# Energy saving and energy efficiency programs of grid organizations of the Russian Federation

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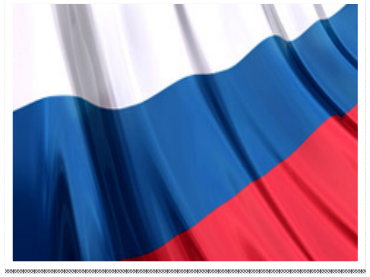
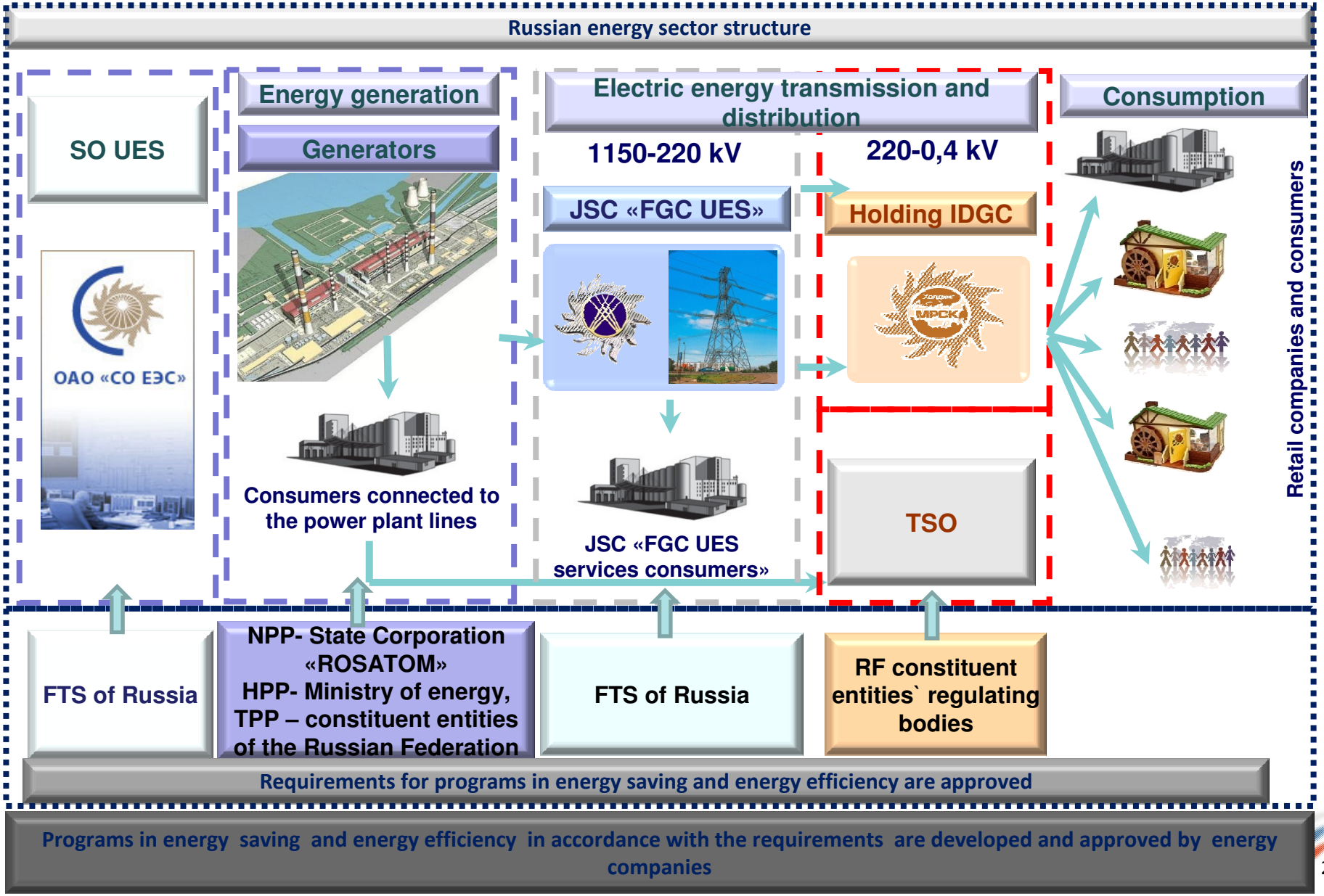
# Legislation of the Russian Federation in the sphere of energy saving

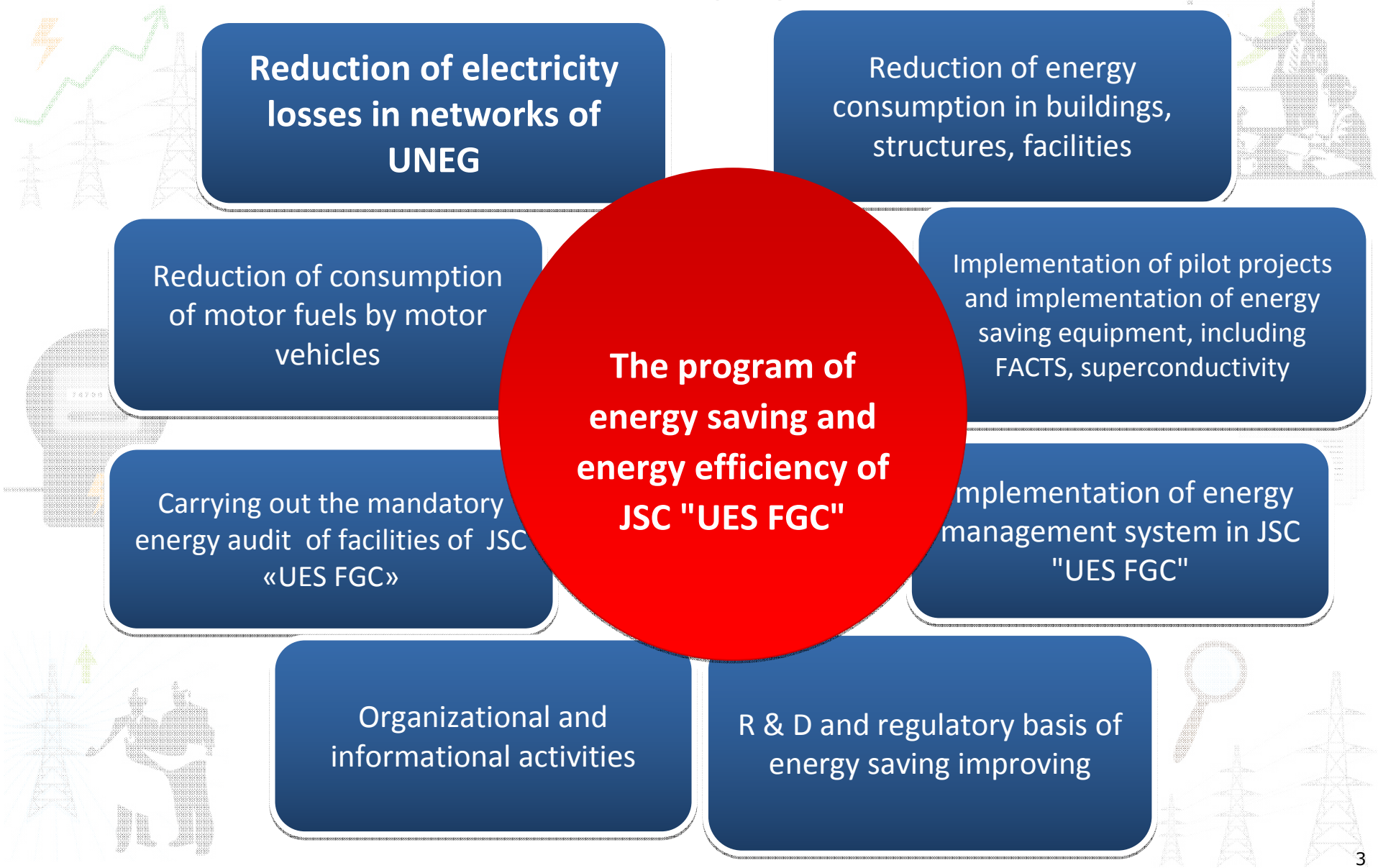


- Federal Law of 23.11.2009 № 261-Ф3 "On energy saving and energy efficiency improvements and on Amendments to some Legislative Acts of the Russian Federation" (hereinafter 261-Ф3);
- RF Government Order of 01.12.2009 № 1830-p "On Approval of the action plan for energy saving and energy efficiency in the Russian Federation aimed at implementing the Federal Law "On energy saving and energy efficiency improvements and on Amendments to some Legislative Acts of the Russian Federation ";
- RF Government Resolution of 31.12.2009 № 1225 "On the requirements for regional and municipal programs in sphere in energy saving and energy efficiency";
- RF Government Resolution of 15.05.2010, № 340 "On the procedure for establishing the requirements for programs in energy saving and energy efficiency improvements for organizations, carried out regulated activities";

# Approval of energy efficiency programs



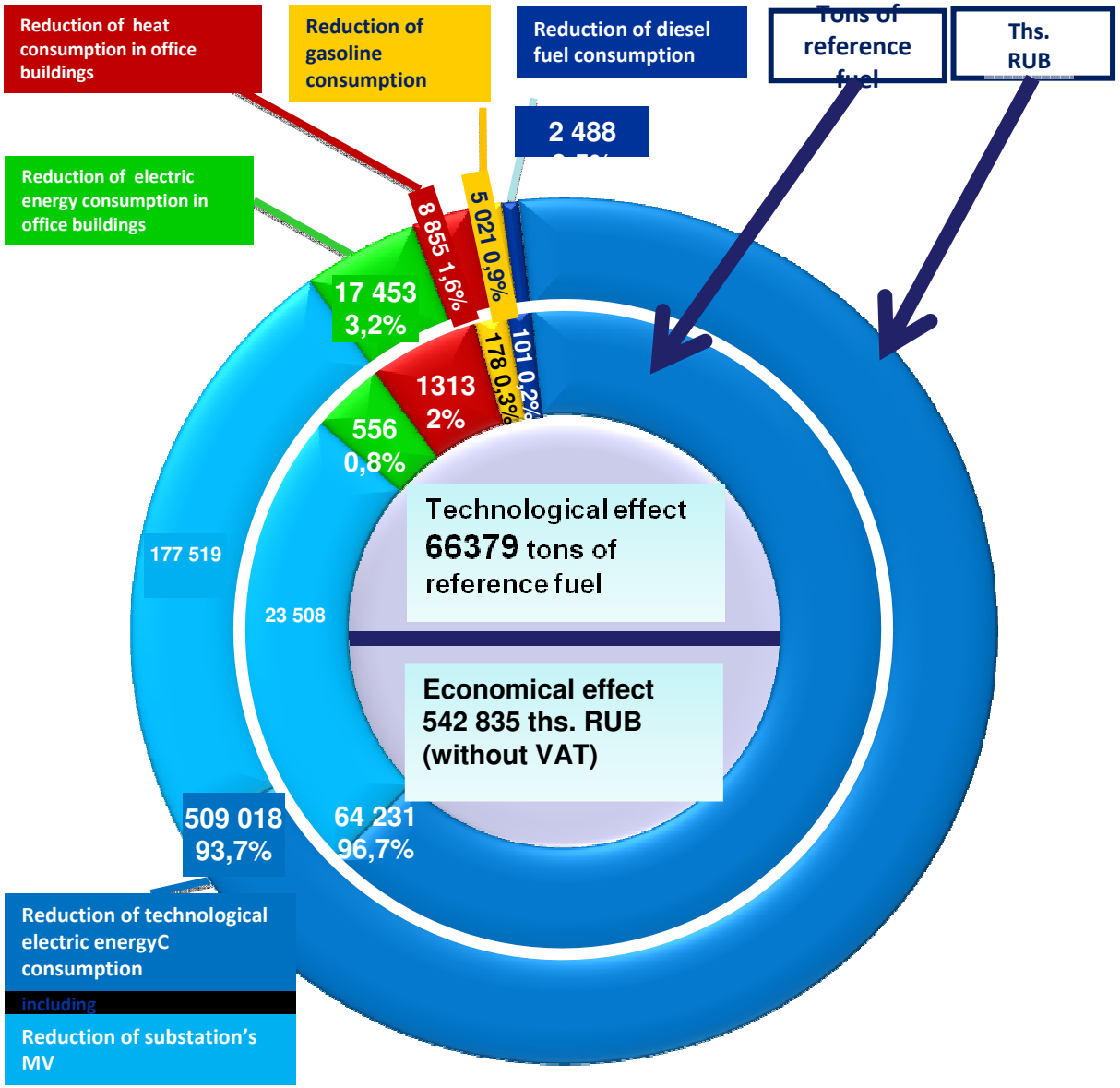
# Energy saving program structure by JSC «FGC UES»



# Technological and economic effects of JSC "UES FGC" as a whole for 2011

| № | Name of indicator | As a whole | Saving | Saving |
|---|---|---|---|---|
| | | Ths. kWh | Ths. kWh | Ths. RUB |
| 1. | Electric energy losses in UNPG | 22 553 171,97 | 137690,54 | 137139,77 |
| 1.1 | Actual volume of losses, % | 4,65 | - | - |
| 1.2 | Standard for technological losses, % | 4,84 | - | - |
| | | Ton of reference fuel | Ton of reference fuel | Ths. RUB |
| 2. | Consumption of energy resources in buildings | 9 516,9 | 767,21 | 9 013,10 |
| | | Ton of reference fuel | Ton of reference fuel | Ths. RUB |
| 3. | Consumption of fuels and lubricants for vehicles (gasoline and diesel) | 19 144,58 | 96,42 | 1 910,62 |

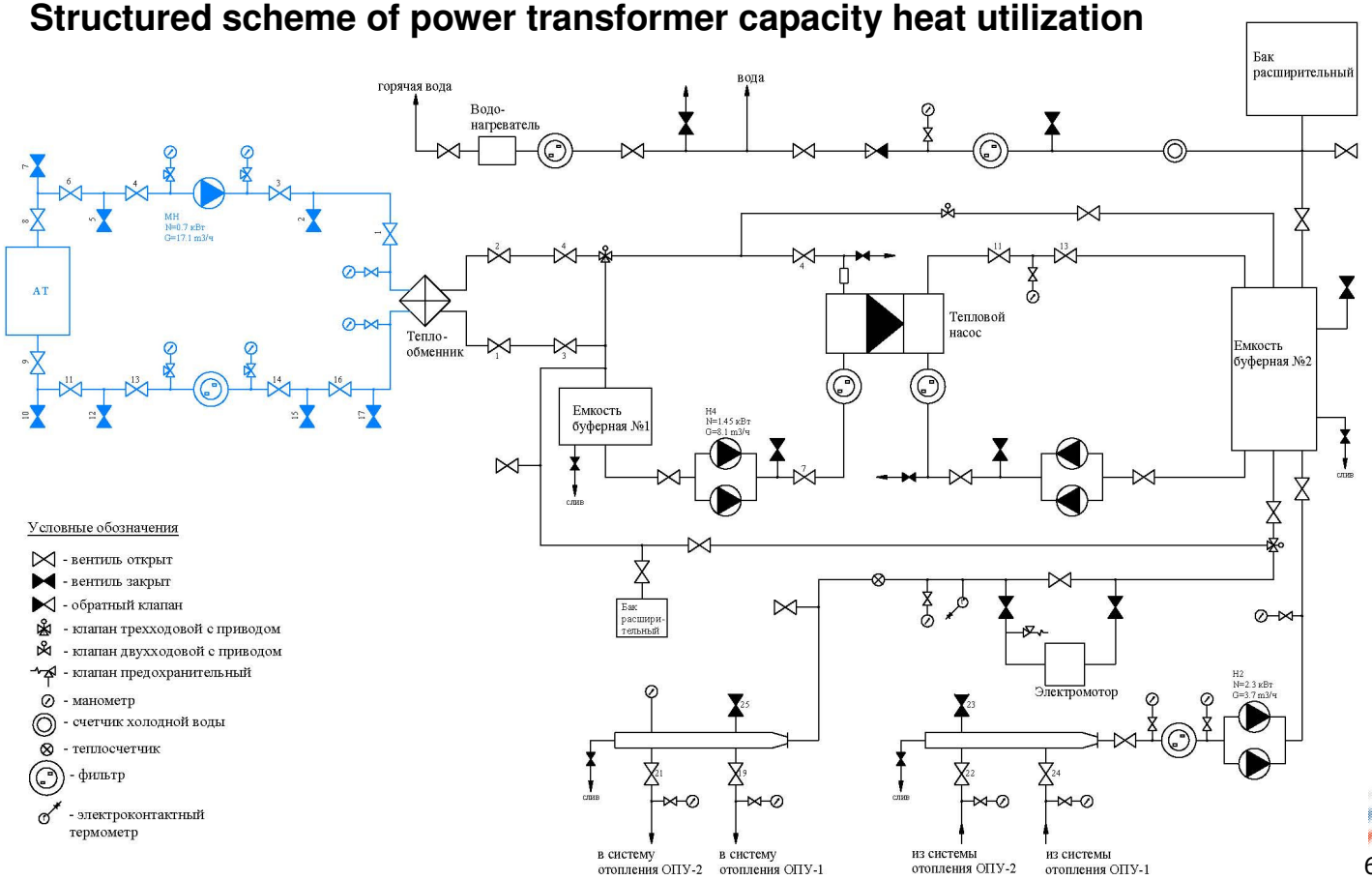
# Predicted value of technological and economic effects of JSC "UES FGC" Program for the 2011-2014 years.



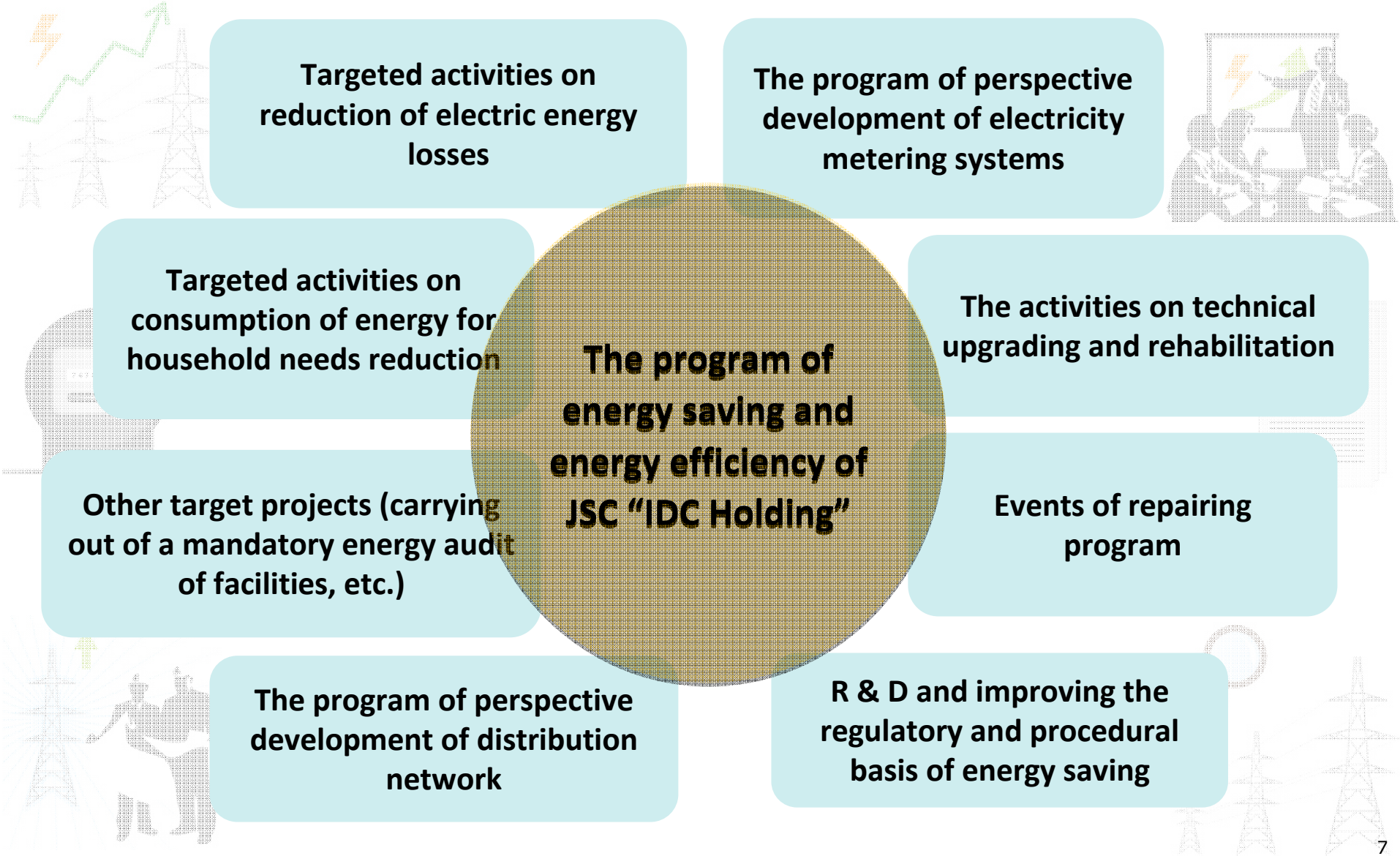
# Project of power transformers heat utilization

Currently, power transformers and autotransformers heat is not used usefully. Heat utilization will afford to heat the substation buildings, to reduce the consumption of electricity (own use) for heating buildings and cooling transformers (about 15% of MV). The effect at all substations of JSC "UES FGC" is about 150 million kWh per year.

## Structured scheme of power transformer capacity heat utilization



# The composition of energy saving programs of companies belonging to JSC "IDC Holding"

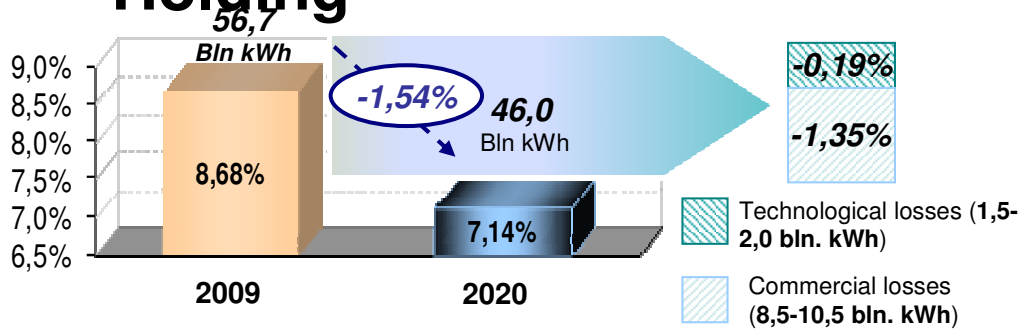


# Technological and economic effects of JSC “IDC Holding" as a whole for 2011

| Indicator name | Unit of measure | Regulatory value | Expected value | Expected actual saving | Expected actual saving, MIO RUB without VAT |
|---|---|---|---|---|---|
| **Technological electric energy consumption (losses)** | MIO kWh | 57 942,7 | 54 102 | 1 147,9 | 3264,3 |
| | % of whole volume | 8,93 | 8,4 | 0,19 | 3,02 |
| **Energy recourses consumption in buildings** | Ths. Tons of reference fuel | - | 510,2 | 19,8 | 75 |
| | % of whole volume | - | - | 3,7 | 3,2 |

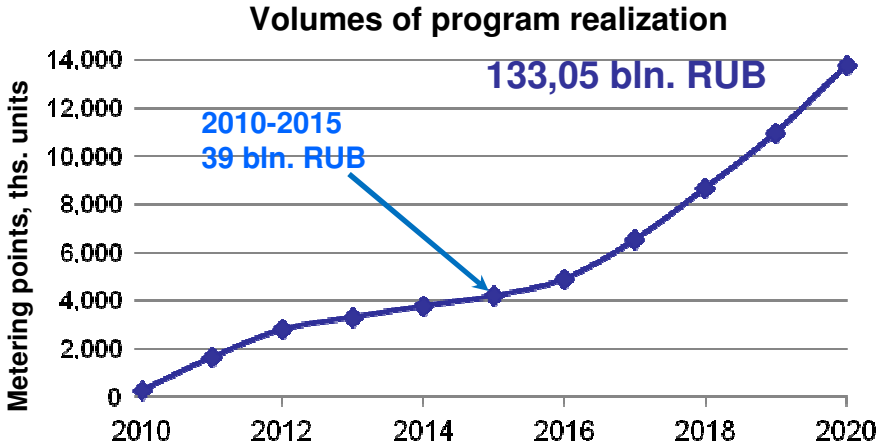
# The program of perspective development of electric energy metering systems by subsidiaries of JSC "IDC Holding"

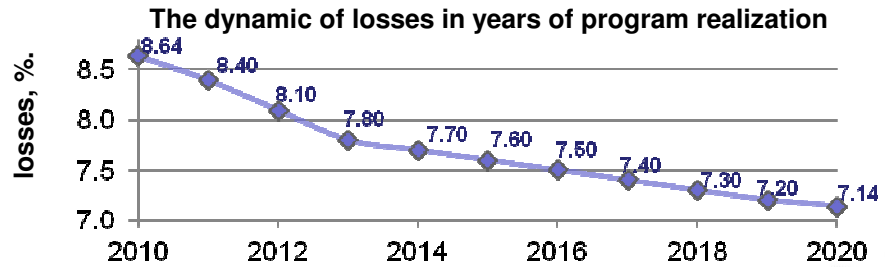
| | |
|---|---|
| Number of metering points, ths. units | 13,744 |
| Cost, billions of rubles | 133.048 |
| Period of implementation, years | 10 |
| Average cost of metering point, RUB | 10,200 |
| Average cost of metering point for households, RUB | 4700 |




## Parts of economic effect of realization of this program

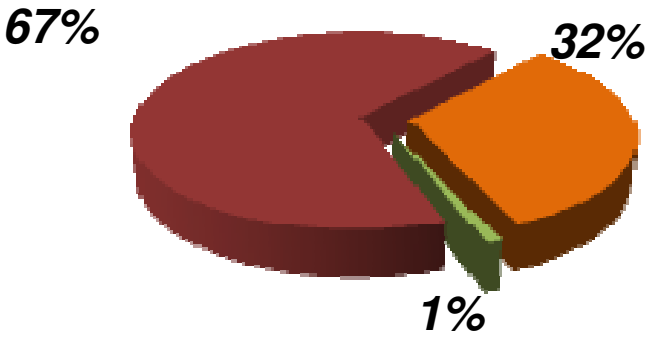
- additional revenue for electricity transmission services from the reduction of commercial losses;
- reduction of costs for purchase of losses;
- reduction of electricity losses;
- reduction of investments due to the optimization of consumption;
- improving the effectiveness of activities on network operation mode;
- reducing of costs on paying the interests on took out credits;
- reduction of maintenance costs.



# Status of energy recourses metering in the Russian Federation

## Status of electric energy metering in retail electricity market

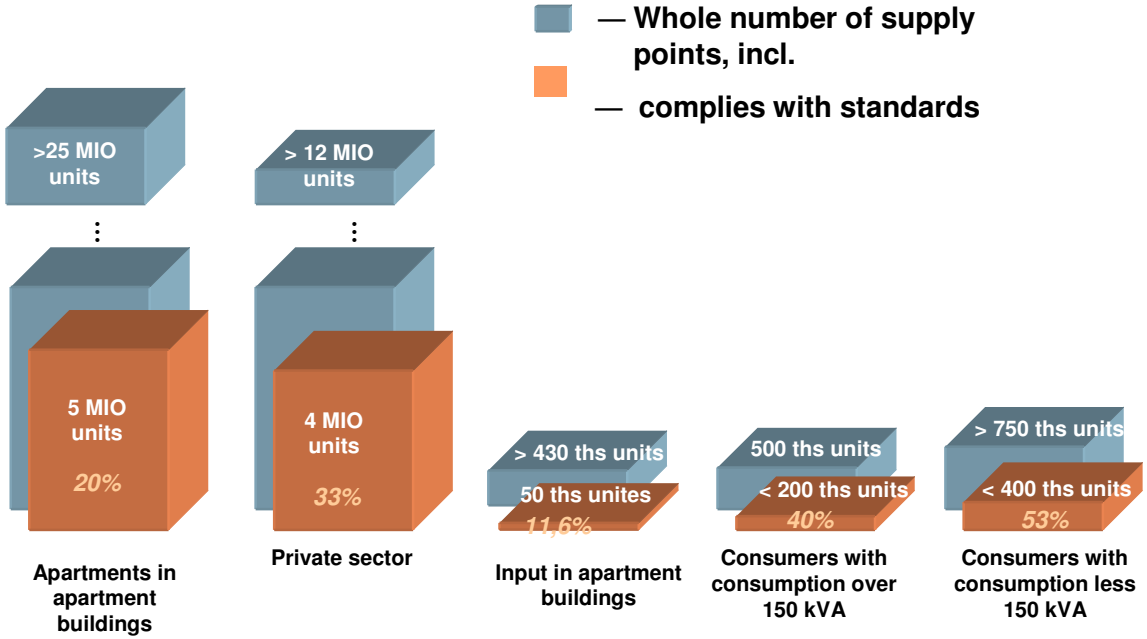



– Doesn`t comply with standards

– Complies with standards

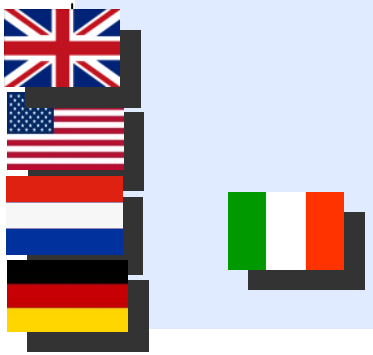
– Complies with standards and allows:

✓ Application of day/night tariff;
✓ Automated data transfer.



# Electric energy metering system evolution

Modern metering

| | Manual meters data collection | Meters data collection with the help of additional equipment | Remote data collection | Automated data collection | Automated metering infrastructure | Efficient consumer |
|---|---|---|---|---|---|---|
| Basic characteristics | ▪ Manual meters data collection and manual fixation process | ▪ Use of handheld computers for data fixation and storage | ▪ Use of PDA for collecting data from specially equipped meter by radio waves | ▪ Automated data is collected from meters and then transferred to the central database for formation of volumes of services performed | ▪ Automated collection and analysis of data on consumed electricity, remote operating with meters | ▪ Data from maters allow to analyze and control the consumption |
| Example |  |  |  |  |  |   |

# Regional pilot project on implementation an automated metering system

## Project participants

## Project characteristics

**The territory of the Perm Region. 50 thousand metering points**

**Subject structure:** network - retail - municipalities - consumer

**The concept of implementation**: the modernization of the electric energy metering systems at the expense of JSC “IDGC of Urals"

**Timing of implementation: 2011-2012.**

## Payback options

| | |
|---|---|
| Payback period, years | 3,55 |
| Payback period (with discount), years | 3,91 |
| IRR | 37% |
| NPV 2012-2022, MIO RUB | 596,4 |

**Payback measures calculated from the savings achieved as a result of:**

- reduction of commercial losses, consumption growth
- reducing the cost of collecting and processing information (a reduction of staff employed)
- reducing the cost of restricting energy consumption

## Project goals

- implementation of the guidelines and technology policy in practice;
- formulate, implement and test the typical technical solution in the territory of the pilot ;
- identify systemic problems and their possible regulatory settlement;
- develop and test methods for promoting energy-efficient consumption of electricity by end-users.

# The residential complex “Akademichesky" (Yekaterinburg) - Energy Efficiency Project

Parameters of project integrated urban development «Akademichesky":

- **Build-op area - 1300 hectares;**
- **Population - 325 thousand people;**
- **Residential area - 9 million square meters;**
- **Project implementation period - up to 2026**
- **Investment in engineering networks - about 15 billion rubles.**

The volume of energy savings in the "Academichesky“ district from the existing city average level compose:

- Heat - 30-35%;
- Water - 15-20%;
- Electricity - 9-10%.

The volume of heat loss is 5.87%,
of electric energy - 3.04%.

In collaboration with BASF in 2011, the first energy-efficient house in Russia will be build in "Academichesky“ district.

The technology of heat ventilating air recovery was applied.

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# THANK YOU FOR YOUR ATTENTION!