

Repair

JSC IDGC of the North-West operates 161,748 km aerial power lines; 8,100 km cable power lines; 1,166 substations with a voltage of 35 kV or higher with 19.03 k MVA installed capacity of power transformers.

The repair program was developed with consideration of an optimal load of the Company's labor resources and the quantity and quality potential of contractors based on the following:

- analysis of accidents in the power grid system in the previous years;
- technical conditions of power grid facilities as determined by diagnostics according to charts for many years;
- requirements of supervisory authorities;
- measures taken according to accident investigation protocols;
- measures of target programs including the program of clearance and expansion of power line openings;
- requirements of the federal laws on safety of the power sector facilities.

In accordance with the repair needs determined according to the technical conditions of the equipment and subject to the tariff and balance decisions that have been made, physical parameters for individual equipment groups can be higher or lower than the corresponding parameters in previous years' programs. In the conditions of a funding deficit, the priority of selecting items for repair planning is set subject requirements to power supply reliability as stipulated by contracts with consumers, grid backup rates, and prospective plans of development and retrofitting.

Fulfillment of the basic physical parameters of the repair plan for 2010-2014

Parameter	Measurement unit	2010	2011	2012	2013	2014	% of fulfillment
Repair of 35-150 kV power lines	km	2,005.7	2,232.6	1,982.4	2,366.1	2,281.8	104
Repair of 0.4-20 kV grids	km	4,588.1	5,624.0	6,888.8	8,000.1	7,707.0	99
Capital repair of 35-220 kV transformers	pcs	30	40	17	22	18	164
Comprehensive repair of 35-220 kV substations	pcs	44	46	85	64	52	106
Clearance of routes of 35-150 kV power lines	handling	5,944.0	7,632.8	7,801.1	8,655.1	11,022.1	111
Clearance of routes of 6-20 kV power lines	handling	5,842.8	6,361.2	6,841.4	8,554.1	8,167.9	107

Physical parameters of the 2014 repair program were fulfilled completely with exceeding of target values in individual items. The exceeding of target values became possible due to savings on the results of tender procedures, which was followed by extra jobs on individual items of the repair program and rehabilitation and restoration operations.

The most significant jobs that were performed in excess of the plan were as follows:

- Repair of equipment of 220-35 kV substations including capital repair of power transformers (7 pcs).
- Repair of transformer substations (closed, completed, and distribution substations) (118 pcs).
- Clearance of openings for 6-150 kV power lines (1,576.17 ha).

In 2014, it was planned to clear 17,614 ha of power line routes, and the actual area cleared amounted to 19,190 ha (109 % of the target). The exceeding was achieved due to extra jobs of automated clearing of PL routes after the branches had purchased mulching equipment; implementation of some of the amount that had been scheduled for 2015 in the framework of effective three-year contracts; clearance by the results of annual inspections and patrols.

Dynamics of distribution of repair costs by the main areas in 2010-2014

Parameter	Repair costs, RUB mln				
	2010	2011	2012	2013	2014
Total for the repair program	1,227.3	1,608.9	1,600.8	1,747.8	1,689.9
Repair of 35-150 kV power lines	174.1	226.9	258.4	301.4	319.1
Repair of 0.4-20 kV grids	552.1	662.9	638.7	717.1	713.8
Comprehensive repair of 35-220 kV substations	32.9	72.3	69.0	48.6	17.7
Clearance of routes of 35-150 kV power lines	71.0	106.7	124.3	139.5	173.1
Clearance of routes of 6-20 kV power lines, in particular	75.2	92.4	96.13	122.9	129.4
company efforts	777.3	1,002.8	974.0	1,050.3	1,039.4
contracting	450.1	606.1	626.8	697.5	650.6

Distribution of repair costs by the main areas in 2014

Parameter	target	actual	% of fulfillment
Total for the repair program, RUB mln, in particular	1,643.5	1,689.9	103
Repair of 35-150 kV power lines	317.8	319.1	100
Repair of 0.4-20 kV grids	687.1	713.8	104
Comprehensive repair of 35-220 kV substations	10.3	17.7	172
Clearance of routes of 35-150 kV power lines	168.6	173.1	103
Clearance of routes of 6-20 kV power lines	124.9	129.4	104

As part of the Company's 2014 repair plan, the 2014 program was made for the amount of RUB 1,620.4 million. The program takes account of seasonal restrictions on accessibility of properties, the possibility of taking the equipment out of service for repair, and guaranteed operation of socially significant properties.

In Q3 2014, pursuant to the Order of JSC IDGC of the North-West No. 356 dated 18.07.2014 entitled On the Adjustment of Business Plans of the Branches and the Company as a Whole for 2014 and with an Outlook for 2015-2018, an adjustment of the repair program was developed and approved by the Board of Directors of the Company. After this adjustment, the repair fund was increased by RUB 23.1 million and amounted to RUB 1,643.5 million. The actual fulfillment of the 2014 repair program amounted to RUB 1,689.95 million including RUB 1,039.38 million (61.5 %) for repair using the company efforts and RUB 650.56 million (38.5 %) using contractors.

The ratio of the contracted and non-contracted methods in the total value of the repair program has remained nearly unchanged for a number of years; in 2014, these proportions amounted to 61 % and 39 %, respectively.

The company performs most of the repairs in 0.4-20 kV distribution grids and equipment of 35-220 kV substations (save for capital repair of high voltage switch devices and high capacity power transformers) using the contracted method. At 35-220 kV power lines, contractors are only hired for jobs involving high concentrations of complicity at the same property (comprehensive jobs including foundation repair, replacement of supports, wires, etc.) for clearing PL openings.

In 2014, special attention was paid to clearing PL openings. JSC IDGC of the North-West has developed and is implementing a program of bringing PL openings in accordance with the standards. The approximate annual amount of PL openings to be cleared under this program in 2014-2019 must be 95,667 k ha.

In total, in 2010-2014, RUB 7,874.80 million were spent under the repair program, and the repair funds are spent yearly in full.