

E F F I C A C Y E N H A N C E M E N T

CAPITAL CONSTRUCTION QUALITY CONTROL

The Company supervises construction works with a view to implement the government decree²⁸. To enforce control procedures, stipulated by the Russian laws on capital construction, the Company has identified resources to be used for construction control. Besides, in furtherance of the Rosseti's Long-Term Development Program²⁹, regarding coverage of 70% facilities constructed under the investment program with independent construction

control to comply with specifications, design documentation, reliability and security requirements, the Company engaged the following watchdogs to evaluate the facilities:

- NIITs MRSK (AO), leader of the joint tenderer (Moscow)
- PMK Sibiri (OOO), leader of the joint tenderer (Krasnoyarsk)

Reconstruction of 110/35/6 kV "Chusovaya" substation

- Construction period: 2010-2016
- Construction quality control period: 2016-2016

Reconstruction of 35/6 kV "AMZ" substation

- Construction period: 2016-2017
- Construction quality control period: 2016-2017

ENHANCEMENT OF ENERGY EFFICIENCY

During 2016 IDGC of Urals (OAO) entrenched energy-saving and enhanced efficiency practices in line with federal³⁰⁻³² and regional laws³³⁻³⁵, and bylaws of the Company³⁶⁻³⁷. Target indicators for energy-saving and enhanced efficiency, in line with the program, are energy losses occurring during network transmission and consumption of power resources for economic needs. Target values of the program are approved for 2015-2019.

Target and actual values*

No.	Indicator	Measurement units	2016	
			Target	Actual
1	Electricity losses	Million kWh	5,474.97	5,336.55
		RUB million net of VAT	10,621.01	9,710.88
		% of supply	7.68	7.84
2	In-house load of substations	Million kWh	103.19	81.60
3	Total consumption of energy resources for economic needs of administrative and production buildings, comprising:	RUB million net of VAT	325.08	296.03
		Thousand tfoe	19.77	17.63
3.1	Electricity	Million kWh	84.83	80.02
		Thousand tfoe	10.18	9.60
		RUB million net of VAT	248.25	227.62
		Million kWh/m ²	0.00	0.00
3.2	Thermal energy (heating system)	Gcal	65,169.37	54,972.86
		Thousand tfoe	9.31	7.86
		RUB million net of VAT	75.51	67.68
		Gcal /m ³	0.06	0.05
3.3	Natural gas (including liquid gas)	Thousand m ³	239.95	150.58
		Thousand tfoe	0.28	0.17
		RUB million net of VAT	1.32	0.73
4	Total consumption of natural resources for economic needs of administrative and production buildings, comprising:	RUB million net of VAT	7.20	4.82
		Thousand m ³	219.88	146.29
4.1	Hot water supply	Thousand m ³	29.96	7.67
		RUB million net of VAT	0.94	0.24
4.2	Cold water supply	Thousand m ³	189.92	138.62
		RUB million net of VAT	6.26	4.58
5	Total fuel consumption by vehicles and machinery, comprising:	Thousand liters	13,392.90	12,370.14
		Thousand tfoe	15.80	14.60
		RUB million net of VAT	410.66	347.90
5.1	gasoline	Thousand liters	7,061.02	6,454.96
		Thousand tfoe	8.00	7.31
		RUB million net of VAT	209.14	177.99
		Thousand liters /100 km	0.02	0.02
5.2	diesel	Thousand liters	6,331.88	5,915.18
		Thousand tfoe	7.80	7.29
		RUB million net of VAT	201.52	169.91
		Thousand liters /100 km	0.03	0.03

Total area of administrative and production buildings in 2016 reached 498.1 thousand m² (515.4 thousand m² in 2015).

* No other energy resources were consumed by the Company during the reported period, except for the ones shown above.

The program consists of sections, target and supporting subprograms, dividing into loss-reducing activities during energy transmission and distribution as well as activities to reduce consumption of power resources for economic needs of administrative and production buildings, divided into administrative and technical measures. Target activities are activities, implemented to reduce consumption of power resources (including electricity) and/or water, with return on 80% of investments within 10 years (simple pay-back period). Supporting activities dealing with optimization of in-house load and economic needs and reduction of energy losses are activities with positive energy efficiency, non-compliant with target-activities criteria.

Target and supporting activities to reduce electricity losses

Activity type	Physical effect, million kWh		Economic effect, RUB million		Activity-related expenses, RUB million	
	Target	Actual	Target	Actual	Target	Actual
Target activities	34.81	79.04	87.86	161.38	3.49	5.90
Supporting activities	78.29	60.76	167.70	111.50	0.00	0.0
TOTAL	113.10	139.80	255.56	272.88	3.49	5.90



Core target activities to reduce electricity losses

Activity	Physical effect, million kWh, Actual	Economic effect, RUB million, Actual	Activity-related expenses, RUB million, Actual
Inclusion of unrecorded consumption of electricity into net supply	78.14	159.58	0.00
Substation heating activities: automation	0.73	1.44	5.01
Check of heating elements and disclosure of deviations of installed capacity	0.15	0.33	0.71
Substation illumination activities: replacement of lamps, installation of automated systems	0.01	0.02	0.17
Mounting of substation heating automated system	0.01	0.01	0.01

As of the year-end the effect from the target activities performed to reduce electricity losses totaled 79.0 million kWh and RUB 161.4 million (net of supporting activities). The ef-

fect from the supporting activities totaled 60.8 million kWh and RUB 111.5 million. The total effect amounted to 139.8 million kWh and RUB 272.9 million.

The core target activities enforcing reduction of consumption for economic and production needs

	Physical effect, tfoe/ thousand m ³		Economic effect, RUB million		Activity-related expenses, RUB million	
	Target	Actual	Target	Actual	Target	Actual
Target activities	202.82/-	841.97/14.69	4.15	14.54	94.77	18.53
Analysis of contracts dealing with public utilities services	-/-	177.34/7.04	-	1.97	-	-
Mounting of fiscal metering units used to record heating power and heating medium	-/-	117.84/-	-	1.10	-	-
Enhancement of consumption discipline	-/-	128.35/4.16	-	2.25	-	-
Mounting of automated heating supply regulating system	-/-	28.41/-	-	0.25	7.68	-
Valve regulation of consumption	-/-	-/2.74	-	0.20	-	-
Reduction of expenses on combustibles and lubricants	-/-	376.06/-	-	8.75	-	-
Supporting activities	5.65/-	22.28/5.19	0.04	0.60	0.00	0.00
TOTAL	208.47/-	864.25/19.88	4.20	15.13	94.77	18.53

In 2016 the effect from target activities performed to reduce resources spent on economic and production needs totaled 842.0 tfoe (14.7 thousand m³ of water) worth RUB 14.5 million against RUB 202.8 tfoe worth RUB 4.2 million. Expenses on target activities totaled RUB 24.4 million net of VAT. The program was funded by the investment and repair programs (RUB 14.5 million and RUB 9.9 million respectively).

OPERATING EFFICIENCY AND COST CUTTING

The Company's enhanced operating efficiency and cost cutting program has been developed in furtherance of the Strategy for Development of the Russian Electric Grid Complex¹, Government Directive³⁸, stipulating 2-3% annual cuts of operating expenses as well as Strategy of Long-term Social and Economic Development of the Urals regions (the Sverdlovsk, Chelyabinsk and Perm regions). The Company's program has been prepared factoring the IDGC of Urals' Regulations on Enhanced Performance Efficiency and Expense Reduction³⁹.

The primary goal of the program is to enforce a non-stop process enhancing supply reliability and quality of services on the back of reduced operating expenses and enhanced performance efficiency. The program includes the following activities:

- Intensification of the process liable

for control over maintenance and repair of equipment, buildings and facilities;

- Intensification of control over working capital;
- Intensification of control over fixed assets;
- Intensification of control over purchases and supply chains;
- Implementation of breakthrough technologies and innovations;
- Optimization of personnel incentive and remuneration systems;
- Improvement of organizational and functional structure, optimization of headcount;
- Enhancement of energy efficiency.

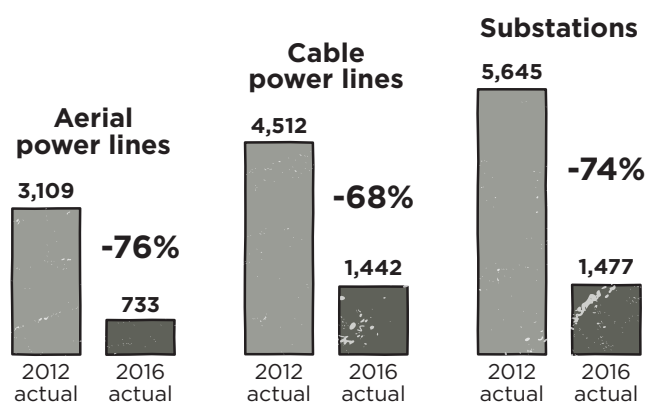
Under the program controlled expenses were reduced in the following aspects: rational use of fuel (RUB 20.9

million or 745 thousand liters saved) and optimization of remunerations through improved system of financial and moral encouragement and job management (RUB 64 million saved). The program also impacts uncontrollable expenses, firstly, expenses to compensate energy losses. Thus, the effect of activities under the loss reducing program totaled 133.8 million kWh or RUB 363 million. Controllable operating expenses of 2016, in furtherance of the Strategy¹ were reduced on 2012 to reach RUB 2,098 million or 21.22%. In line with the Directive⁴⁰ we updated the package of measures focusing on achievement of 2016 opex reduction indicator at -10% factoring measures stipulated by the directives⁴⁰.

Actual YoY reduction of operating expenses totaled 18.6%.

DECREASE OF PER-UNIT INVESTMENT EXPENSES

Reduction of per-unit construction costs, compared to 2012 numbers, RUB thousand/(km, MVA)



To intensify investment activities and enforce the decree⁴¹, the Company has completed measures aimed at reduction of per-unit investment expenditures. Target effect of 2016 activities totaled RUB 93 million net of VAT (22.5%), actual effect reaching RUB 98 million net of VAT (22.5%).

Besides, as a part of control over investment program pricing and reporting analysis, the Company also enforces compliance with per-unit construction costs.

Reduction of 2016 per-unit costs on construction of aerial and cable power lines and substations against 2012 numbers

Facility	2012 Actual, RUB thousand/(km, MVA)	2016 Target					2016 Actual				
		Physical parameters, km/MVA	Commissioning, RUB thousand, net of VAT	Per-unit indicator, RUB thousand/(km, MVA)	2012 Per-unit indicator, RUB thousand/(km, MVA)	2016/2012, %	Physical parameters, km/MVA	Commissioning, RUB thousand, net of VAT	Per-unit indicator, RUB thousand/(km, MVA)	2012 Per-unit indicator, RUB thousand/(km, MVA)	2016/2012, %
Aerial power lines	3,109.13	1.628	1,949.0	1,197.17	888.64	71%	6.35	6,269.88	987.38	732.91	76%
1-20 kV power lines (MV2)	1,382	1.538	1,860	1,210	898.16	35.0%	6.06	5,994.82	989.24	734.29	46.9%
0.4 kV power lines (LV)	1,087	0.09	89	985	731.14	32.7%	0.29	275.06	948.48	704.04	35.2%
Cable power lines	4,512.28	8.0	26,966	3,370.75	2,502.03	44.6%	9.95	19,335.47	1,943.26	1,442.44	68%
3-10 kV power lines (MV2)	4,636	7.46	26,095	3,498	2,596.49	44.0%	9.95	19,335.47	1,943.26	1,442.44	68.0%
0-1 kV power lines (LV)	2,070	0.54	871	1,621	1,203.23	41.9%					
Substations	5645.29						0.25	497.57	1,990.28	1,477.34	74%
1-20 V substations (MV2)	2,536						0.25	497.57	1,990	1,477	41.8%