

# Main problems of termination of the mechanism of tariffs' alignment for electric energy for industrial consumers of the Republic of Sakha (Yakutia)

## Principales problemas de terminación del mecanismo de alineación de tarifas para energía eléctrica para consumidores industriales de la República de Sakha (Yakutia)

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#### ABSTRACT:

As a result of the study there was considered the improvement of economic and legal mechanisms of tariffs' alignment for electric energy based on the analysis of efficiency of mechanisms of tariffs' alignment for electric energy for industrial consumers of the Republic of Sakha (Yakutia). There were studied the methods of assessing the impact of tariff changes on electric energy on the financial and economic indicators of enterprises and there were determined the essence and importance of the mechanism of tariffs' alignment for electric energy in the Far East. There were identified problems of ending the alignment of tariffs for electric energy in the Republic of Sakha (Yakutia) and in the Far East with their own peculiarities and there were proposed main directions of improvement of state regulation of tariffs for electric energy in the Republic of Sakha (Yakutia) and economic and legal mechanisms of regulation of tariffs for electricity for industrial consumers of the region.

**Keywords:** electricity, tariffs, government regulation, improvement, alignment, mechanisms, consumers, problems, Republic of Sakha (Yakutia)

#### RESUMEN:

Como resultado del trabajo de investigación "Evaluación, las principales tendencias en el estado natural y socioeconómico, el potencial humano de la zona económica occidental de la República de Sakha (Yakutia)", una parte del programa de investigación integral bajo el contrato estatal N5327 del 08/02/2017, este documento presenta una evaluación comparativa de la eficiencia del consumo de electricidad en el contexto de los asentamientos de la Zona Económica Occidental (ZEO) naturales de consumo de combustible y recursos energéticos. Se desarrollan propuestas y recomendaciones para la producción y consumo eficientes de combustible y recursos energéticos en los asentamientos de la ZEO. El estudio permite desarrollar un balance de combustible y energía de las repúblicas. Según los resultados de este estudio, es necesario complementar y actualizar regularmente los resultados del balance básico de combustible y energía de la República de Sakha (Yakutia) en el contexto de los asentamientos en las regiones de la ZEO. En los últimos años, no se han realizado estudios relevantes en la República de Sakha (Yakutia), especialmente en el contexto de cada asentamiento y los principales grupos de consumidores de electricidad.

**Palabras clave:** recursos energéticos, producción, consumo, Zona Económica Occidental

## 1. Introduction

According to the list of instructions of President Vladimir Putin of November 3, 2015 on the issue of cross-subsidization of electricity prices in Yakutia, one of the options for solving the problem of cross-subsidization of diesel (local) energy was the option of dividing tariffs of centralized and decentralized electricity zones.

In the process of electricity tariffs' division, the tariff will decrease for industrial consumers in the centralized power supply zone. In this case an economically proved tariff will be established in the decentralized power supply zone. In order to avoid a sharp increase in tariffs it is proposed to establish a preferential tariff taking into account compensation for the difference in tariffs from the federal budget.

At the same time, it is necessary to start replacing existing diesel generation with cost-effective modern energy generation facilities through the use of modern technologies and equipment, including the development of small and alternative energy and the use of renewable primary energy sources. In order to improve energy supply of local power zones with obsolete inefficient sources of generation should be replaced by modern renewable energy units and with partial power grid economy coverage and conversion to alternative fuels.

Within the framework of the Long-term program of optimization of local energy of the Republic of Sakha (Yakutia) for 2016-2025 it is planned to build 120 renewable energy facilities: 117 solar power plants and 3 wind - driven electric power stations with a total installed capacity of 37,074 MW.

However, the requirement to divide tariffs for consumers of the Northern energy area and for non-price zones of the wholesale market will lead to the actual division of the energy industry and all issues of life support of the Republic of Sakha (Yakutia) into two parts. In other words, we will return to cross-subsidization, which makes it necessary to extend the mechanism of alignment of electricity tariffs with the average Russian level for an indefinite period by shifting the price burden to Central Russia, Ural and Siberia.

On this basis, it is necessary not to introduce the establishment of separate tariffs until the final resolution of the issue of the validity of the mechanism of alignment of electricity tariffs in the Far East. Secondly, it is necessary to extend the tariff alignment mechanism in the Far East for an ongoing period - in order to stimulate business development and prevent an increase in the budget burden to subsidize local energy.

These measures will reduce electricity tariffs for consumers, stop their departure to the EPWM and will attract new large consumers and thus contain the sharp increase in electricity tariffs for all consumers of the republic in the future.

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## 2. Methodology

On the problems of the existence of cross-subsidization of electricity for consumers in the Russian Federation and its features in the Republic of Sakha (Yakutia), many researches were published by scientists and large specialists in the field of state regulation and formation of tariffs for electric energy in the Russian Federation and in its constituent units. 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 on the electricity industry of the Russian Federation, where laws on the formation of real electricity costs are violated and unreasonably 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 elimination of cross-subsidization of electricity consumers in the Republic of Sakha (Yakutia) and termination of mechanisms of tariffs' alignment for electric energy for industrial consumers of the Republic of Sakha (Yakutia) were described in articles and monographs (Elyakova, 2014; Zhirkova & Elyakova, 2017; Elyakova, 2015). Kinoshita in his study found that households reduce electricity consumption when electricity tariffs increase each month (Kinoshita, 2017).

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) , Federal Law "On energy saving and on increasing energy efficiency and on amendments to certain legislative acts of the Russian Federation" (FL of 23.11.09 N 261-FL "About energy saving", 2017), 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), on approval of the strategy for the development of the electric grid complex of the Russian Federation (order of the Government of the Russian Federation N 511-r dated 03.04.2013 "on approval of the development strategy," 2017), official documents of the government of the Russian Federation, energy strategy of the Republic of Sakha (Yakutia) for the period up to 2030 (Integrated development scheme, 2016), 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.

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## 3. Results and discussion

The Far Eastern Federal District is the largest by size but it is the most sparsely populated district in the Russian Federation. The district is characterized by a low population density which is slightly more than one person per square kilometer and there is also huge unequal settlement.

In the East ECO structure, electric power is generated by 19 stations (power of each is 5 MW and higher), and by substations 110-500 kV. Their total capacity reaches 33,7 million kVA. The combined power system is formed by 110-500 kV power line with a total length of 25956,6 km. According to the data published by the system operator of an integrated power grid of the country dated by 01.01.2017, the total rated capacity of energy-generating objects of ECO of the East is 9186,5 MW. [14, p. 88]

Thermal power plants here significantly prevail in structure of the generating capacities. They have 63,6% of total number of rated capacity. And only 36,4% make hydroelectric power station. Key energy-generating objects are located in northwest part of the regional integrated power system while the main areas of consumption are situated in the southeast and it explains the big extent of the power line.

In the north of the Far Eastern Federal District the electric power is developed by many small diesel power plants. They are not connected to one of the operating power networks and therefore generate electricity in self-driven mode. Delivery of diesel fuel to the remote districts of the district can take about two years that inevitably affects the prime cost of the electric power. (Ushakov, 2014).

It is also possible to note the low investment attractiveness of the Far East district, according to the following factors:

- extreme natural and climatic conditions;
- weak development of territories, huge distances among regions;
- distance from industrialized areas of the country;
- lack of transport infrastructure;
- isolation and dilapidation of energy infrastructure;
- continuing outflow of the population;
- environmental problems, especially at places of resource-based economy, etc.(Svitych N.Y., 2014).

At the same time, in the Far East, electricity tariffs are quite high compared to other federal districts.

Thus, in order to solve the problem of high tariffs for electric energy, a tariff alignment mechanism has been launched in the Far East, which involves shifting the price load of the energy industry of the Far East to the central part of the Russian Federation.

Due to the alignment mechanism, for the first time in the history of the Russian Federation, the Far East and the Republic of Sakha (Yakutia) there was a reduction of tariffs for 58% for electric energy since July 1, 2017 (with recalculation since 01.01.2017) for consumers, but except the population. As a result, regulated tariffs of the communal complex decreased: for heat energy, water supply, water disposal. This allowed consumers to feel the effect of alignment of tariffs on electric energy to the average Russian level.

The significant advantage of adopting the option of alignment compared to the elimination of cross-subsidies is that the implementation of this decision does not require any funds from the national and federal budgets.

The mechanism of tariffs 'alignment for electric energy is valid for the regions with the highest tariffs: Chukotskiy Autonomous District, Magadan region, Kamchatskiy region, Republic of Sakha (Yakutia) and Sakhalin Region. The largest reduction was in Chukotskiy AD - more than 70% and in the Republic of Sakha (Yakutia) - 58%. In Kamchatskiy region and Magadan region the tariff for electricity decreased by more than 38%, in Sakhalin - by 35,5%.

According to the Ministry of the Russian Federation of development of the Far East, after the reduction of electricity tariffs on average by 1-1,5%, the costs of the economy of the Far East in the field of industrial production decreased, while the savings in their electricity costs reached 25-30% for energy-intensive industries.

The Republic of Sakha (Yakutia) received the largest amount of subsidies, which is due to the high costs of the power system, in particular diesel generation. Large enterprises, small and medium-sized businesses received the greatest effect of reducing tariffs on 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%). The costs of limited liability companies and individual entrepreneurs decreased by 2.6 billion rubles. The reduction of costs for large industrial enterprises, small and large businesses allowed to reduce the cost of products and services and gave impetus to the development of local production, which is a prior aim for the leadership of the republic.

Expenditures of the consolidated budget of the republic (4.5 billion rubles) also decreased significantly. This made it possible to allocate the released funds to various social issues.

The duration of the program is 3 years, but the issue of extending the program for another 7 years or more is under discussion. The total load on the market only from subsidies in ten years can amount to 400 billion rubles.

The mechanism of alignment of tariffs for electric energy with the average Russian level is valid from January 1, 2017 to January 1, 2020. Let us consider the main problems that may arise in the Republic of Sakha (Yakutia) if the alignment mechanism comes to an end by 2020.

The main problems of ending the alignment of tariffs for electric energy in the Republic of Sakha (Yakutia):

### **3.1. Return to cross-subsidizing of electricity consumers.**

Cross-subsidizing means an artificial mechanism to maintain price skewing: reducing the level of electricity tariffs for the population and social facilities by increasing tariffs for industrial facilities (Dronov, 2016).

In order to calculate the amount of cross-subsidization, it is necessary to determine the difference between the necessary costs of diesel energy and the cost of electricity for end-users.

There is a cross-subsidization between types of energy - electric and thermal, between production and transmission of energy. The classic practice of cross-subsidization - between consumer groups - population and industrial enterprises is widely used in the regions (Lobanova, 2015).

The most complex scheme of cross-subsidization of electric power industry in the Russian Federation was developed because of the availability of diesel generators in the Republic of Sakha (Yakutia). Areas with high

production costs were subsidized at the expense of consumers with low electricity production costs (Elyakova, 2015).

For the first time, the problem of the high cost of tariffs for electric energy was identified by the Republic of Sakha (Yakutia) in 2005 in the context of solving the issue of elimination of cross-subsidies of local energy.

The implementation of the directions approved by the Government of the Russian Federation for reforming the energy industry of the Russian Federation confirmed the need to eliminate cross-subsidies. The development of the draft technical assignment of the investment sectoral program "Program of optimization of local energy of the Republic of Sakha (Yakutia) for 2016-2025" was the first step in the elimination of cross-subsidies (On approval of the Strategy for Development of the Power Grid Complex of the Russian Federation, 2013).

We calculate the projected volume of cross-subsidization between the energy corporations of PJSC "Yakutskenergo" and JSC "Sakhaergo" for 2017-2019 (Table 1).

**Table 1**  
Projected volume of cross-subsidization between energy corporations of PJSC "Yakutskenergo" and JSC "Sakhaergo" for 2017-2019 years

	<b>Units of measurement</b>	<b>Central power district</b>	<b>South-Yakutskiy power district</b>	<b>Western power district</b>	<b>JSC "Sakhaenergo"</b>	<b>Total</b>
<b>2017</b>						
Productive supplies	Mln/kWh	1252,3	428,1	1700,3	219,5	3600,2
Cost-effective average tariff	rub/ kWh	6,695	3,4	3,545	39,5	6,808
Approved average tariff on electric power	rub/ kWh	6,105	6,003	7,645	5,931	6,808
Required commodity products	mln.rub.	8384,9	1455,5	6027	8643,9	24511
Total commodity revenue	mln.rub.	7645	2569,8	12998,3	1301,6	24511
Subsidy for alignment	mln. rub.	-740	1114	6971	-7342	0
<b>2018</b>						
Productive supplies	Mln.kWh	1311,2	448,2	1780,2	229,82	3769,41
Cost-effective average tariff	rub/ kWh	7,010	3,560	3,712	41,357	7,128
Approved average tariff on electric power	rub/ kWh	6,392	6,285	8,004	6,210	7,128
Required commodity products	mln.rub.	8778,9	1523,9	6310,3	9050,2	25663,0
Total commodity revenue	mln.rub.	8004,3	2690,6	13609,2	1362,8	25663,0
Subsidy for	mln.rub.	-774,8	1166,4	7298,6	-7687,1	0

alignment							
<b>2019 (forecast)</b>							
Productive supplies	mln/kWh	1382,0	472,4	1876,3	242,2	3972,9	
Cost-effective average tariff	rub/ kWh	7,388	3,752	3,912	43,589	7,513	
Approved average tariff on electric power	rub/ kWh	6,737	6,625	8,437	6,545	7,513	
Required commodity products	mln.rub.	9253,1	1606,2	6651,0	9538,9	27048,8	
Total commodity revenue	mln.rub.	8436,5	2835,9	14344,1	1436,4	27048,8	
Subsidy for alignment	mln.rub.	-816,6	1229,3	7692,8	-8102,18	0	

Compiled by the authors based on data of PJSC "Yakutskenergo" and JSC "Sakhaergo" (Annual reports of PJSC "Yakutskenergo" for 2011 -2017, Annual reports of PJSC " Sakhaergo " for 2011 -2017).

Cross-subsidization in the electricity industry of the Republic of Saha (Yakutia) takes place between consumers with high and low cost of electricity production. In 2016, the amount of cross subsidizing in the republic was 6.8 billion rubles, and in 2017 reached 7,3 billion rubles which was made of account of 125 of the diesel stations in the Arctic zone of the republic which form local power where on average the prime cost of the electric power is 9 times higher than the average Russian level which in 2016 was 36 rub/kWh.,in 2017 - 39,39 rub/kWh. In 2018, the volume of cross-subsidies between energy corporations is projected at 8,4 billion rubles, and in 2019 - 8,9 billion rubles.

As a result, due to the special social importance of the northern energy industry, the high cost of electricity generated by diesel power plants is subsidized at the expense of other consumers of the Republic.

According to the data, it can be concluded that economically reasonable tariffs in four energy districts of the republic differ from the approved average tariffs for the energy company. Dynamics of costs generated in electricity tariffs does not correspond to real economic costs for their production, therefore, economically unjustified tariffs for electricity of PJSC JSC "Yakutskenergo" in energy districts of the republic have been established. This makes it necessary to revise significantly the method of regulating tariffs for electric energy in the Republic of Sakha (Yakutia).

### 3.2. Growth of tariffs for electric energy for industrial consumers in all energy regions of the Republic of Saha (Yakutia)

Consider the forecast level of electric tariffs for industrial consumers when the alignment mechanism is terminated (Table 2).

**Table 2**  
Forecast of tariffs for industrial consumers of the Republic of Sakha (Yakutia) for 2019-2020, rub/kWh

Indicator	1 half-year, rub/kWh				2 half-year, rub/kWh			
	BH	CH-I	CH-II	HH	BH	CH-I	CH-II	HH
<b>2016 year</b>								
Straight-line tariff	5,97243	6,31135	6,6852	6,77118	6,86830	7,25806	7,69466	7,80040
<b>2017 year</b>								
Straight-line tariff	6,86830	7,25806	7,69466	7,80040	6,86830	7,25806	7,69466	7,80040

Tariffs' alignment subsidy	3,83902	4,12896	4,46557	4,52693	3,83902	4,12896	4,46557	4,52693
Straight-line tariff with subsidy	3,02928	3,12910	3,22909	3,27347	3,02928	3,12910	3,22909	3,27347
<b>2018 year</b>								
Straight-line tariff	6,86830	7,25806	7,69466	7,80040	9,12622	9,51598	9,99526	10,05833
Tariff alignment subsidy	3,83903	4,12896	4,46557	4,52693	5,49109	5,76107	6,07768	6,13017
Straight-line tariff with subsidy	3,02927	3,12909	3,22909	3,27346	3,63513	3,75490	3,87490	3,92815
<b>2019 year</b>								
Straight-line tariff	7,23919	7,65000	8,11017	8,22162	9,61904	10,02984	10,53500	10,60148
Tariffs' alignment subsidy	4,04634	4,35192	4,70671	4,77138	5,78761	6,07217	6,40587	6,46120
Straight-line tariff with subsidy	3,19285	3,29806	3,40346	3,45023	3,83143	3,95766	4,08414	4,14027
<b>2020 year without alignment mechanism</b>								
Straight-line tariff	7,52876	7,95600	8,43458	8,55049	10,00380	10,43104	10,95640	11,02554

Compiled by the authors based on data of PJSC "Yakutskenergo" and JSC "Sakhaergo"  
(Annual reports of PJSC "Yakutskenergo" for 2011 -2017, Annual reports of PJSC " Sakhaergo " for 2011 -2017).

According to table 2, it can be concluded that when the mechanism of tariffs' alignment for electric energy is terminated, tariffs for industrial consumers will increase sharply and in 2020 will be already at the level of 10 rub/kWh.

Since the population is a socially protected category of consumers, the burden of maintaining diesel energy - cross-subsidizing diesel energy will be put on industrial consumers. Prior to the alignment mechanism, there had been a steady trend for large industrial consumers to reduce their electricity consumption at a high voltage level that was explained by:

- going to the wholesale market of electricity and capacity (OPWM), where there is competition and tariffs are significantly lower;
- leaving for own generation;
- refusal of other potential large consumers to join the networks of PJSC "Yakutskenergo."

With the rapid emergence of the wholesale electricity market and capacity in the Republic of Sakha (Yakutia), with the termination of the alignment mechanism, large electricity consumers can start buying electricity from the wholesale market, in this case tariffs for other electricity consumers may increase.

The departure of large consumers entails an increase in the burden on the remaining ones, which in its turn leads to an advance increase in tariffs. Thus, in 2015 the tariff for electricity in the republic was increased by 15%, of which 9% are negative consequences of the withdrawal from PJSC "Yakutskenergo" of such consumers as OJSC HC "Yakutugol" and PJSC "Gold of Seligdar" (Kuzminov, 2016).

### 3. Growth of tariffs for electric energy for the Northern power area.

Feature of the Northern power area (zone of the decentralized power) is existence of the extensive territory supplied by large number of the decentralized diesel power plants. The absence of large consumers results in inexpediency of construction of sources of generation with big rated capacity. By production only of 5% of the electric power the share of costs of local power in expenses makes about 30% in general on power industry of the republic.

The main problems of local power are the high prime cost of the electric power, need of annual delivery according to the difficult transport scheme over 80 thousand tons of expensive diesel fuel, need of creation of one and a half annual reserves of oil products, et al.

In the case if the alignment mechanism is discontinued without cross-subsidization or the centralized and decentralized zones are divided, tariffs in the Northern energy region may increase significantly.

Thus, at present, the Government of the Russian Federation is preparing a decision on joining the Western and Central regions of the energy system of the Republic of Sakha (Yakutia) to the Unified energy system of the Russian Federation and assigning these regions to the non-price zone of the wholesale market of electric energy

and capacity of the Far East. If such a decision is made, after 2020, when the tariffs' alignment mechanism ends, the financial costs of electricity for industrial consumers will rise sharply again. Then there will be an increase in federal and regional budget expenditures due to the increase in tariffs and subsidies to cover the tariffs' difference of the Northern energy region.

The requirement about division of tariffs for consumers of the Northern power area and non price zones of the wholesale market will lead to the actual division of the branch of power, so and in general all questions of life support of the republic on two parts. In other words, we will return again to cross subsidizing of which we tried to get rid.

4. Need of large sums for elimination of cross subsidizing of consumers of the electric power.

By the carried-out calculations of expense for elimination of cross subsidizing in 6 years increased from 3 to 7 billion rubles because of the unregulated prices of diesel fuel. Therefore, alignment of tariffs for electric energy was more attractive to the republic, than funding for elimination of cross subsidizing.

The elimination of cross-subsidies from the republican budget would lead to a reduction in electricity tariffs for industrial consumers, but at the same time to an increase in electricity tariffs for the population. The introduction of tariff alignment for electric power has been able to mitigate significantly the negative consequences of the possible elimination of cross-subsidies.

However, in alignment electricity tariffs with the average russian level there are also negative sides - enterprises of Central Russia, Ural and Siberia, on which the price load was transferred, consider, that the decision to reduce energy tariffs for the five regions of the Far East is not economically justified or supported by economic calculations and the effect that Far Eastern enterprises received from the reduction of the energy market is extremely small and disproportionate with negative consequences for enterprises of Central Russia, Ural and Siberia. According to them, the inflow of investments to the Far Eastern regions is hampered not by energy tariffs, but primarily by administrative barriers and poor transport infrastructure.

Enterprises on their own generation are not yet considering the possibility of transferring their power supply from their own generation to network electricity at a preferential tariff. But if technically possible, and if this solution becomes longer-term, it can start switching to network power.

Despite conflicting assessments of the government program, market participants agree that achieving a sustainable economic effect from tariff cuts in the Far East is possible on the condition if the new rates are long-term - for example, for ten years.

Thus, 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, but for greater efficiency it is necessary to extend the mechanism of alignment of tariffs for electricity for at least another 7 years or more, or for an indefinite future at all.

The calculation of the forecast amount of subsidies for the alignment of tariffs for electric energy to the guaranteeing suppliers of the Republic of Sakha (Yakutia) for industrial consumers of RS (Y) can be seen in Table 3.

**Table 3**  
Forecast of subsidies for alignment of electric energy tariffs to guaranteeing suppliers for 2018-2019

	Guaranteeing supplier	Accounted for 2017, mln. rub.	Account forecast for 2018-2022, million rub.					Relative share
			2018	2019	2020	2021	2022	
1	PJSC "Yakutskenergo"	10 671,9	11 173,6	11 776,9	12365,7	12984,0	13633,2	68,28
2	JSC"Vilyiskaya HPP-3"	2 627,7	2 751,2	2 899,8	3044,8	3197,0	3356,9	16,81
3	LLC"Mechel-Energo"	656,4	687,2	724,3	760,5	798,5	838,5	4,20
4	PJSC"Surgutneftegas"	517,7	542,0	571,3	599,9	629,9	661,4	3,31
5	JSC"Vitimenergosbyt"	384,6	402,7	424,4	445,6	467,9	491,3	2,46
6	LLC"Rusenergoresurs"	324,0	339,3	357,6	375,5	394,3	414,0	2,07
7	JSC"Sakhaenergo"	164,9	172,7	182,1	191,2	200,8	210,8	1,06
8	PJSC"YATEK"	152,1	159,2	167,8	176,2	185,0	194,2	0,97

9	FFE "Airports of the North"	129,9	136,1	143,5	150,7	158,2	166,1	0,83
	Republic of Sakha(Yakutia) total	15 629,5	16 364,1	17 247,8	18110,2	19015,7	19966,5	100,00

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))

In 2017, the volume of subsidies to guaranteeing suppliers amounted to 15 billion 629 million rubles. For 2018, the projected volume of the subsidy for bringing tariffs for electric energy to basic levels in the Republic of Sakha (Yakutia) is 16 billion 364 million rubles, and for 2019 - 17 billion 247 million rubles. The largest volume of subsidies falls on PJSC "Yakutskenergo" - 68% or 11,8 billion rubles and on JSC "Vilyuyskaya HPP-3" - 17% or 2,9 billion rubles, the smallest - FFE "Airports of the North" - 0.83% or 143,4 million rubles.

Then we will calculate the projected volume of savings of industrial consumers' expenses on payment of utilities and electric energy due to alignment of tariffs for electric energy for 2018-2019 (Table 4).

**Table 4**  
Calculation of the projected volume of savings of industrial consumers' expenses due to alignment of tariffs for electric energy for 2018-2019, million rubles.

Name of services	Totally in RS(Y)	Housing stock (OKK subsidy)	Local budget	Republican budget	Federal budget	Other consumptions
2017						
Electric energy	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
2018						
Electric energy	10709,38	-	543,30	508,75	307,72	9346,57
Thermal energy	4193,89	2188,10	347,51	174,75	73,20	1412,40
Water supply	859,20	325,49	14,56	20,85	9,33	490,00
Water disposal	601,64	196,71	9,33	14,56	8,28	372,73
Total	16364,09	2710,30	914,69	718,90	398,52	11621,70
2019						
Electric energy	11287,68	-	572,64	536,22	324,34	9851,28
Thermal energy	4420,36	2306,26	366,28	184,19	77,15	1488,67
Water supply	905,60	343,07	15,35	21,97	9,83	516,46
Water disposal	634,13	207,33	9,83	15,35	8,73	392,86
Total	17247,75	2856,65	964,08	757,72	420,04	12249,27

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))

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 expenditure savings amounted to 16,4 billion rubles in the republic, of which 11,6 billion rubles were for enterprises, and 4,7 billion rubles were for budget



consumers, in 2019 there were 17,2 billion rubles, for industrial consumers 12,2 billion rubles, for budget consumers were almost 5 billion rubles.

By subsidizing the alignment of electricity tariffs with the average Russian level in the wholesale electricity market in 2018, prices may increase by 4%, in 2019 - by 6.9%, in 2020 - by 4%.

At the same time, the Republic of Sakha (Yakutia) will begin to receive a greater effect from the reduction of tariffs for electricity and utilities by alignment of tariffs with the average Russian level for the second and third years. However, 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.

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## 4. Conclusions

Ensuring reliable and uninterrupted power supply of consumers, increase in efficiency of a power complex is a main objective of development of power industry. The main directions of improvement of state regulation of rates for electrical energy in the Republic of Sakha (Yakutia) are:

1. Saving of the mechanism of alignment of tariffs for electrical energy on termless perspective or at least for 7 years, and further subsidy of diesel generation in the Northern power area of the republic at the expense of the federal budget. High rates in the Northern power area are explained by isolation of an power area and technological feature of the diesel power stations located in the territory with low population density, the low level of infrastructure and undeveloped economy.

2. Development of essentially new tariffs' policy in power industry of the republic of Sakha (Yakutia) using the mechanism of subsidizing of consumers of local diesel power industry of the Northern power area. Power producers need selection of address subsidy and subventions to consumers of the Northern power area from budgets of all levels.

3. Development of the differentiated price level on power area with economically reasonable costs of its productions and with saving for consumers of the average Russian price level on the electric power taking into account the aligning mechanism.

In case of cancellation of the mechanism of alignment of electricity tariffs with the average Russian level at the end of 2020 and at impossibility of subsidizing from the federal budget, it is necessary to provide reduction of tariffs for electrical energy for industrial consumers due to development of a new method of regulation of tariffs for electrical energy for saving and deduction of large consumers of the electric power from their leaving the wholesale electricity and capacity market.

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