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Efficiency of electric energy tariffs' alignment mechanisms for industrial consumers of the Republic of Sakha (Yakutia)

Eficiencia de los mecanismos de alineación de las tarifas de energía eléctrica para los consumidores industriales de la República de Sakha (Yakutia)

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ABSTRACT:
The influence of tariffs' alignment mechanisms for electric energy in the Republic of Sakha (Yakutia) was studied on the basis of analysis of efficiency of application of tariffs' alignment mechanisms for electric energy for industrial consumers of the Republic of Sakha (Yakutia). The mechanism of alignment of tariffs for electric energy implies shifting the price load of tariffs for electricity of the Far East to central consumers of the wholesale market. The result of the adoption of this mechanism at the state level was very effective, it allowed enterprises of the Far East to allocate more funds to social projects and increase the volume of investments by about 30 billion rubles per year and create favorable conditions for accelerated social and economic development of both the whole Far East and the Republic of Sakha (Yakutia) in particular, contributed to the increase of investment attractiveness of the region, development of all levels of business and local production.
Keywords: power industry, electric power, consumer, tariff, mechanism, alignment, Republic of Sakha (Yakutia)

RESUMEN:
La influencia de los mecanismos de alineación de tarifas para la energía eléctrica en la República de Sakha (Yakutia) se estudió sobre la base del análisis de la eficiencia de la aplicación de los mecanismos de alineación de tarifas para la energía eléctrica para los consumidores industriales de la República de Sakha (Yakutia). El mecanismo de alineación de las tarifas para la energía eléctrica implica trasladar la carga de precios de las tarifas de la electricidad del Lejano Oriente a los consumidores centrales del mercado mayorista. El resultado de la adopción de este mecanismo a nivel estatal fue muy efectivo, permitió a las empresas del Lejano Oriente asignar más fondos a proyectos sociales y aumentar el volumen de inversiones en aproximadamente 30 mil millones de rublos por año y crear condiciones favorables para la aceleración social. y el desarrollo económico de todo el Lejano Oriente y de la República de Sakha (Yakutia) en particular, contribuyeron al aumento del atractivo de inversión de la región, el desarrollo de todos los niveles de producción comercial y local.
Palabras clave: industria energética, energía eléctrica, consumo, tarifa, mecanismo, alineación, República de Sakha (Yakutia).

1. Introduction

Nowadays relations between the federal, regional and local levels of government are actively developing, including the regulation of prices and tariffs for electric energy. Thus, intelligent state regulation and the development of economically viable and acceptable tariff levels for end-users are their priority, because it relates directly to the living conditions of the population and the development of the economy.

In the electricity industry of the Republic of Sakha (Yakutia) there are significant changes due to the beginning of the mechanism of tariffs' alignment for electric energy with the middle russian level in the Far East. In the Republic of Sakha (Yakutia), tariffs for electric energy for industrial consumers almost halved,

which was reflected in significant savings in the resources of enterprises. However, the alignment mechanism is expected to operate for only three years, which raises the question of its level of effectiveness in such a short-term period. Therefore, the analysis of the efficiency of the mechanism of tariffs' alignment for electric energy for industrial consumers becomes particularly relevant.

There is a need to improve the state regulation of tariffs for electric energy, development of institutional, as well as methodological basis of regulation in the industry in the process of forming a new system of tariff formation in the RS (Y) under conditions of joining the wholesale market of electricity and capacity in the near future and issues of extension of the mechanism of tariffs' alignment with the average Russian level.

2. Methodology

Many researches were published by scientists and qualified specialists in the field of state regulation and formation of tariffs for electric energy in the Russian Federation and in its constituent entities on the problems of the existence of cross-subsidization of electricity consumers in the Russian Federation and its features in the Republic of Sakha (Yakutia). There are a number of scientific works, (Denisov, Dzuba, 2018; Kuzovkin, 2007; Volkonskiy V.A. & Kuzovkin A.I., 2008; Dolmatov et al., 2015) on the effectiveness of regulation of electricity tariffs, mechanisms, ways and methods of eliminating the negative impact of cross-subsidies in the electricity industry of the Russian Federation, where laws on the formation of real electricity costs are violated and high electricity tariffs are established for certain groups of consumers, especially for industrial consumers by reducing tariffs for the population and budgetary organizations in order to support them socially. Studies on eliminating cross-subsidization of electricity consumers in the Republic of Sakha (Yakutia) and ending the mechanisms of tariffs' alignment for electric energy for industrial consumers of the Republic of Sakha (Yakutia) were described in articles and monographs (Kuzminov, 2016; Elyakova, 2015;).

Following scientific methods are used in the study: general scientific methods (systematic and historical method, analysis and synthesis method); specific scientific methods (research method, problem-chronological method); theoretical methods followed by analysis and generalization of results (statistical, observational and comparison, balance and empirical methods).

Our study used the following legislative and regulatory acts of the Russian Federation and the Republic of Sakha (Yakutia): Federal law "About power industry" (FL of 26.03.2003 N 35-FL "About power industry", 2016), about pricing in the field of regulated prices (tariffs) in the electric power industry (Resolution of the Government of the Russian Federation dated 29.12.2011 N 1178 "On pricing in the field of regulated prices" (tariffs) in the electric power industry, "2018),as well as information, analytical and statistical materials of the Russian Federation and the Republic of Sakha (Yakutia): Federal state statistics service of the Russian Federation and RS (Y) for 2012-2017, Official materials of the Ministry of Economics of the Sakha (Yakutia) Republic, the State committee on the price policy of the Sakha (Yakutia) Republic and the Ministry of housing and public utilities of the Republic of Sakha (Yakutia) , Annual reports of PJSC "Yakutskenergo" and JSC "Sakhaenergo" for 2012-2017.

3. Results and discussion

In connection with the reduction of electricity tariffs, the State committee on price policy of the Republic of Sakha (Yakutia) decided to adjust all economically reasonable tariffs for utilities. A total of 1608 tariffs were reviewed, including1182 tariffs in the sphere of heat supply, in the sphere of water supply 318 tariffs, in the sphere of water disposal 108 tariffs. In general, the reduction of tariffs was in the range of up to 10%, while for individual enterprises of the communal complex the reduction of tariffs was up to 50% (for electric boiler rooms).

Of these, 32 tariffs for cold water supply, including JSC "Vodokanal" of Yakutsk city, 21 tariffs for heat energy and 6 tariffs for hot water of small enterprises of Yakutsk city the population pays an economically reasonable tariff without subsidizing the difference of tariffs, so the reduction of these tariffs by various values will affect the population. According to JSC Vodokanal of the city of Yakutsk, the tariff reduction was 14%. These 59 communal tariffs were also recalculated to the population from 1 January 2017. We considered the volume of savings of budget expenditures and industrial consumers RS (y) on payment of utilities and electric energy for 2017 (Table 1).

Table 1
Volume of cost savings in 2017 due tariffs' alignment for electric energy to the basic level, million rubles.

Name of services	Totally in RS(Y)	Housing stock (OKK subsidy)	Local budget	Republican budget	Federal budget	Other consumptions
Electric power	10 228,63		518,91	485,91	293,91	8 927,00
Thermal energy	4 005,63	2 089,88	331,91	166,91	69,91	1 349,00
Water supply	820,63	310,88	13,91	19,91	8,91	468,00

Water disposal	574,63	187,88	8,91	13,91	7,91	356,00
Total	15 629,50	2 588,63	873,63	686,63	380,63	11 100,00

Source: Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia)

Expenditures of the consolidated budget PC (Y) for 2017, compared to the planned indicators, decreased due to the tariffs' alignment for electric energy by 4.53 billion rubles, including the subsidy for the difference of tariffs for the population decreased by 2.58 billion rubles, expenditures of local budgets decreased by 0.87 billion rubles, expenditures of institutions financed from the republican budget decreased by 0.69 billion rubles.

Tariffs for electric energy decreased due to the surcharge to the price of capacity in the European, Ural and Siberian parts of Russia, after which the surcharge is diverted to the budgets of the Far East regions, which in turn distribute funds to guaranteeing suppliers and energy companies.

Granting a subsidy allows to compensate expenses of the guaranteeing suppliers, the power marketing (power supplying) organizations in connection with bringing tariffs for electric energy to basic levels.

Subsidies in accordance with Procedure No. 353-p are provided from funds received in the state budget of the Republic of Sakha (Yakutia) in the form of free earmarked contributions under the Agreement on free earmarked ccontributions of 16.08 .2017 which was concluded between the Public Joint Stock Company "Federal Hydro-Generating Company - RusHydro" and the Government of the Republic of Sakha (Yakutia). We considered the allocation of the grant to guaranteeing suppliers in RS (Y) for 2017 (Table 2)

Table 2
Summary of distribution of the amount of lost revenues to guaranteeing suppliers in connection with bringing tariffs for electric energy to the base for 2017, rubles

	Guaranteeing suppliers	**Charge for 2017y., rub.**	**Relative share, %**
1	PJSC "Yakutskenergo"	10 671 987 716,79	68,28
2	LLC “Rusenergoresurs”	324 028 098,24	2,07
3	LLC"Mechel-Energo"	656 387 312,04	4,20
4	JSC "Vitimenergosbyt"	384 610 221,01	2,46
5	JSC"Sakhaenergo"	164 984 232,09	1,06
6	PJSC"YATEK"	152 073 105,90	0,97
7	PJSC"Surgutneftegas"	517 707 013,02	3,31
8	JSC"Vilyiskaya HPP-3"	2 627 745 034,57	16,81
9	FFE "Airports of the North"	129 993 266,33	0,83
	Total in the Republic of Sakha(Yakutia)	15 629 516 000,00	100,00

Source: Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia)

Subsidies to tariffs’ alignment for electric energy with the average Russian level were divided into 9 guaranteeing suppliers. Thus, the total volume of subsidies for 2017 in the Republic of Sakha (Yakutia) amounted to 15 billion 629 million rubles. The share of PJSC "Yakutskenergo" in the total volume of subsidies amounted to 68%, JSC "Vilyuyskaya HPP-3" - 17%.

It is also worth noting that with the reform of energy in the Far East, the South Yakut Energy District RS (Y) acquired the status of a non-price zone where electric energy is supplied from the wholesale market of electricity and capacity. Therefore, in the territory of the South Yakut energy area - Aldanskiy and Neryungrinskiy districts - for other consumers of electric energy, including budget consumers and housing and utilities, tariffs are set in the form of formulas. In the non-price zones of the wholesale market of electric energy since 2019 the West and Central energy territories should also unite. The formulas determining the tariff size are established for six price categories of consumers (except the population), the characteristics of which are presented in Table 3.

Table 3
Price categories for consumers
of electric energy

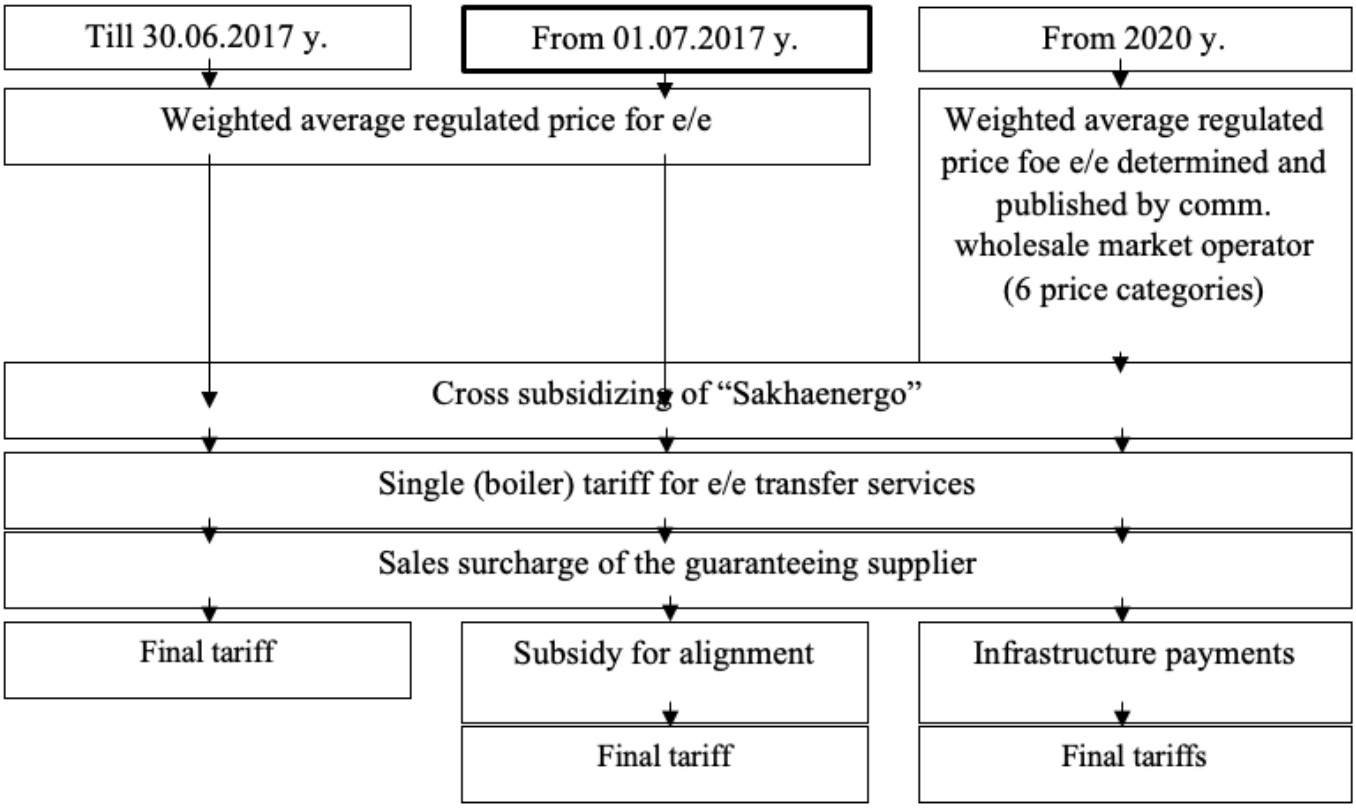
Price category	Characteristic
First	For purchase volumes of electric energy (capacity), which are recorded in general during the calculation period
Second	For volumes of electric energy (capacity) purchase, which are recorded according to the zones of day of the calculation period
Third	For volumes of purchase of electric energy (capacity), for which hourly accounting is carried out during the calculation period, but hourly planning is not carried out, and the cost of services for transmission of electric energy is determined at the rate for services for transmission of electric energy in one-stage terms
Fourth	For volumes of purchase of electric energy (capacity), for which hourly accounting is carried out during the calculation period, but hourly planning is not carried out, and the cost of electric energy transmission services is determined by the tariff for electric energy transmission services in two-rate terms
Fifth	For volumes of purchase of electric energy (capacity), for which hourly planning and accounting are carried out during the calculation period, and the cost of electric energy transmission services is determined by the tariff for electric energy transmission services in one-stage terms
Sixth	For the volumes of purchase of electric energy (capacity) for which hourly planning and accounting are carried out during the calculation period, and the cost of electric energy transmission services is determined by the tariff for electric energy transmission services in two-rate terms

Source: Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia).

Thus, the price category of electricity consumers is determined depending on the power of consumption, intervals of operation and time of loading of the enterprise. Consumers are given the opportunity to choose the most suitable and profitable category, and undefined with the price category to consumers, the price category of PJSC "Yakutskenergo" will be determined independently (only from 1, 2 and 4 categories).

After the termination of the mechanism of tariffs' alignment for electric energy, all consumers (except the population) of practically the entire Republic of Sakha (Yakutia), except those areas where diesel stations of JSC "Sakhaenergo" are used, should switch to a new tariff formation scheme. The transition to the Western system of competitive energy market will affect all enterprises, budgetary institutions, housing and utilities, shops, entrepreneurs, legal entities, except the population, which paid a firm tariff and will pay it. The new pricing system will have the following diagram (Figure 1).

Figure 1
Diagram of generation of final tariffs for electric
energy for industrial consumers of RS (Y)



As it can be seen from Figure 1, from July 1, 2017 in the formation of tariffs there was added the article of subsidy for alignment of tariffs for electric energy, and after the alignment mechanism the formula of calculation of tariff for electric energy will depend on the volume of generation in six price categories.

As a result of the mechanism of tariffs' alignment for electric energy, large enterprises, small and medium-sized businesses have the greatest effect of reducing tariffs for electricity and utilities. In general, this amount for enterprises of the republic amounted to 11.1 billion rubles out of 15.6 billion rubles (71%). Let 's look at the list of major consumers of electric energy in RS (Y) (Table 4).

Table 4
List of major electric power consumers in the Republic of Sakha (Yakutia), million kWh

Consumer	Type of activity	Power consumption, million kWh					
		2012 y.	2013 y.	2014 y.	2015 y.	2016 y.	2017 y. (forecast)
Central power region							
JSC "Yakutcement"	Construction Materials	53,8	50,9	53,8	53,3	44,1	46,5
MUE "Heat Energy"	Heat Supply	29,5	28,2	31,3	н.д.	н.д.	
JSC "Vodokanal" in Yakutsk	Water Supply	46,0	45,6	41,9	38,3	34,1	35,9
JSC HC "Yakutugol" (open cut Kangalasskiy+Jebariki-Haya)	Coal industry	9,8	11	8,7	8,4	6,3	6,6
FFE "Airports of the North"	Transport	16,3	15,6	19,5	14,6	15,0	15,8
JSC "Tarynskaya gold ore company"	Non-ferrous metallurgy	-	-	-	3,9	5,6	5,9
JSC "Termoergoservice" (Ust-Mayskiy Branch)	Heat Supply	9,6	9,0	9,2	8,9	8,4	8,9
Western power region							

JSC"ALROSA" (PJSC)	Diamond-mining industry	1626,5	1601,3	1581,1	1557,9	1460,0	1538,8
PJSC"Surgutneftegas"	Oil production (Talakan deposit)	346,8	405,2	449,6	516,8	410,3	432,5
PJSC "Transneft", total, including:	oil transportation	163,9	180,3	240,5	447,0	403,3	425,1
NPS-10		78,6	89,0	98,5	100,7	114,5	120,7
NPS-11		-	-	8,5	50,0	59,1	62,3
NPS-12		-	7,8	29,5	63,9	42,5	44,8
NPS-13		15,0	26,8	34,0	70,5	47,2	49,7
NPS-14		70,3	56,7	57,9	86,2	55,0	58,0
NPS-15		-	-	12,1	75,6	85,0	89,6
PJSC "YATEK"	gas production	13,9	15,5	14,1	15,9	16,1	17,0
JSC «Teploenergoservice» (Viluiskiy branch)	heat supply	115,4	124,4	125,0	110,9	116,5	122,8
Western -Yakut energy region							
JSCHC "Yakutugol" (c.Nerungri)	Coal industry	317,3	319	299,1	280,8	296,1	312,1
PJSC "Transneft", total, including:	oil transportation	87,0	174,4	208,1	279,7	315,9	333,0
NPS-16		-	56,7	66,0	85,1	96,1	101,3
NPS-17		87,0	64,6	71,6	88,3	98,4	103,7
NPS-18		-	53,1	60,1	53,9	65,3	68,8
NPS-19		-	-	10,4	52,4	56,1	59,1
JSC "Pole of Aldan"	nonferrous metallurgy	146,2	140,5	143,6	141,4	140,8	148,4
JSC "Neryungrinskiycityvodokanal"	Water supply	38,4	37,2	35,7	н.д.	н.д.	н.д.
PJSC " Seligdar" (PJSC "Seligdar" + PJSC "Gold of Seligdar" + LLC "Aldanvzryvprom"(Excluding diesel power plants (DPS))	nonferrous metallurgy	43,6	41,3	34,8	39,3	9,7*	н.д.
JSC " Teploenergoservice" (Aldanskiybranch)	Jeat supply	56,7	49,6	46,3	44,3	43,7	46,1
Northern energy region							
PJSC " Diamonds of Anabar"	Diamond mining	17,7	20,2	33,7	35,5	37,1	39,1

Source: Form of Rosstat 6-TP for 2012-2016 years' report enterprise data

The list of the main large consumers is presented mainly by enterprises for mining, transportation of oil, non-ferrous metallurgy and housing and communal services. Consumers of the central energy corporation are represented by the load of the industrial, agricultural, communal, transport and construction sectors. Large consumers of CER with annual consumption of more than 10 million kWh include: JSC "Vodokanal," JSC "Yakutzement," MUE "Heat Energy." In the western energy corporation of the Yakut power system operates the largest consumer of electricity - JSC "ALROSA" (PJSC), it is a system-forming consumer of the WER, its share of the total power consumption is more than 60%.Large consumers are also PJSC "Surgutneftegas", PJSC "Transneft"and PJSC "Teploenergoservice". Consumers of the South Yakut energy region are represented by the load of the South Yakut territorial-industrial complex (coal, gold mining and facilities of VSTO), Neryungrinsky and Aldanskiy industrial and agricultural complexes. About 30% of the total power consumption of the energy sector is the flow of electricity to the Amur power system. The steady growth of electricity consumption of PJSC "Surgutneftegas" and PJSC "Transneft" is due to annual growth of oil production and increase of its transportation volume. Small fluctuations in the volume of power consumption are observed in non-ferrous metallurgy, which is connected with the dynamics of development of old and introduction of new gold deposits.

To begin with, we will calculate the volume of savings of expenses of industrial enterprises of the Republic of Sakha (Yakutia) due to alignment of tariffs for electric energy to the basic level (Table 5).

Table 5
Volume of savings of expenses of industrial enterprises of the republic due to alignment in 2017, million rubles

Name of services	Savings
Electric power	8 927
Thermal power	1 349
Water supply	468
Water disposal	356
Total	11 100

Source: Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia)

It can be seen from table 5 that industrial enterprises of the Republic saved considerable funds for utilities by alignment of electricity tariffs. Thus, for industrial enterprises and small and medium-sized businesses, the alignment of tariffs for electric energy resulted in a reduction of costs for utilities by 11.1 billion rubles, including costs for electric energy - by 8,9 billion rubles, thermal energy - by 1,3 billion rubles, water supply - 0,5 billion rubles, water disposal - by 0,4 billion rubles.

It can also be noted that the dynamic growth of production indicators has had a positive impact on the financial results of enterprises. At the end of the year, the structure of the balanced financial result changed. The share of profitable enterprises in 2017 amounted to 72,9% (in 2016 - 66,8%). Next, consider the changes in the industrial production index in the Republic of Sakha (Yakutia) for 2016-2018 years (Table 6).

Table 6
Indices of industrial production in the RS (Y)

	January-December 2016y. in% by January-December 2015	January-December 2017y. in% by January-December 2016y.	January-April 2017y. in% by January-April 2016y.	January-April 2018y. in% by January-April 2017y.
Industrial production	101.7	102.2	103.4	105.6
Mining	102.1	103.3	105.0	106.0
Coal and anthracite mining	112.7	98.6	88.5	103.7
Extraction and enrichment of brown coal (lignite)	105.2	93.9	104.7	115.2

Crude oil and natural gas production	106.8	101.2	102.4	112.4
Crude oil and associated gas production	106.9	101.2	102.5	112.5
Natural gas and gas condensate production	105.6	100.9	99.9	106.7
Mining of metal ores	93.5	105.4	104.7	163.8
Extraction of non-ferrous metals ores	93.6	105.4	104.7	163.8
Manufacturing plants	92.1	93.5	95.1	101.6
food products production	99.0	107.5	100.0	95.3
textile manufacturing	39.3	76.4	52.2	61.2
production of rubber and plastic products	89.7	100.7	92.5	63.7
production of leather and leather products	75,2	79,0	76.5	175.2
furniture production	91.5	105.0	100.5	122.9
Production of other finished products	60.5	124.2	97.2	120.4
Diamond processing	59.1	118.8	86.9	121.7

Source: DSP: Industrial production in the RS (Y). 2017: Collection of papers /Territorial body of the Federal service of state statistics for the Republic of Sakha (Yakutia) Yakutsk, 2017.

According to table 6, it can be determined that the index of industrial production in January-December 2017 in relation to the corresponding indicator of 2016year in the republic amounted to 102,2%, which was provided at the expense of mining enterprises. The growth rate of the industrial products index in 2017 year was higher than in 2016 (101,9%). The trend of growth of production indicators continues in the current year. In the first quarter of 2018, the turnover of organizations increased by 105,3% compared to the same period of 2017, the index of industrial production - 104.4%. Textile production has grown 2 times, wood processing on 104.9%, petroleum products on 107.6%, timber - on 120,3%. The production index of other finished products was 124,2%. The growth of jewelry production is related to the restructuring of production and the launch of a new line of jewelry by one of the major manufacturers. Enterprises of the transport complex have also increased their indicators. 35,2 million tons of various cargoes were transported by all modes of transport. The growth of freight transport is observed in railway transport (by 16,6%). Enterprises of the communal complex and energy industry increased the production of network gas and electricity by 10,1% and 13,9%, respectively.

Thanks to the combined effect of government support and lower electricity tariffs, growth was achieved in the food industry: production of beef, except an offal, increased twice, pork - by 123,3%, fowl - for 161,7%, productions of sausages - for 104,1%, semi-finished products - for 100,7%, processing of fish - for 107,6%, cream - for 120,9%, fermented milk products - for 104,9%, alcoholic products - for 115,8%, compound feeds - for 134,3%. At the same time, the products of energy-intensive production of food industry (meat and by-products of food, sausage products, fish processing) grew faster. Small business entities also have an economic impact. For local producers, tariffs' alignment served as a deterrent in the formation of product cost. In certain settlements of Abyiskiy, Mirninsky, Oymyakonskiy and Tomponskiy districts the price of bread decreased by 2-16%. The positive impact changed the structure of small and medium-sized businesses. During 2017, there was an increase in the number of small and medium-sized businesses engaged in certain energy-intensive industries (construction).

For extractive industries, the reduction in utility costs is significant. For example, the costs of JSC "ALROSA" decreased by almost 2 billion rubles, large gold mining enterprises: LLC Rudnik "Duo" - by 33 million rubles, LLC Artel miners "Drazhnik" - by 61 million rubles. Costs of construction enterprises: JSC "Yakutzement" - by 172 million rubles, JSC "DSK" - by 46 million rubles, JSC "YAKSMK" - by 9 million rubles. Savings of trade enterprises amounted to: LLC "Aigul" 21 million rubles, LLC "Tuaber and K" -10 million rubles. In the sphere

of agriculture and agricultural production the savings amounted to 7 million rubles from LLC "Khatassky pig complex," JSC "Tuimaada-Agrosnab" - 2 million rubles. In the sphere of educational services for FSAOU "SVFU" costs decreased by 53 million rubles, in the sphere of health care the National Center of Medicine - 66.2 million rubles. Savings of large enterprises of food industry amounted to: JSC "Yakut bread processing plant" 38 million rubles, JSC "Gormolzavod" 21 million rubles, LLC "Khotu-As" - 14 million rubles, IE Zhenykh A.JI. ("Skif" net) - 11 million rubles, JSC "Yakut poultry farm" - 10 million rubles. On the products of JSC "Yakut bread processing plant," JSC "Yakut poultry farm" alignment of tariffs had an impact of different degrees. Thus, the cost of 1 kg of bread "Wheat of the1st class" decreased taking into account the alignment of electricity tariffs by 3 rubles, but this decrease had already been taken into account when the price was agreed. The impact of lower electricity tariffs on the cost of chicken eggs is not so positive. Thus, the cost of 1 egg decreased by 8 kopeks. Taking into account decrease in a tariff for cold water supply of JSC "Vodokanal" the payment of the citizens in Yakutsk living in the well-planned apartment of 63 sq.m. since 01.07.2017 is less, than was planned on average for 128 rubles, the citizens living in partially well-planned apartment of 48 sq.m. - on average for 116 rubles. Besides, as reduction of tariffs for the electric power was entered since July 01 with recalculation of tariffs since January 01, to citizens recalculation of a payment for utilities was made from 01.01.2017 till 30.06.2017: living in a well-equipped apartment with an area of 63 square meters, on average by 135 rubles per month, living in a partially well-equipped apartment with an area of 48 square meters - on average by 122 rubles per month.

Since our northern region is characterized by increased consumption of energy and fuel, the socio-economic situation in the republic depends to a large extent on the balance and level of tariffs for electric energy. Nowadays, there are urgent issues of analysis of the impact of the level of tariffs on electricity and their changes on the financial and economic condition of industrial enterprises of the Republic of Sakha (Yakutia). Let 's look at the costs of large enterprises in RS (Y)for production and sale of products, including the costs of electric energy consumption for 2017 taking into account the alignment mechanism (Table 7).

Table 7
Costs of large enterprises for electric energy consumption in the Republic of Sakha (Yakutia)

Main prom. el/power consumers	Revenue, bln.rub	Cost, bln. rub.	Consumption of e/p, mln.kWh	Consumption costs el energy, mln.rub.			Relative share in cost, %		
				At tariff for e/p		Абс. откл.	At tariff for e/p		Abs. off
				7,179 rub/ kWh	3,108 rub/ kWh		7,179 rub/ kWh	3,108 rub/ kWh	
Extraction of diamonds									
PJSC JSC"ALROSA"	200,04	99,4	349,25	2506,9	1085,3	-1421,6	2,52	1,09	-1,43
PJSC"Diamond of Anabar"	18,2	10,9	37,1	266,3	115,3	-151	2,45	1,06	-1,39
Transportation of oil									
LLC "Transneftenergo"	835,9	72,0	237,68	1706,3	738,7	-967,6	2,37	1,03	-0,14
Extraction of oil									
PJSC "Surgutneftegas"	1144,4	818,6	410,3	2945,5	1275,2	-1670,3	0,36	0,16	-0,2
Electric power production, transmission and distribution									
PJSC "Yakutskenergo"	29,02	27,3	219,5	1575,8	682,2	-893,6	5,78	2,50	-3,28
Heat supply									
JSC"Teploenergoservice"	5,8	5,2	168,6	1210,4	524,0	-686,4	23,3	10,1	-13,2
Supply of thermal energy, water supply and sanitation services									
SUE "HCS of RS(Y)"	16,9	16,7	163,3	1172,3	507,5	-664,8	7,03	3,04	-3,99

Mining of ores and sands of precious metals (gold, silver and platinum group of metals)									
JSC "Pole of Aldan"	н.д.	н.д.	140,8	1010,8	437,6	-573,2	-	-	
Production and sale of construction materials									
JSC "Yakutcement"	2,8	2,0	44,1	316,6	137,1	-179,5	15,6	6,77	-8,86
Water collection, purification and distribution									
JSC "Vodokanal"	1,4	1,4	34,1	244,8	106,0	-138,8	17,9	7,76	-10,2
Natural gas and gas condensate production									
PJSC "YATEK"	6,2	2,9	16,1	115,6	50,0	-65,6	3,93	1,70	-2,23
Coal mining									
PJSC "Yakutugol"	40,01	11,5	6,3	45,2	19,6	-25,6	0,39	0,17	-0,22

Compiled by the authors based on data of the Ministry for Price Policy of the Republic of Sakha (Yakutia)
(Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia))

According to Table 7 it can be concluded that with the reduction of tariffs, electricity costs have almost halved, which has directly affected the cost of production. Thus, in absolute terms, the expenses of PJSC "Surgutneftegas" decreased by 1670,3 million rubles, JSC JSC "ALROSA" for 1421,6 million rubles, "Transneftenergo" LLC for 967 million rubles. The share of electricity costs in the cost price decreased most of all for PJSC "Teploenergoservice" by 13,2%, for PJSC "Vodokanal" by 10,2% and for PJSC "Yakutzement" by almost 9%. Next, we will consider the income tax deductions of the Republic 's enterprises (Table 8).

Table 8
Income tax deductions of enterprises of the Republic
of Sakha (Yakutia) for 2017year, mln rubles

Main industrial consumers	**Profit, mln.rub.**	**Income tax, mln.rub.**		**Including to the regional budget, mln.rub.**		
		At tariff for e/p 7,179 rub/kWh	**At tariff for e/p 3,108 rub/kWh**	**At tariff for e/p 7,179 rub/kWh**	**At tariff for e/p 3,108 rub/kWh**	**Abs. disconnect.**
PJSC JSC"ALROSA"	89503,3	17842,3	18184,98	15165,95	15457,23	+291,28
LLC "Transneftenergo"	2446,7	164,97	193,52	140,2	164,5	+24,3
PJSC "Surgutneftegas"	232210,0	15352,4	15686,5	13049,54	13333,5	+283,96
PJSC "Yakutskenergo"	1732,8	359,3	512,54	294,6	435,6	+141
JSC"Teploenergoservice"	125,9	10,0	137,28	8,5	116,7	+108,2
JSC "Pole of Aldan"	-	-	114,6	-	97,4	
JSC "Yakutcement"	407,5	52,4	88,3	44,54	75,1	+30,56
PJSC"Diamond of Anabar"	7369,2	884,6	914,8	751,91	777,58	+25,67
JSC "Vodokanal"	2,9	22,1	49,86	18,8	42,4	+23,6
PJSC "YATEK"	1039,7	385,2	398,32	327,42	338,6	+11,18
PJSC "Yakutugol"	13232,3	3120,9	3126,02	2652,7	2657,1	+4,4
Total	348370,4	38254,37	39599,72	32505,16	33659,71	+1154,55

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According to Table 8, it can be concluded that in 2017 year the above-mentioned enterprises could bring to the budget of the RS (Y) an additional 1154,55 million rubles at the expense of savings . For some enterprises, there were taken projected amounts of income tax contributions. Thus, in some enterprises, the large increase in income tax is due to the energy intensity of production. Thus, tax contributions could increase at PJSC JSC " ALROSA" by 291,3 million rubles, at JSC "Surgutneftegas" by 283,96 million rubles, at JSC "Thermoenergoservice" by 108,2 million rubles. Then we will calculate the impact of tariffs on electric energy on the economic indicators of PJSC JSC "ALROSA" (Table 9).

Table 9
Calculation of impact of tariffs on electric energy
on economic indicators of PJSC JSC "ALROSA"

Indicators	**2016 y.**		**2017 y.**				**Changes**			
	At tariff for e/p 6,586 rub. / kWh,mln.rub.	**Rel.share in prime cost, %**	**At tariff for e/p**		**Rel.share in prime cost, %**		**Abs., mln.rub.**		***T growth*, %**	
			7,179 rub. / kWh,mln.rub	**3,108 rub. / kWh,mln.rub.**						
Revenue	249566,5	-	200039,4	201461,4	-		-49527	+1422	-19,8	+0,7
Prime cost	129751	100,00	133910	132488	100,00		+4159	-1422	3,2	-1,1
Including: salary, contributions from LCF, other employee benefits	43686	33,67	43554		32,52		-132		-0,3	
Movement of diamond, ore and sand stocks	(156)	-0,12	7347		5,49		7503		-	
Transport	2215	1,71	2178		1,63		-37		-1,7	
Depreciation	24668	19,01	23792		17,77		-876		-3,6	
MPT	22188	17,10	21782		16,27		-406		-1,8	
Materials	13592	10,48	13287		9,92		-305		-2,2	
Fuel and energy	14493	11,17	12686	11264	9,47	8,50	-1807	-1422	-12,5	-11,2
Incl. Cost per e/p	2300	1,77	2507	1085	1,87	0,82	+1422	-1422	+9,0	-56,7
Services	7714	5,95	7955		5,94		241		3,1	
Cost of diamonds for resale	763	0,59	16		0,01		-747		-97,9	
Other	588	0,45	1313		0,98		725		123,3	
Income Tax	29839,2	-	17842,3	18126,7	-		-11996,9	+284,4	-40,2	1,6

Including: To regional budget	25363,32	-	15165,7	15407,4	-	-10197,6	+241,7	-40,2	1,6
To federal budget	4475,9	-	2676,6	2719,2	-	-1799,3	+42,6	-40,2	1,6

Compiled by the authors based on data of the Ministry for Price Policy of the Republic of Sakha (Yakutia).
(Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia))

According to the data of Table 9, it can be concluded that due to the alignment of tariffs for electric energy with the average russian level, PJSC JSC " ALROSA" was able to save 1 billion 422 million rubles for the payment of electric energy. And with the reduction of tariffs for water disposal, water supply and heat power, the total volume of savings will be about 2 billion rubles. Thus, in 2017 year, electricity costs decreased by 56,7%, cost by 1,1%, which gave an increase to revenue by 0,7%. Due to the reduction of cost and increase of profit, tax contributions to the budget of the republic could increase by 242 million rubles, to the federal - by 42 million rubles, which is higher than the actual value by 1,6%. Next we will calculate the impact of tariffs on electric energy on the economic indicators of PJSC JSC "ALROSA" (Table 10).

Table 10
Calculation of Impact of Tariffs on Electric Energy
on economic indicators of SUE "HCS of the RS (Y)"

Indicators	**2016 y.**		**2017 y.**				**Changes in 2017-2017**		**Changes in 2017(at 3,108 rub/kWh)-2016**	
	At tariff for e/p 6,586 rub. / kWh,mln.rub	**Rel.share in prime cost , %**	**At tariff for e/p**		**Rel.sharein prime, %**		**Abs., mln.rub.**	***T Growth*, %**	**Abs., mln.rub.**	***T Growth*, %**
			7,179 rub. / kWh,mln.rub	**3,108 rub. / kWh,mln.rub**						
Revenue	7765,4	-	8183,3	8848,1	-		664,8	8,1	+1082,7	+13,9
Subsidy	9689,4	-	7709,1	7044,3	-		-664,8	-8,6	-2645,1	-27,3
Prime cost	16562,2	100,0	16675,4	16010,6	100,0		-664,8	-4,0	-551,6	-3,3
Including: Material costs	9094,0	54,9	8796,7	8796,7	52,75	54,94	0	0	-297,3	-3,3
Labor costs	3739,1	22,6	3902,9	3902,9	23,41	24,38	0	0	+163,8	+4,4
Social contributions	1164,7	7,0	1225,3	1225,3	7,35	7,65	0	0	+60,6	+5,2
Depreciation	1360,2	8,2	1621,0	1621,0	9,72	10,12	0	0	+260,8	+19,2
Other costs	1203,7	7,3	1066,3	1066,3	6,39	6,66	0	0	-137,4	-11,4
Cost per e/p	н.д.	-	1172,3	507,5	7,03	3,17	-664,8	-56,7	-	-

Compiled by the authors based on data of the Ministry for Price Policy of the Republic of Sakha (Yakutia)
(Official materials of the Ministry for Price Policy of the Republic of Sakha (Yakutia))

According to Table 10, it can be concluded that thanks to the alignment of tariffs for electric energy, the savings of the SUE"HCS" of the RS (Y) amounted to 664,8 million rubles. Thus, cost decreased by 4%, and revenue increased by 8,1%. Due to the reduction of electricity costs, the subsidy for SUE "HCS" may also be reduced by 664,8 million rubles or 8,6%.

However, the maximum effect of the reduction of tariffs for electricity and utilities due to the alignment of tariffs with the average russian level the Republic of Sakha (Yakutia) will begin to receive for the second and third years. However, in order to have a higher effect, preferential tariffs should be extended by 10 years. This will allow enterprises to invest not in maintaining current activities, but in modernizing production.

Thus, the reduction of tariffs created favorable conditions for increasing the investment attractiveness of the region, accelerating the socio-economic development of the Republic and improving the production performance of the enterprises of the Republic, which positively affected their financial condition.

4. Conclusions

In the Republic of Sakha (Yakutia) there was a complex scheme of cross-subsidization, i.e. maintaining artificial price skewing: lower prices for electricity for the population and social facilities due to increased tariffs for industry due to the presence of diesel generation. Because of this, there was a tendency for industrial enterprises to withdraw to their own generation or join the wholesale electricity and capacity market. However, the problem of cross-subsidies nowadays has been temporarily solved by alignment of tariffs for electric energy with the average russian level.

The mechanism of tariffs' alignment implies shifting the price burden from consumers (except the population) of energy of the Far East to consumers (except the population) of subjects of the central part of the Russian Federation. The significant advantage of adopting the option of alignment compared to the elimination of cross-subsidies is that the implementation of this decision will not require any funds from the republican and federal budgets.

In the Republic of Sakha (Yakutia) there was a reduction of tariffs for 58% for electric energy since July 1, 2017 (to recalculation since 01.01.2017) at the expense of the alignment mechanism for the most number of other consumers, except the population. In 2017, due to the alignment of tariffs for electric energy, enterprises were able to save 11,1 billion rubles, and budget consumers - 4,5 billion rubles. In 2018, the forecast of cost savings amounted to only 16,4 billion in the republic, of which 11,6 billion rubles are for enterprises. In order to have a lasting and higher effect, it is necessary to extend the duration of preferential tariffs by 7 years or more. This will allow enterprises to invest not in maintaining current activities, but in modernizing production. The Republic of Sakha (Yakutia) received the largest amount of subsidies - 15,6 billion rubles, which is due to the high costs of the power system, in particular diesel generation. The subsidies were distributed to 9 guaranteeing suppliers.

The analysis showed that due to the reduction of tariffs enterprises received significant savings, also in the long term it will allow to increase the volume of income tax to the budget of the RS (Y) or reduce subsidies for enterprises. The funds received were used to ensure the current activities of enterprises and small businesses, to replenish working capital and fixed assets.

Thus, alignment of tariffs for electric energy allowed enterprises to allocate more funds to social projects and increase the volume of investments in the Far East by about 30 billion rubles per year and create favorable conditions for accelerated social and economic development of both the whole Far East and the Republic of Sakha (Yakutia) in particular, contributing to the increase of investment attractiveness of the region, development of all levels of business and local production.

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