

The New Energy Efficiency Policy in the Russian Federation

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ABSTRACT

The government of the Russian Federation has recently given a lot of attention to energy saving activities. The new federal law on energy conservation and energy efficiency was issued in November 2009. The law has defined new duties of federal and local governmental authorities. The most important accomplishment is the development and realization of federal, local, and municipal energy efficiency programs. The law has approved the application of the European experience of the interdiction on production and trading of incandescent lamps. Now produced, transmitted, and consumed energy resources are subject to the obligatory measuring with meters. Industrial enterprises, which meet the special criteria, must carry out obligatory energy audits before 2013. As a result of the new federal law, information about actions in the field of energy efficiency improvements must be organized on a regular basis by creating a state informational system of energy efficiency.

In December 2009 the decision of the Government of the Russian Federation on regional and municipal energy conservation programs was accepted. The government decision defines energy efficiency measures recommended for inclusion in the regional and municipal programs. Programs must also include a list of energy efficiency target parameters for each region or municipality per year.

The Ministry of Economic Development of the Russian Federation has created list of energy efficiency measures recommended for utilities and industry, the development of secondary and renewable energy resources, and on the transportation sector.

In April 2010, the Ministry of Energy of the Russian Federation ratified an energy passport standard for industrial energy/fuel consumers. The order of the Ministry of Energy has defined requirements for energy passport content. Energy passport has to include energy savings potential of the consumer and measures on energy efficiency increase for the next five years.

The new federal law and energy efficiency initiatives are important steps in the reduction of total energy consumption in the Russian Federation. Regional authorities of the Russian Federation have developed and have ratified their own specific requirements on energy conservation and energy efficiency improvements. All industrial enterprises will create their energy efficiency programs by 2011. However there are still some barriers and difficulties for industry to realize all of the governmental requirements on energy efficiency.

The New Federal Law of the Government of the Russian Federation on Energy Conservation and Energy Efficiency Increase

It is no secret that using energy in Russia is not as effective as in America and Europe, especially in the industrial sector. The necessity to increase energy efficiency to a level of countries with similar climatic conditions (Canada, the countries of Scandinavia) is noted in the Russian Federation governmental strategy of energy development until 2030. That's why Government of the Russian Federation has recently emphasized energy-saving activities on the federal, local, and municipal levels.

In November 2009 the new federal law on energy conservation and energy efficiency increase was issued.

Powers and Duties of the Federal and Local Governmental Authorities, State Regulation on the Field of Energy Efficiency

The law has defined new duties of the federal and local governmental authorities. The most important accomplishment is the development and realization of federal, local, and municipal energy efficiency programs. Federal authorities must determine the list of goods which have to contain power efficiency information, rules of drawing of such information, rules for the definition of energy efficiency classes of goods, and energy efficiency requirements for buildings and new constructions. Requirements for power efficiency of goods, works and services, which are carried out for the state or municipal needs will be determined by federal orders. Governmental authorities have to establish procedure and realization of the state control over energy efficiency legislation and forms and methods of the state support in energy efficiency as well. According to the law, state authorities have to determine interdictions and restrictions for producing and trading of goods with low power efficiency in the Russian Federation, the duties of consumers for measuring of consumed energy resources, and the requirements for conducting obligatory energy audits.

New Energy Efficiency Activities in Commercial Sector

As a result of the new legislation there are several requirements in the residential and commercial sector. Household power consuming devices have to contain the information on a class of their power efficiency as of 2011. PCs and other computer electronic devices and technical equipment must have the power efficiency information by 2012, and other goods from a date which will be established by the government of Russian Federation. Information on a power efficiency class of the goods must be included in the engineering specifications applied to the goods, in their marks, and on their labels. Such rules are to be carried out by federal authorities as well.

The government of the Russian Federations has also approved and has decided to apply the European experience of the interdiction on production and trading of incandescent lamps. Production and trading of the incandescent lamps with capacity of 100 watts and higher for lighting will be forbidden beginning in 2011. The interdiction on the production and trading of the incandescent lamps with a capacity of 75 watts and higher will begin in 2013 and the interdiction of the incandescent lamps with capacity of 25 watt and higher will begin in 2014.

Obligatory Measurement of Consumed Energy Resources

Most industrial consumers in Russia have systems for measuring consumed energy resources. But until 2011, there were some cases when small enterprises paid for thermal energy by norms, which were calculated on the basis of volume and construction material of the buildings. Sometimes consumed energy was calculated according diameter of the pipe and pressure and temperature differences. Now produced, transmitted, and consumed energy resources are subject to the obligatory measuring using meters. All industrial consumers have been obliged to install meters to their buildings and constructions that are connected to electric grids, heating, water, and gas supply networks as of 2011. Due to the new 2010 law, all utilities,

electric grids, heat, water and gas supply enterprises have to organize meter installation service for all consumers. The industrial consumer can choose to sign a contract on meter installation with a specialized organization or with the energy resources supplier. The supplier has to install meters if an industrial consumer applies. Moreover, since 2011, all suppliers have to install meters and provide technical service for meters to all industrial consumers which have not executed the requirement of meter installation as of 2011. Consumers have to give access to suppliers and to cover the expenses of installation and technical service of meters to the supplier.

Obligatory Energy Audit in Industry

An energy audit is now obligatory for industrial consumers who meet the following criteria:

- Enterprises participating with the state or municipal property
- Enterprises or activities which are regulated by state
- Enterprises which produce, process and transport water, natural gas, thermal energy, electric power, oil, coal or other energy resources
- Enterprises with total expenses for consumption of natural gas, fuel, oil, coal, thermal energy, electric power more than ten million rubles per calendar year
- Enterprises which realize energy conservation and energy efficiency projects financed by federal or local budgets

Industrial enterprises must carry out the first obligatory energy audit before 2013 and then periodically once every five years.

The purposes of energy audits in industry are for getting the objective data on actual volume of used energy resources, defining real parameters of power efficiency, estimating energy conservation potential, and creating a list of energy efficiency measures and their cost estimation. After the energy audit, the industrial enterprise (corporation) makes its own energy efficiency program, which becomes a part of the regional program.

Self-Regulated Organizations

A company which performs an energy audit must be a member of the self-regulated (noncommercial) organization. It is a rather new institution in the Russian Federation instead of state licensing. To obtain membership in the self-regulated organization, a company must have special equipment and specially trained personnel. Creation and functioning of the self-regulated organizations in the field of energy audits must be realized according to the requirements of the Federal law from December 2007, "About the Self-Regulated Organizations".

The non-commercial organizations will be able to get the status of the self-regulated organization in the field of energy audits if it follows special requirements. The self-regulated organization must associate in its structure twenty five or more members (companies) or forty or more individual persons who are working with energy audits. Self-regulated organizations have to unite ten companies and fifteen individual persons. The self-regulated organization must have a compensation fund generated from member payments as well. The self-regulated organization in the field of energy audits must develop standards and rules which regulate the procedure of energy audits and procedures for disclosing the information about the activity of the self-

regulated organization and its members. The federal Ministry of Energy of Russian Federation will control the activity of the self-regulated organizations by scheduled and off-schedule checks.

Once every three months each self-regulated organization has to send copies of the energy passports made by members of such self-regulated organizations to the federal Ministry of Energy of the Russian Federation. The federal Ministry of Energy will gather, process, and analyze the energy passports data. The received data will be used for developing objective information about the efficiency of power resources, energy conservation and energy efficiency increase potentials in industry, the companies which have achieved the best results at energy audits, enterprises and corporations having the best parameters in energy conservation, and energy efficiency improvements.

Informational System for Energy Efficiency Support

As a result of the new federal law, information about actions in the field of energy efficiency improvements will be organized on a regular basis by creating a state informational system of energy efficiency, distributing educational programs to mass media(TV and broadcasts), and by organizing exhibitions of high energy efficiency technologies.

The state informational system of energy efficiency must contain information about regional and municipal programs on energy efficiency improvements and their realization, the volume of power resources used in different sectors of industry, and basic results of the obligatory energy audit. Actual information must include data about production and technological processes having high energy efficiency, perspective directions of power efficiency improvements, state supported volumes in energy efficiency projects in industry and infringements of the energy efficiency legislation.

The information included in the state informational system has to be accommodated on official sites of federal and local authorities on the internet and must be updated once every quarter.

In the frame of state statistic systems, industrial enterprises have to include the data on total expenses for consumed energy resources per calendar year in an annual accounting reporting.

State Support and Control on the Field of Energy Efficiency

The state financial support for the investment in energy efficiency in industry can be realized by tax preferences granted to the enterprises and by partial compensation of expenses for interest rate payments on the loans received in the Russian credit organizations.

Investment projects included in regional energy efficiency program can be partly financed from the federal budget within the limits stipulated by the federal law on fiscal year.

The state control over the energy efficiency legislation is provided by federal and local authorities. There are disciplinary and administrative responsibilities for infringement of the law according to the legislation of the Russian Federation.

The Decision of the Government of the Russian Federation on Regional and Municipal Energy Efficiency Programs

List of Target Parameters on the Field of Energy Efficiency

According to the new policy, regional and municipal energy efficiency programs must include a list of energy efficiency target parameters for region or municipality each calendar year. Target parameters include: volume of energy consumption for a total regional product; shares and consumption of different kinds of energy, water, natural gas, calculated by meters; shares and volumes of energy, produced by renewable energy sources and with using secondary power resources; and savings of different kinds of energy, water, and natural gas.

There are 28 target parameters for energy efficiency in the budget organization sector and 32 target parameters for energy efficiency in housing. Parameters include shares, total consumption, specific consumption of different kinds of energy, water, gas and their annual changes, number of realized energy audits, total amount of expenses and subsidies for consumed energy resources and fuels, etc.

Several target parameters for energy industry (utilities) are also included. Many of them are specific, such as consumption of fuels for electric and thermal power production and their annual changes, actual volumes of losses of electric, thermal power and water in transmitting networks and their annual changes.

Measures on Energy Conservation and Energy Efficiency for Inclusion in the Programs

The governmental decision defines energy efficiency measures recommended for inclusion in the regional and municipal programs as following:

- meter installation
- modernization of the equipment used for production of thermal energy,
- transfer of electric and thermal energy
- replacement of the equipment with high efficiency equipment
- implementation of innovative energy savings decisions and technologies
- reducing energy consumption of energy producers for their own needs

It is possible to include in the regional and municipal programs secondary energy resources and renewable energy sources implementation, measures for losses reduction of electric and thermal energy in grids and networks as well.

The Order of the Ministry of Economic Development of the Russian Federation on Measures for Energy Conservation and Energy Efficiency

Measures on Energy Conservation and Energy Efficiency at Utilities and Industry

The Ministry of Economic Development of the Russian Federation has created a list of energy efficiency measures recommended for utilities and industry:

- Conduct energy audits
- Co-generation projects on the base of gas-turbine units with recovery boiler; gas-piston and turbo-detander units implementation
- Boiler-houses construction and modernization with high energy efficiency equipment and technology.
- Thermal networks replacement with effective technologies application on thermal insulation
- Variable speed drives using on electric motors
- Systems of turnaround water supply implementation
- Effective diode lamps using for lighting
- Install meters on buildings and facilities
- Increase insulation and thermal protection of buildings and facilities
- Automation of thermal energy consumption for buildings and constructions
- Hydraulic adjustment of heating and water supply networks
- Energy equipment replacement with more efficient units

Measures on Development of Secondary and Renewable Energy Resources

The Ministry of Economic Development of the Russian Federation recommends an increase in energy production with the application of wind and solar power units and their combinations, small hydropower stations, geothermal energy sources, and expanding the use of a biomass, waste products of timber industry and agriculture, mine methane, biogas, etc. Heat pumps installation, which use ground and atmospheric air energy or secondary used energy, are suggested for heating and hot water supply of buildings and industrial objects.

Measures on Energy Efficiency at Transport Sector

Main activities on energy efficiency in the transportation sector will be: development of logistic systems in cities; construction of automobile gas compressor stations; and the expansion of natural gas used as motor fuel for vehicles instead of the gasoline.

The Order of the Ministry of Energy of the Russian Federation on Requirements to Energy Passport

Requirements to Energy Passport Content

The Ministry of Energy of the Russian Federation has ratified the energy passport standard for industrial energy/fuel consumers, which includes several forms:

- General data on industrial enterprises
- Data on existing meters for energy calculation
- Data on consumption of energy resources and its annual changes
- Balance of thermal energy and its annual changes
- Balance of fuel consumption and its annual changes
- Balance of motor fuel consumption and its annual changes
- Data on secondary power resources use, local fuels and renewable energy sources application
- Data on electric energy using for lighting
- Data on power resources consumption for technological processes and their characteristics
- Brief characteristic of buildings and constructions of the enterprise.
- Data on energy efficiency parameters
- Description of transportation lines of energy resources and waters
- Data on quantity and the installed capacity of transformers
- Data on volume of losses of transferred energy resources
- Recommendations on reduction of losses of transferred energy resources
- List of measures on energy efficiency increase
- Estimation of probable savings of energy resources

Energy Saving Potential

One of the most important forms is the Energy Saving Potential and Estimation of Probable Energy Resources Savings form for industrial enterprises (Table 1). In this form an energy auditor must select energy efficiency measures for implementation at the enterprise and calculate investments, savings, and payback period.

Table 1. Energy Saving Potential and Estimation of Probable Energy Resources Savings

N	Calculated Parameters of Planned Energy Efficiency Measures					Payback Period (Plan), years
	Energy Efficiency Measures	Investments, th. rub. (Plan)	Annual Fuel/Energy Savings (plan)			
			Volume	Units	Economy, th. rub.	
1.	Electric energy: Measures №1, 2, 3, etc.					
2.	Thermal energy: Measures №1, 2, 3, etc.					
3.	Solid fuels: Measures №1, 2, 3, etc.					
4.	Liquid fuels: Measures №1, 2, 3, etc.					
5.	All motor fuels					
5.1.	gasoline: Measures №1, 2, 3, etc.					
5.2.	kerosene: Measures №1, 2, 3, etc.					
5.3.	diesel: Measures №1, 2, 3, etc.					
5.4.	gas: Measures №1, 2, 3, etc.					
6.	Natural gas: Measures №1, 2, 3, etc.					
7.	Water: Measures №1, 2, 3, etc.					
8.	TOTAL:					

Source: The Ministry of Energy of the Russian Federation

Measures on Energy Efficiency Increase

Another important form is the List of Measures on Energy Efficiency Increase for industrial enterprises. Here an energy auditor develops planned measures on three types of energy efficiency increases: short term and low cost; medium term and medium cost; and long term and high cost measures. The implementation period has to be defined as well. All measures must be united in groups in the frames of energy resource types.

The energy auditor has to fill in all passport forms and to send the energy passport of industrial consumer to the Ministry of Energy of the Russian Federation. The Ministry of Energy of Russian Federation reviews the documentation within ten days and then informs the applicant about acceptance of the passport or returns it for correction.

Development of Regional Programs on Energy Conservation and Energy Efficiency Increase

All regional authorities of the Russian Federation have developed and have ratified their own specific requirements on energy conservation and energy efficiency improvements. It is expected that all regional energy efficiency programs will be developed and ratified during 2011. All industrial corporations and enterprises will create their energy efficiency programs also in

2011 as well. Most programs include a five year period of realization. Regional energy efficiency parameters of 2010 year will be the basis for calculating efficiency improvements over the next few years.

Barriers and Difficulties at Realization of Governmental Decisions on Energy Efficiency Increase in Industry

Unfortunately there are some barriers and difficulties at realization of the new governmental policy. New legislative acts, orders, and decisions on the federal and local levels define short time periods for execution. Enterprises have very limited time for planning, fund finding, and realization of the energy efficiency increase measures.

Each regional energy efficiency program has its own specific requirements. Industrial corporations, which have branches in different regions of Russia, must create an energy efficiency program which meets the requirements of different regional authorities.

There are lower energy tariffs and higher inflation rates in Russia than in Europe and relatively high custom duties for foreign energy efficiency equipment. That is why the payback period for energy efficiency investment projects in Russia is longer and economic parameters harder to achieve.

Summary

The new federal law and energy efficiency initiatives are important steps to reducing total energy consumption in the Russian Federation. Despite of some difficulties in the processes of energy conservation programs creation and realization, obligatory energy audits and energy efficiency project implementation in industry have started. State authorities now restrict producing and trading of goods with low power efficiency. Produced, transmitted and consumed energy resources are subject to the obligatory measuring requirements with meters. The state informational system of energy efficiency actions must be organized on a regular basis in the future. All of these activities should accomplish the basic purpose of improving energy efficiency in the Russian Federation.

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