

# The fuel-energy balance for practical Energy Efficiency

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# General overview on housing and communal complex

- In 2004-2005 increase of the crisis phenomena in a housing and communal complex proceeds. Reforming has not occurred. The system of functioning of housing and communal services remains inefficient, it is not possible to provide the realization of modernization and to stop increase of negative tendencies.
- Deterioration of the equipment in housing and communal services reaches on the average 75 %, of engineering networks - 65 %. Losses of heat at operation of the power equipment and systems of a heat supply reach 60 % at norm of 16 %. The quantity of failures in work of systems for the last 10 years has grown in 5 times.

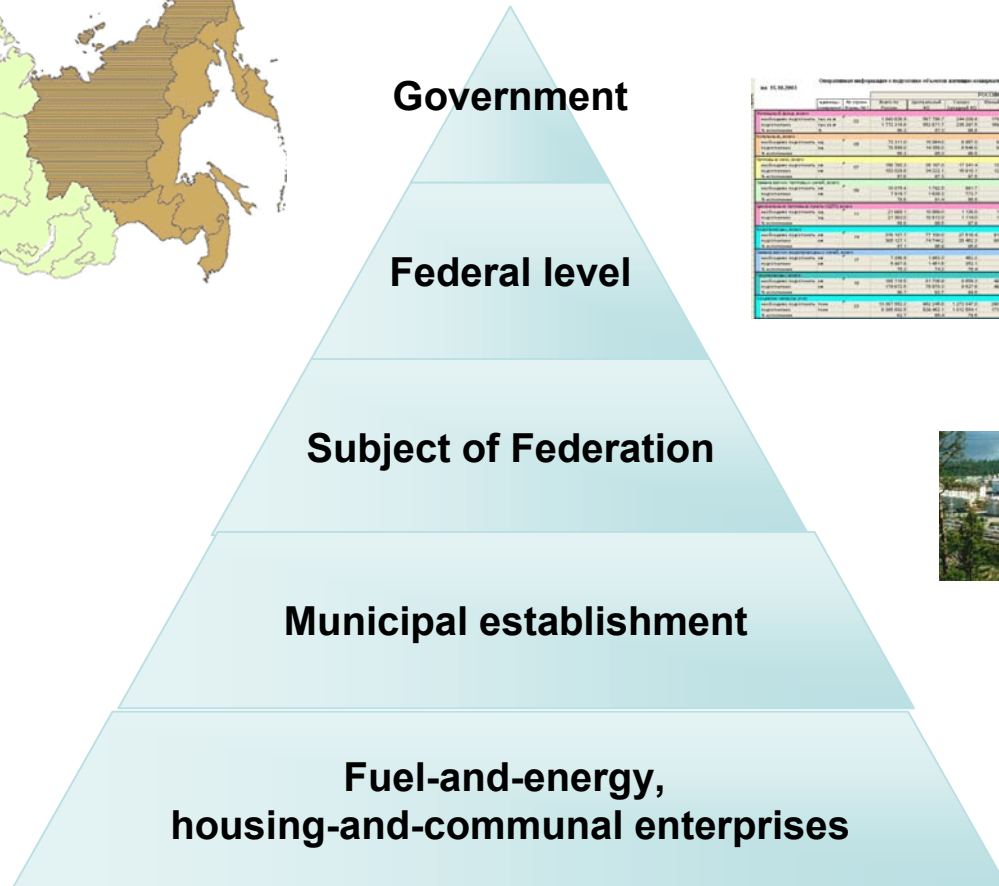
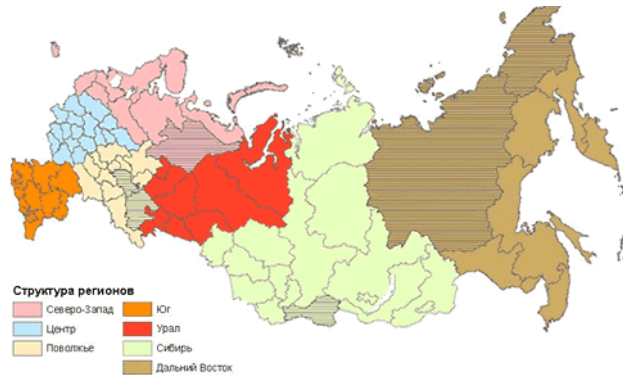
## Necessary actions

- To correct this situation it is necessary to organize urgently in regions a single system of gathering, processing and the analysis of the authentic and detailed information on a state of systems of power supply, processes occurring in these systems, to reveal the most problem items and to define for everyone technical and financial decisions, to take the control over budget.
- In housing and communal complex the information vertical (Federal level - region - municipal formation - object) must be present for the decision of questions which cannot be solved at a level of municipal establishments, for creation of the system providing coordinated work of the state, municipal and private organizations on satisfaction of consumers interests.

# Steering Committee of the Energy Efficiency 21 Project «The fuel-energy balance for practical Energy Efficiency»



## Levels of monitoring of processes in housing-and-communal complex

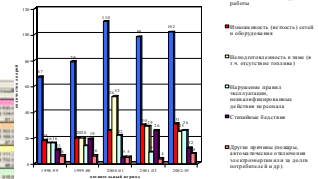


№ 15.19.001

Оперативная информация о нарушениях работы коммунальных систем теплоснабжения за период с 01.01.2013 по 30.03.2014 года

| Категория        | № заявки | Время      | Состояние  | Степень    | Время от   | Время до   | Время от   | Время до   | Время от   | Время до   |
|------------------|----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Водоснабжение    | 1        | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 |
| Теплоснабжение   | 2        | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 |
| Канализация      | 3        | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 |
| Электроснабжение | 4        | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 |
| Газоснабжение    | 5        | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 | 01.01.2013 |

Динамика аварий и нарушений работы коммунальных систем теплоснабжения



The basic aim of the project.

Development of constantly operating  
fuel-energy balance model,  
based on modern monitoring centers.

## Structure of the project

### Technical audit

Data on sources, networks,  
objects

### Financial audit

Economical constituent  
Tariffs and prime cost

### Geo-location

Underground objects  
3-D cube of the information

### Creation of GIS

(geo-information system)  
3-D Drawing of ground-based  
objects  
Characteristics of objects

### Model of fuel-energy balance creation

Mathematical description of GIS  
objects state Creation of active model  
of work of a system due to the state  
of objects and temperature of outdoor air

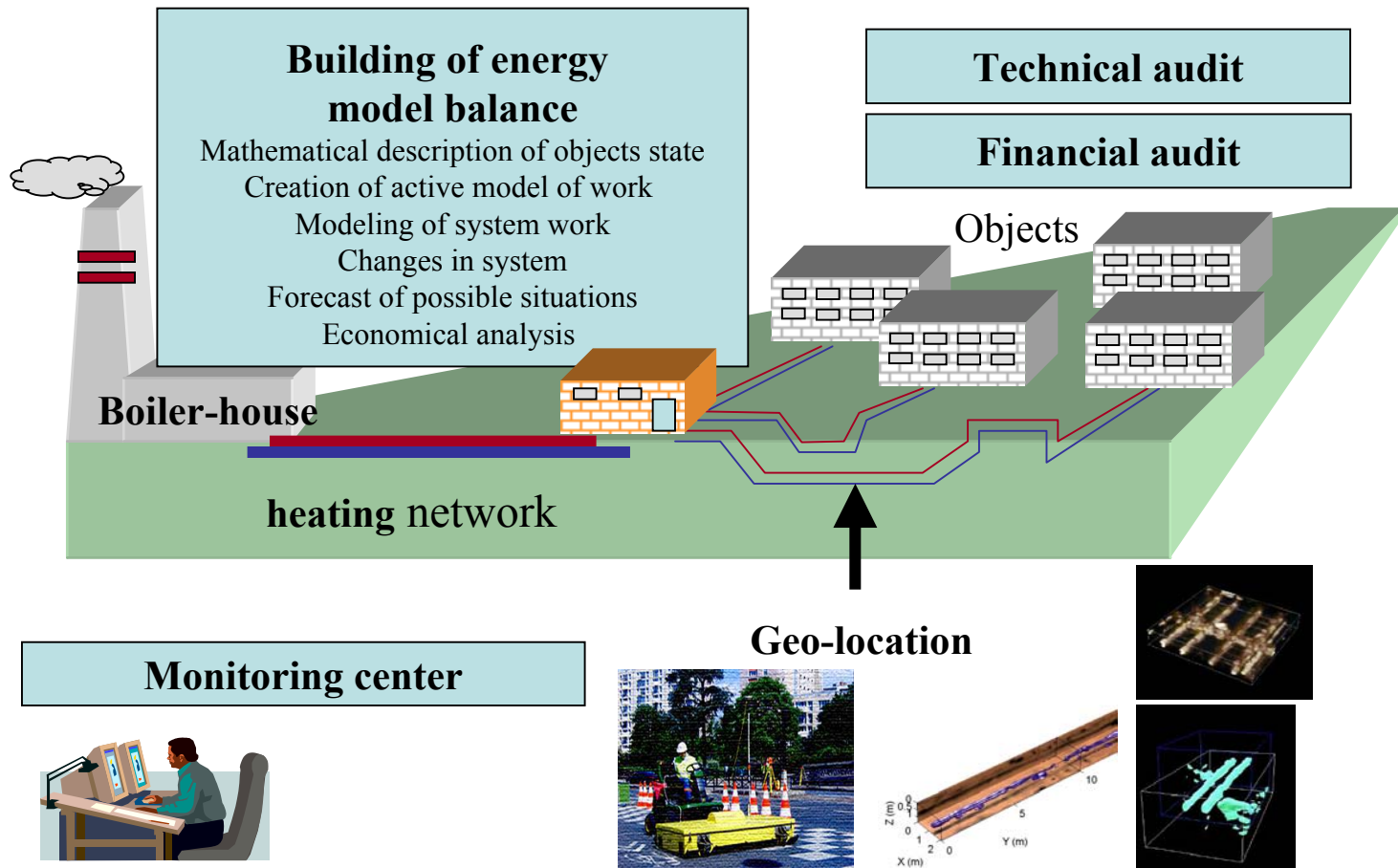
### Analytic

Modeling of system ,  
Changes in system  
Possible situations forecast  
Economical analysis

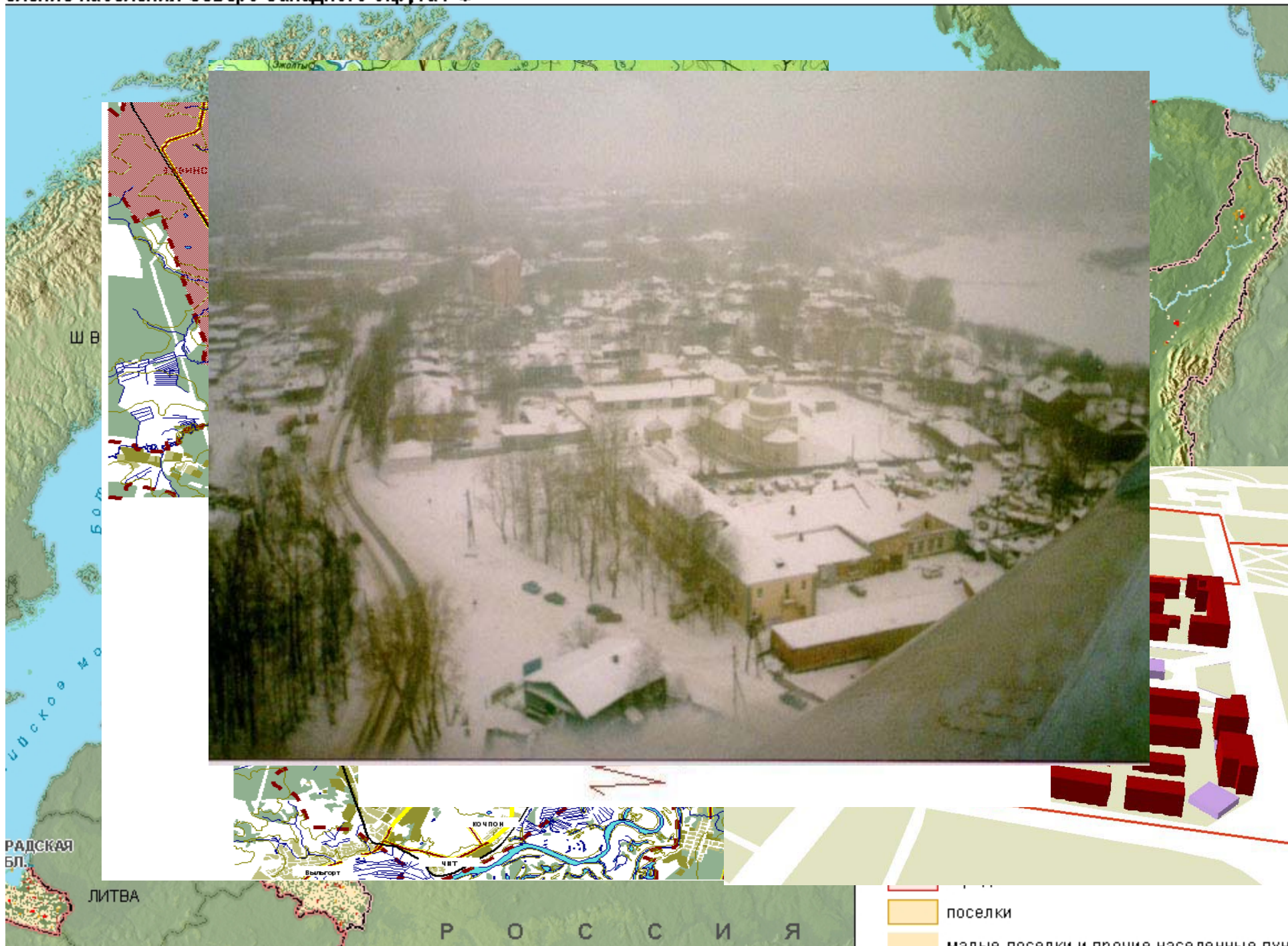
### Creation of information-dispatching system

Installation of technical equipment and software  
Building of communication links wit another informational structures  
Collection and primary information processing

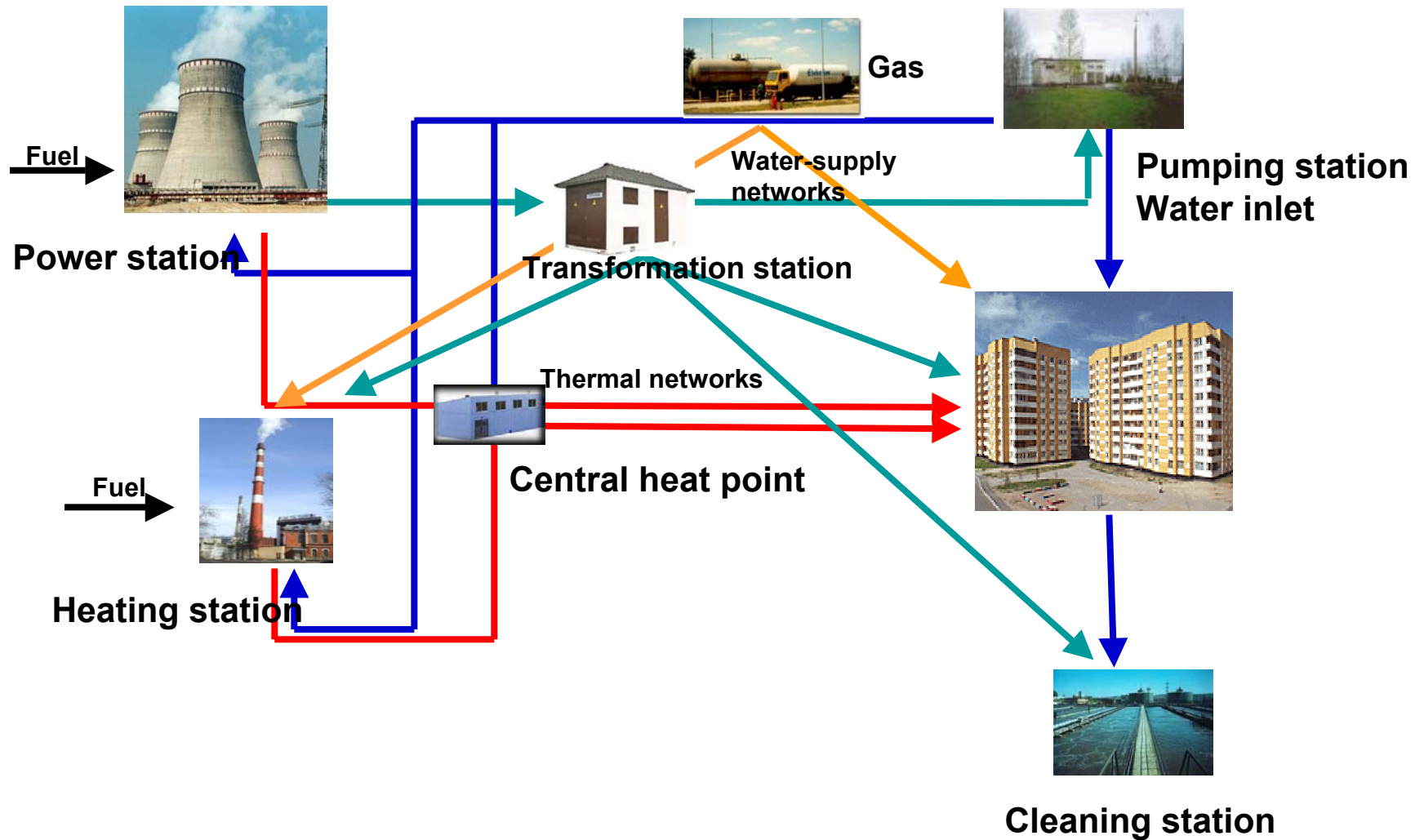
**Single geo-informational system of monitoring, modeling and analysis of the processes in housing-communal complex**



# еление населения Северо-Западного округа РФ



### Principal scheme of energy balance model for municipal establishment



# The analysis of heat supply state

is carried out on the basis of three parameters:

- **Actual** - received according the facts, given by municipal establishments and subjects of federation;
- **Normative** - calculated according to the data, given by subjects of Federation in compliance with normative parameters;
- **Rated-normative** - given as a result t of works and the inspections carried out on places, defining the real need for power resources in the concrete conditions. These figures we get in the result of gathering and processing of the information, work on the geo-location and constructions of energy balance model. This parameter is mostly approached to real processes of a heat supply.

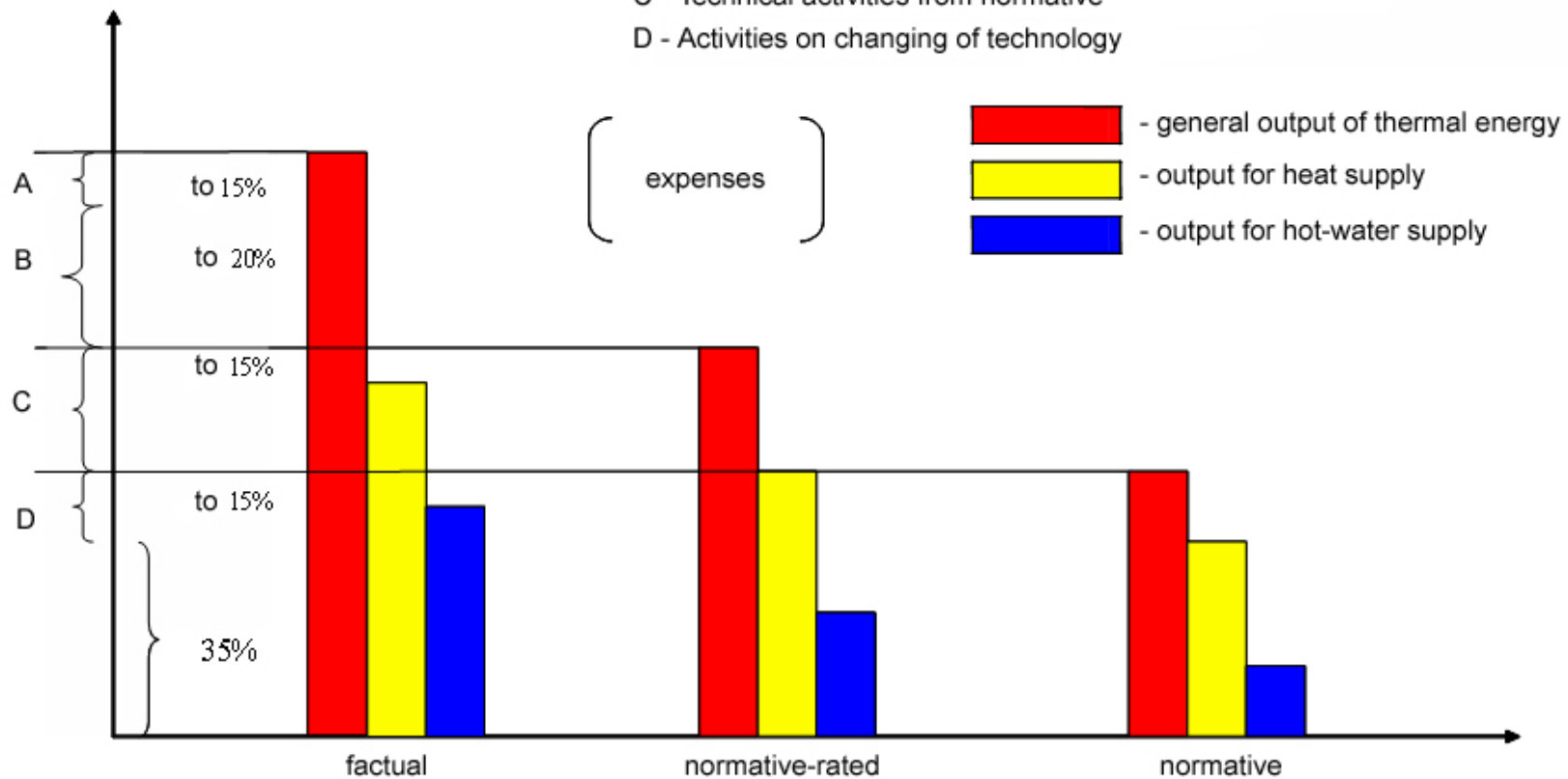
# Steering Committee of the Energy Efficiency 21 Project

## «The fuel-energy balance for practical Energy Efficiency»



### Structure of nonproductive expenses in heat-and-power engineering in municipal economy

- A - Administrative activities
- B - Economic activities from normative-rated to normative
- C - Technical activities from normative
- D - Activities on changing of technology



## Saving result

The practical works held in a number of regions show, that only the putting in order of fuel-energy balance during information-analytical inspection allows to reduce expenses, for example, on heat supply up to 35 %. Carrying out of a complex of technological actions allows to lower them to 50 %.



# Project advantages for Energy Efficiency

## **Ecological**

1. 30% Reduction of CO<sub>2</sub> emissions.
2. Improvement of a global environment.

## **Economical**

1. Reduction of fuel expense.
2. Revolving investments for infrastructure new technologies on saving-expenses base.

## **Social**

1. Stability and security
2. Increasing of the level of life.

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**Thank you for attention**

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