks have been operated for more than 20 years, at the same time the networks wear level exceeds 70%, that demands their urgent replacement in the nearest future.

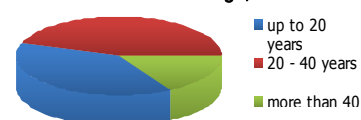
Turbogenerators Age, %



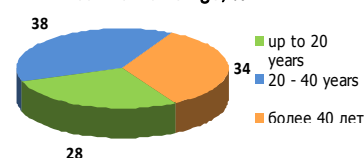
Boilers Age, %



Electric Networks Age, %



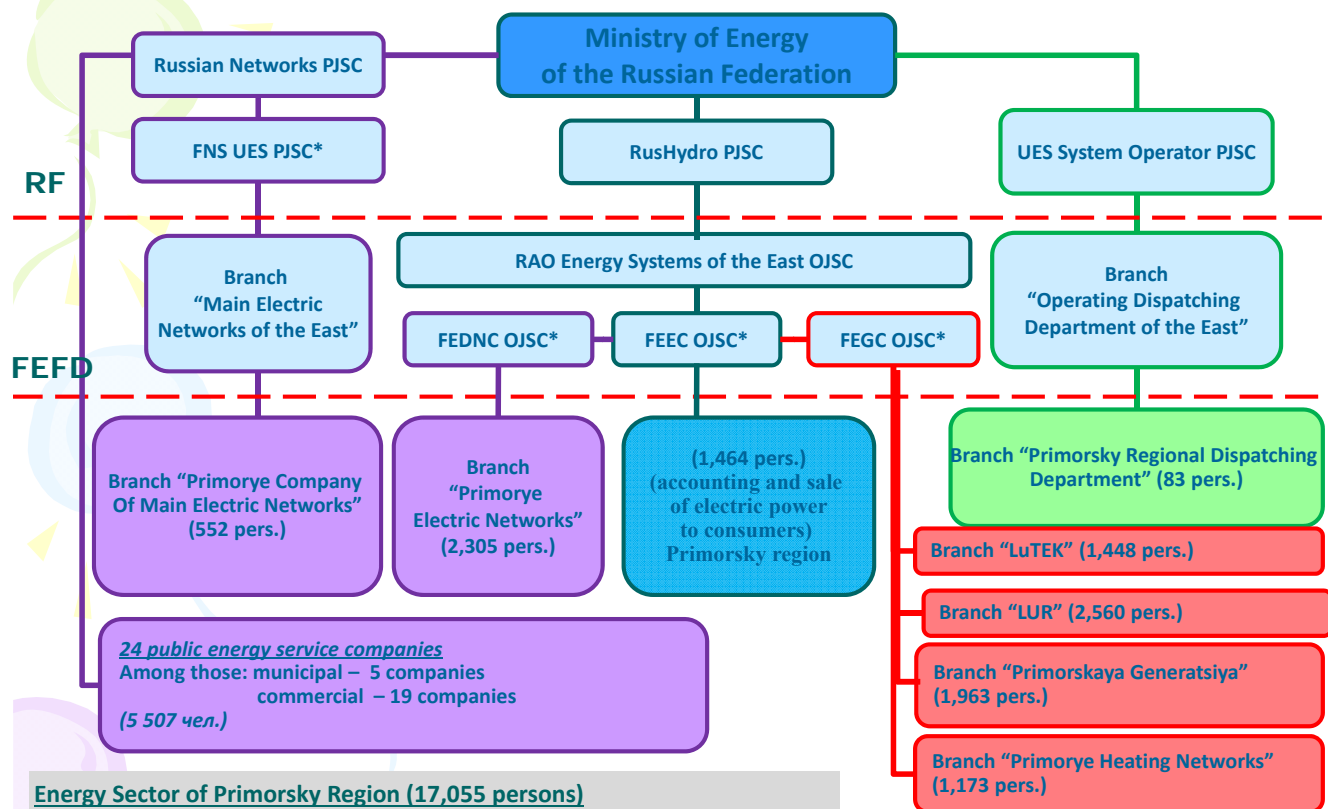
Heat Networks Age, %



Characteristics of Energy Sector of Primorsky Territory

- The peculiarity of Primorsky Territory is its energy deficiency almost in all types of primary energy - electricity, boiler and furnace fuels, motor oil.
- More than 20% of electric power consumption, up to 40% of coal burned in the region and the entire amount of used fuel oil are supplied to Primorsky Territory.
- Part of the remote areas of Primorsky Territory are provided with power service by inefficient and outdated diesel-run power plants.
- According to the energy security from the combination of these indicators Primorsky Territory belongs to a class of disadvantaged.

Structure of Energy Sector of Primorsky Region



* FNC UES - Federal Network Company of Unitary Energy System;
 FEDNC - Far Eastern Distribution Network Company;
 FEEC - Far Eastern Energy Company;
 FEGC - Far Eastern Generating Company;

System operator (dispatcher)
 Generating companies
 Network companies

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Energy Facilities of Primorsky Region

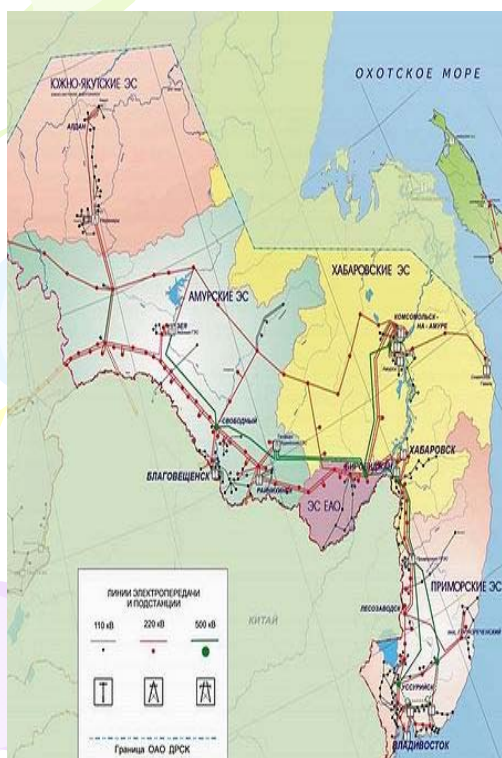
- Branch of Far Eastern Generating Company OJSC
- “LuTEK”
- “Luchegorsk Coal Pit”
- “Primorye Company of Main Electric Networks” (electric grids of 500 – 220kV voltage)
- Branch Far Eastern Network Distribution Company OJSC (electric grids of 110 – 35kV voltage)
- Branch SO UES OJSC – Primorsky Regional Dispatching Department of Energy System
- Far Eastern Energy Company OJSC (FEEC OJSC) – electric power sales

A decorative graphic on the left side of the slide featuring three balloons in green, blue, and purple, each with yellow streamers and rays emanating from them.

Primorsky Region Generation

- Vladivostok Central Heating and Power Plant-2 (CHPP-2) – 497MW capacity;
- Artem CHPP – 400MW capacity;
- Partizansk State Regional Power Plant (SRPP) – 147MW capacity;
- Primorye SRPP – 1,467MW capacity.

Chart and Program of Long-Term Development of Primorsky Region Energy Industry



- This document contributes to development of network infrastructure and generating capacities for provision of demand for electric power and output, formation of stable and favorable conditions for attraction of investment in construction of energy facilities, reliable power supply of customers.
- Currently pending approval of Primorsky Region Administration.

Facilities of Long-term Development of Primorsky Region Energy Sector

In order to increase reliability of electric power supply of consumers and resolve the problem of power deficit in the energy balance of Primorsky region, the following projects are planned till 2025 :

Facility	Capacity	Delivery Time	Type of Fuel	Investor
Mini-gas turbine power plant Artem	59MW	2014-2016	Natural gas	RAO ES Vostok
Mini-gas turbine power plant Vladivostok	44MW	2014-2018	Natural gas	RAO ES Vostok
Artem CHPP-2	670 – 800MW	2015-2022	Coal	RAO ES Vostok
CHPP “Vostochnaya” Vladivostok	Electric – 139.5MW, Thermal – 420Gcal/hr	2011-2016	Natural gas	RAO ES Vostok
Construction of Ussuriisk CHPP	Electric – 370MW, Thermal – 560Gcal/hr	2012-2017	Natural gas	RAO ES Vostok
Construction of thermal power plant (TPP) on the basis of “Eastern Petrochemical Company”	Electric – 685MW, Thermal – 1,054Gcal/hr	2012-2028	Natural gas	Oil and Gas Company “Rosneft”

Ussuriisk Central Heating and Power Plant



- Cost: 11BN rubles
- Employer: RAO "ES Vostok"
- Place: Ussuriisk
- Fuel: natural gas
- Delivery period: 2012 – 2017
- A correction was made in the gas supply chart of Ussuriisk urban district
- Targets: reliable energy power supply of consumers of southern Primorsky region;
- Solving heat supply problems
- Improvement of environmental conditions
- Decrease of housing and utility rates

Artem Central Heating and Power Plant-2

Project Grounds:

- replacement of the CHPP capacities of the existing Artem CHPP with expired service life;
- satisfaction of future demand for heating and electric power;
- Inclusion of the project of Artem CHPP-2 in the heating supply scheme of Artem urban district for the period till 2028 (Order of Artem Urban District Administration No. 3313-pa dated 13.12.2013).

Current project status:

- Technology and price audits has been carried out; positive opinion of Science and Technical Board of United Energy System is obtained.
- End of designing the approved part and undergoing state expert examination – 3rd quarter of 2016.

Key technical resolutions:

- construction of coal CHPP with total electric power of 670MW with the possibility of extension to 800MW;
- brown coal of the field Pavlovskoe is to be the design fuel of Artem CHPP-2. The annual coal consumption will be:
 - 2020 – 1,900 thousand tons;
 - 2021 – 3,200 thousand tons;
 - 2022 – 4,600 thousand tons.

Coal Mining in Primorsky Region

#	Supplier, pit	2014 output	2015 output
		January - August	
Total output, including:		3761.5	5136.8
<i>Brown coal</i>		3441.7	4574.1
<i>Bituminous coal</i>		319.9	562.8
1	FEGC OJSC, Branch "Luchegorsk Coal Pit" CJSC	2017.1	1808.6
2	Coal Pit "Rakovsky" CJSC	249.8	44.6
3	Primorskugol OJSC, total including by coals:	1394.7	3223.1
	<i>Surface Mine Office "Novoshakhtinskoe"</i>	<i>1174.8</i>	<i>2720.9</i>
	<i>Mine Office "Vostochnoe"</i>	<i>219.9</i>	<i>502.3</i>
4	Kingcoal Far East Co., Ltd.	<i>100.0</i>	<i>60.5</i>

Direction for the Development of the Far Eastern Federal District Power Sector

JSC "RAO ES Vostok" plans of generating capacitance development and also development trends of cross-border regions give an opportunity for the further region electricity development as follows:

- Power export
- Development of renewable energy resources projects
- Cogeneration technology use

Socio-Economic Impact of Projects Implementation

Energy companies

Substitution of retired capacities and providing reimbursement of future demand for electricity and thermal energy.

- Decrease in specific fuel consumption.
- The ability to use depreciation from constructed facilities for the of investment project's financing.

Population

Creation comfortable living conditions for 6.5 million people living in the Far Eastern Federal District.

- Creation new jobs, increase the level of employment and reducing its outflow from the region.
- Improvement of quality and reliability of services for the supply of electricity and heat.

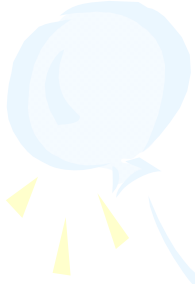
Government

Providing a reliable and smooth operation of the power system in the Far Eastern Federal District.

- Creating the conditions for the further development of the industry in the region.
- Creating an additional source of tax revenues to the budgets of different levels.

Next Steps

- **Far Eastern Federal District Development,**
including Power Industry Enhancement as a basement for further Industrial Development of the region;
- **Construction of new electric power plants;**
- **Federal Support**
(government co-financial of advanced projects and preferences for investors);
- **Active Development of Renewable Power Generation**
(including wind parks and solar electric generating stations);
- **Cooperation with Asia-Pacific Region countries,**
regarding «Power Bridge» projects development and export of electrical power to China and Japan (mid-term and long-term outlook).



Thank you!