

**AN EVALUATION OF THE  
EFFICIENCY OF ENERGY  
REGULATION IN UKRAINE**

by

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Abstract

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Chairperson of the Supervisory Committee: .....  
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There is an extensive literature on using economic analysis for exploration of the efficiency of regulation for developed and developing countries. This work develops approaches to evaluation of Energy Regulator's performance under specific conditions of Ukrainian economy in transition.

The Ukrainian Energy Regulatory System was tested for compliance with economically based principles of good regulation and compared with efficient regulatory system (U.K.). The second part of the work was devoted to event study for evaluation of industry responses on regulatory and market events with using electricity losses as measure of performance of electricity distribution companies.

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## GLOSSARY

**Electricity Losses.** Physical losses of electricity measured as a difference between metering data on total electricity supply to the network and on consumption by end users.

**Commercial Losses.** Electricity delivered to end users but not paid for.

**Normative Technical Losses.** Permitted by NERC level of technical losses which is established in the transportation tariff and charged to all consumers.

**Technical (Line) Losses.** Physical losses of electricity as a result of energy dissipation in networks.

## INTRODUCTION

The Ukrainian Energy Regulatory System started its development in 1994. Basic principles for the emerging system were proposed by well known international advisors. At that time these principles reflected the best advances of regulatory theory and practice. Since then Energy Regulator – National Electricity Regulatory Commission of Ukraine (NERC) – has gained a great experience of energy regulation under the specific conditions of Ukrainian economics in transition such as:

- Weak development of market institutions;
- Weak development of the judicial system as an independent authority;
- Established tradition of command and control regulation;
- A tradition to consider energy as a public good and as a consequence excessive subsidies to energy consumption as well as nonpayments or noncash payments for electricity supply.

At present Ukraine is in the process of reconsideration of approaches to National Energy Policy. Drafts of the basic laws “On the basic principles of the Energy Policy of Ukraine”, “On the Bases of the State Regulation of Natural Monopolies and Related Markets in the Fuel and Energy Complex of Ukraine”, “On the basic principles of the Wholesale Electricity Market operation”, “On the Natural Gas Market” are in the center of public attention. In such circumstances it is especially important to evaluate merits and demerits of current regulatory system and to propose measures to its improvement. The subject of special interest is institutional design of the system of energy regulation and its influence on the performance of Energy Regulator.

An important issue is the evaluation of efficiency of the energy regulation or, in other words, estimation of the benefits and costs of energy regulation. In

developed countries (U.K.) as well as in developing countries (Argentina) the implementation of efficient regulation have led to benefit to all relevant parties (consumers, industry and government) which was reflected in real price reductions, improvements in service quality, output growth, investments growth, efficiency improvements and in increased public support for the government. But, in some cases, regulation leads to adverse effect when social benefits from regulation are less than their costs. To combat inefficient regulations many countries implemented systems of estimators for regulatory efficiency e.g. system of regulatory appraisals in U.K.

The creation of the Energy Regulatory System in Ukraine coincided with the transition from a socialist to a market economy. Such a transition is necessarily accompanied by a decline in energy production, closing of energy companies, reduction in employment in the industry, continuous increases in energy prices and growth of social tensions. To carry out an evaluation of regulatory efficiency one should attempt to separate the net impact of regulatory decisions on social welfare from influence of other factors such as industry restructuring and privatization.

There is an extensive literature on using standard economic analysis to the exploration of regulation for developed and developing countries. This work is intended to apply these approaches to the evaluation of energy regulator's performance to a transition economy - Ukraine. The main objective of the work is qualitative evaluation of Ukrainian Energy Regulatory System as compared with economically based principles of good regulation and efficient regulatory system (UK). The second goal is to see whether generally used quantitative methods, such as event study, are applicable to the evaluation of regulatory impact under the specific conditions facing Ukraine.

Testing Ukrainian Energy regulatory system for compliance with principles of good regulation shows such deficiencies as inconsistent and ambiguous legislative framework, lack of independence, accountability and expertise of the Energy Regulator. I found that physical losses of electricity are sensitive to regulatory decisions enough to be used for econometric estimation regulatory impact on the performance of the Ukrainian electricity distribution companies. It appears that such market and regulatory events as privatization of distribution companies, implementation of cost based electricity tariffs, implementation of real time pricing resulted in decreasing electricity losses.

In the first chapter, I present a literature survey of the basics of regulatory economics and methods of evaluation regulatory efficiency. The second chapter describes basic features of the Energy Reform in Ukraine and provides qualitative evaluation of the Ukrainian Energy Regulatory System. In chapter 3 electricity losses in Ukrainian distribution networks were used in econometric event study for estimation regulatory impact on performance of the local distribution companies. Chapters 4 and 5 provides description of findings, some conclusions and policy implications.

## *Chapter 1*

### LITERATURE REVIEW

The economic theory of regulation as well as regulatory practice have been extensively developed during past several decades. The Averch-Johnson (1962) model showed that rate of return regulation doesn't create incentives for efficiency. They founded the theoretical basis for network industries deregulation in 1980s-90s. Rapid developments in the theory of optimal pricing – particularly Ramsey pricing (1927) – influenced the implementation of price cap regulation in the utility industries. Stiglerian (1971) approach of private interest allowed to better explain the regulatory practice than naïve public interest theories.

#### **Economic theory of regulation**

Kip Viscusi, Vernon and Harrington (2000) consider 3 stages of evolution of the Theory of Regulation:

- Public interest theory or normative analysis as a positive theory (NPT);
- Capture theory (CT);
- Economic theory of regulation (ET).

NPT and CT are considered as not theories but rather as hypotheses. Only ET is a theory in proper sense.

According to Stiglerian approach (1971) regulation is supplied to meet demand of interest groups, which are maximizing their income. The Stigler-Peltzman modeling of the economic theory of regulation (Peltzman, 1976) is based on the following basic tenets (Kip Viscusi, Vernon and Harrington, 2000):

- Regulatory legislation redistributes wealth.
- The behaviour of legislators is driven by their desire to remain in office, implying that legislation is designed to maximize political support.
- Interest groups compete by offering political support in exchange for favourable legislation.

According to these tenets regulation is likely to be biased towards better organized, small cohesive interest groups with strong preferences, at the expense of large heterogeneous interest groups with weak preferences. Small interest groups with the high per capita potential benefits from regulation enjoy advantages in terms of both recognition of a need for regulation and implementation of that regulation. This argument explains why much of observed regulations are biased toward producers and against consumers. Producer groups are small with large potential benefit for each firm from regulation, whereas consumer groups comprise millions of consumers and even substantial aggregate welfare losses from regulation are small for each consumer.

The main assumption of Stigler-Peltzman model is that the individuals who control regulatory policy desire to be reelected and choose policy so as to maximize their political support. Let's consider Peltzman model for optimal regulatory policy (Fig.1). A legislator/regulator chooses prices so as to maximize political support which represented by  $M(p, \delta)$  where  $p$  is price and  $\delta$  is profit.  $M_3 > M_2 > M_1$  are indifference curves for legislator.

The optimal price for legislator  $\bar{P}$  is that which achieves the highest level of political support subject to constraint that profit equals  $\delta(P)$ .  $\bar{P}$  lies in between competitive and monopoly prices so interest groups have incentives for implementation of regulation when industry is either relatively competitive or relatively monopolistic. Price and entry regulation in competitive industry (electricity generation, natural gas production etc.) shifts price from optimal level and leads to consumer's and deadweight losses. Efficient regulation in monopolistic industry (public utilities) may lead to price decreases. In such a case one can expect increasing consumer's surplus. This was the case, for example, in the U.K. electricity industry after the implementation of regulation.

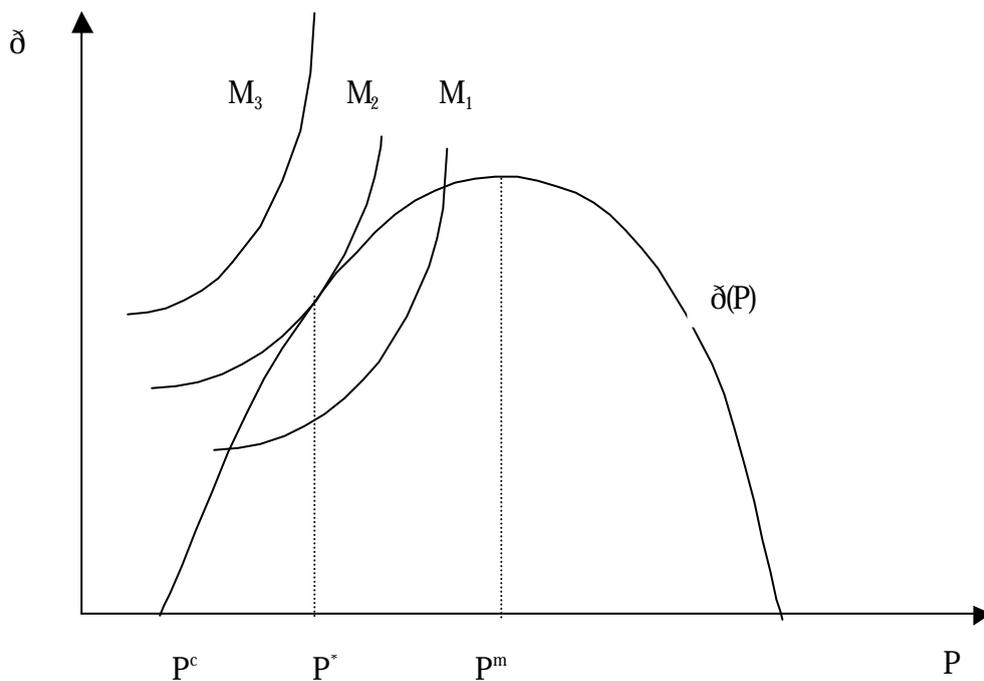


Figure 1. Optimal Regulatory policy: Pelzman Model (Kip Viscusi, Vernon and Harrington, 2000, p322).

## **The Rationale for Electricity and Gas Industry Regulation.**

The specific feature of electricity and natural gas industries as well as other utility industries (infrastructure industries, network industries) is that they distribute their good and service over networks where it is delivered to numerous consumers for end use. The network often exhibits economies of scale and involves substantial sunk costs, so in the case of network industry we deal with a natural monopoly.

The typical case of natural monopoly is a firm producing a single good with downward long-run average cost curve throughout the entire range of output. Efficient production requires to have only one firm in industry but this monopoly has to be regulated to prevent excessively high prices and to ensure a “fair” rate of return on firm investment. An alternative approach to providing both productive and allocative efficiency is a state ownership of the utility.

The basic activities of infrastructure industries can be broken into three components: production, transmission and distribution. In the case of a firm which is vertically integrated into all three activities there arises the problem of unbundling these functions to facilitate competition. It is generally accepted that the production stage is competitive in most infrastructure industries so the essence of the problem is in the organization of transmission and distribution components of a sector with special attention to the matters free entry, or free access to transmission and distribution networks (Geddes, 1998).

## **Principles of regulatory structure design.**

Worldwide process of infrastructure industries reforms put in the forefront the issue of efficient regulatory system for energy and other utility industries. Utility

regulation has to promote efficiency through protection of consumers from monopoly abuse and protection of utilities and investors from political and regulatory risks. Jadresic and Fuentes (1999) classified regulatory risks as follows:

- Change of rules of the game during the life of the project
- Ex-post interpretation of rules vaguely specified
- Misuse of discretion
- Regulation decisions (as prices) driven by political and social climate
- Lack of enforcing procedures

To find approach to optimal design of regulatory institutions, which could mitigate regulatory risk, authors used analytical methods of institutional economics and principal-agent model. They found that organizational failures are a major source of risks. Credibility and transparency are the basic criteria for regulatory system design that can overcome organizational failures.

Independence, accountability and proficiency of the energy regulators are crucial for credibility. Smith (1997, p21) notes such peculiarities of infrastructure industries as large and irreversible investments, and critical importance of utility services e.g. electricity supply for consumers, which are also voters. To achieve short-term political goals elected political power (President, Government, Parliament) as a rule withhold justified tariff increases at the expense of investors and long-term interests of consumers. Investors are aware of risk for their investments and they will demand higher tariffs to compensate for increased risk or they will invest in countries or industries with independent regulatory agencies.

Independence ensures regulator's ability to resist regulatory capture and pressures from economic and political interest groups. The key requirements for independence are personal qualities of regulators need to take independent

decisions and resist improper pressure or incentives, technical knowledge, and professional experience. To prevent reprisals from affected parties regulators must be appointed for fixed terms and protected from arbitrary removal. Independence of regulator must be supported with earmarked funding. Otherwise the regulator can be improperly influenced by cuts to its budgetary allocation. The most appropriate approach is levies charged (directly or indirectly – through license fee for regulated firms) to consumers of regulated services. Such fees can be considered as payment for services provided by the regulator, and as direct link of regulator with consumers of its services. It increases accountability of the regulator. The autonomy of the regulator should also mean exemption from civil service salary restriction and rules of recruitment that hinders hiring of well-qualified staff. The regulator also has to be able to contract out some tasks to external experts – private firms and consultants.

To ensure accountability of the regulator legislation should assure transparency of decision-making process, detailed justification of decisions, opportunities for all interested parties to take part in public hearings and provisions permitting the removal of regulators in case of the proven misconduct or incapacity.

Estache and Martimort (1999) considered regulation as the game between players with different levels of knowledge and information, which are need for efficient and fair decisionmaking. According to them government consist of different bodies with their own constituencies and regulatory tools. Such “real” government has limited ability to commit and is subjected to regulatory capture. Optimization of regulatory system connected with minimization of transaction costs originated from the influence of interest groups on the regulatory process. The main conclusion of the work is that when transaction costs are taken into account, regulatory structure and regulatory processes affect regulatory

decisions. This theoretical investigation provides principles of regulatory structure design which for the most part agree with above mentioned requirements.

But theory, based on minimization of transaction costs, casts doubt on widely used professional criteria of regulator's appointment. Professional experts are likely to come from regulated sector and are likely to return to it. Such a situation increases the probability of regulatory capture and, to reduce risk of capture, one should involve in selection process both the executive and the legislative power. Estache and Martimort (1999) believe that short term contracts for regulators strengthen regulatory independence and autonomy. This conclusion in contradiction with general practice of 48 years duration of nomination for regulators with possibility of renewal.

Baldwin and Cave (1999, p.77) generalized approaches to assessing regulatory regime and proposed five key tests for compliance with principles of good regulation:

- “Is the action or regime supported by legislative authority?”
- Is there an appropriate scheme of accountability?
- Are procedures fair, accessible, and open?
- Is the regulator acting with sufficient expertise?
- Is the action or regime efficient?”

### **The Efficiency of Regulation**

The problem of efficiency of regulation is a matter of primary importance for the success of energy reforms, especially in postsocialist countries with limited tradition of independent public institutions and limited regulatory experience and capacity.

Economic theory considers regulation as a means of market failure correction to improve the functioning of markets. However, regulation is not costless. It involves significant transaction costs in negotiating, monitoring and enforcing regulatory rules. There are also indirect costs, e.g. as a result of delay of urgently need regulations. Regulation is a subject of political influence and is rarely based exclusively on criteria of economic efficiency. Under such circumstances regulation may have adverse (negative ) effect on the economy (Guasch and Hahn,1999). So, the costs and benefits analysis is necessary to choose the optimal amount of regulation. In recent years a growing number of countries have started regulatory reforms aimed to reduce regulatory burdens and improve the quality and cost effectiveness of regulations that remain.

To provide efficiency of regulations a system of checks of regulatory programs was introduced in UK. In 1986 - 1996 UK Government implemented procedures for appraisal of regulatory proposals to ensure due balance between costs and benefits of regulation. According to appraisal procedure regulatory agencies must provide for all regulatory proposals Compliance Cost Assessment (CCA), “identify the problem and possible harm; identify options for dealing with the problem and estimating a monetary value of each option; comparing costs and benefits for business, consumers and government, identifying any uncertainty and risk, identifying any issues of equity or political considerations” (Ogus, 1998).

The main objectives of regulatory appraisal in the UK are to provide regulatory agencies with more complete information on expected consequences of proposed regulations and to create incentives for preparing of good quality regulation, rather than to provide a conclusive test concerning the regulatory proposal.

According to Guasch and Hahn (1999, p139) there are several approaches to estimating the cost of regulation:

- Econometric study as a rule estimates regulatory impact on output markets or uses production and cost functions for measuring. Macroeconomic models may be used to assess economywide effects of regulation.
- Evaluations of expenditures of regulatory agencies and regulated firms as a result of regulatory decisions.
- Productivity studies – comparisons between actual productivity change over time and those that would have occurred in the absence of regulations.
- General Equilibrium Models. Measuring of changes in output, employment, and welfare in response to implementation of regulation.

According to Chisari, Estache, and Romero (1999) implementation of effective regulation in Argentina utility industries was beneficial for all classes of society. They used computable general equilibrium model to estimate macroeconomic and distributional impact of the privatization and regulation of utilities. Table 1 presents the general equilibrium calculation of the levels and distribution of gains that could be achieved through effective regulation. The indirect gains achieved through effective regulation amount to almost \$ 1 billion or 16 % of the average utility bill.

Table 1. Gains from effective regulation of public utilities in Argentina (Chisari, Estache, and Romero, 1999)

Income quintile	Saving from effective regulation (million of 1993 U.S. dollars)	Percentage decrease in expenditures on utilities
1 (poorest)	138	20
2	142	17
3	121	12
4	214	17
5 (richest)	302	17
Total	915	16

The standard econometric method for measuring industry responses on regulatory decisions is event study (Shwert, 1981; Austin, 1993; Dnes, 1995; Armitage, 1995; MacKinlay, 1997; Robinson, 1998). The essence of the method is the comparison of the stock market return for regulated company with the returns for comparable company (or the group of companies) not affected by regulation. This method can be used to estimate efficiency of regulatory decisions and to check hypothesis that firms in regulated industry influence the regulatory environment in their favor (regulatory capture). If statistical analysis shows that changes in regulatory environment are followed by abnormally high returns of regulated firms, it indicates the case of regulatory capture. This capture may occur in the legislature (top level capture), as policy formulated and legislation passed, or in the regulatory agency and the ministerial decisionmaking (lower-level capture).

This method was used to assess impact of ministerial and Oftel (telecommunication industry regulator) decisions in the U.K. telecommunication industry after privatizing British Telecom (Dnes, 1995). Econometric analysis showed 12 statistically significant regulatory events affecting British telecom from 75 identifiable regulatory events over post-privatization period. But the company's average daily return was not significantly higher than the market index. The author believes that this result rules out top level capture. Additionally this work gave information about efficiency of regulatory decisions of Oftel.

## *Chapter 2*

### UKRAINIAN ENERGY REGULATORY SYSTEM – TESTING FOR COMPLIANCE WITH PRINCIPLES OF GOOD REGULATION

#### **Energy Reform in Ukraine**

Ukraine has a powerful energy complex for generation, transmission and distribution of electricity. Its capacity is 44 thermal power plants, 8 large hydro power plants, and 5 nuclear power plants.

Currently, the installed generating capacity of the Ukrainian power industry totals 54 million kW, with 36.6 million kW (67.6% of the total) at thermal power plants, 12.8 million kW (23.8%) at nuclear power plants, and 4.7 million kW (8.7%) at hydro power plants.

Reforms of the power sector started after Presidential Decrees of April 4, 1994, May 21, 1994 and December 8, 1994, which stipulated the basic tasks for the creation of a competitive electricity market in Ukraine, power sector restructuring and creation of the National Electricity Regulatory Commission (NERC) as a state regulatory body.

Before restructuring, the power sector had eight vertically integrated regional energy associations subordinated to Energy Ministry. The restructuring was basically aimed at the unbundling of monopoly activities (electricity transmission and distribution) from potentially competitive activities (electricity generation and supply).

At present the structure of Ukrainian electricity industry includes (Appendix 1):

- four thermal generation companies, two hydropower generation companies, and nuclear generation company (all state owned);
- twenty seven regional distribution companies (oblenergoss) – operators of low voltage networks and regulated tariff suppliers (7 oblenergoss were privatized in 1998) ;
- hundreds of independent (nonregulated tariff) suppliers;
- State company Ukrenergoss – operator of high voltage network and National Dispatch Center.

The Wholesale Electricity Market of Ukraine (WEM) operates since June 1997 (Cabinet Resolution of 21/05/1997 #487). Basic principles of organization were adopted from the Electricity Pool of England and Wales.

WEM is organized as a “uniform price auction”. Hourly wholesale prices are based on price bids submitted daily by thermal generating companies – the prices at which each generating unit would be willing to supply power. Price bids together with the capacity offered by each generating unit are used to construct supply curve for WEM. The Market Operator - a State Enterprise “Energymarket” – determines System Marginal Price for every hour as a point of intersection of supply curve with demand curve - the price bid of the most expensive generating unit needed to meet forecasted demand. The wholesale price at which suppliers purchase electricity from the WEM is defined as the sum of System Marginal Price, charges for use of main electricity network, Market Operator charges, environmental and Chornobyl charges, debt repayment charges, charges for subsidizing privileged groups of residential and agricultural consumers etc.

Electricity is supplied to consumers by both regulated tariff suppliers (Local Distribution Companies - oblenergoss) and unregulated tariff suppliers (independent suppliers). According to Electricity Law (1997) all consumers were allowed to choose their electricity supplier.

### **Regulatory Framework**

Before 1995 the Energy Ministry performed all regulatory and control functions in electricity sector and the Ministry of the Economy dealt with energy price and tariff policy. The Energy Ministry was the main state body responsible for implementation of state policy in electricity sector and really represented the state as an owner of energy companies.

According to new Ukrainian legislation entrepreneurial activity of natural monopoly industries is regulated by the state regulatory commissions. Law of Ukraine "On Natural Monopolies" (2000) states that electricity and gas transportation and distribution undertakings are the subjects of natural monopolies and electricity generation, electricity and gas supply are adjacent markets so they are subjected to state regulation. Targets of regulation are prices of goods and services, conditions of access to goods and services and other conditions of carrying out entrepreneurial activity provided by legislation.

The National Electricity Regulatory Commission of Ukraine (NERC) was founded in accordance with Decree of the President of Ukraine No.738 of December 8, 1994 ) as a standing independent non-departmental public agency. The Electricity Law of Ukraine (1997) defines NERC as the power sector state regulatory body. Regulation of activity in the power sector is implemented by means of granting licenses for carrying out particular activities in the power sector, developing tariff policy and monitoring the quality of provided services. In accordance with Decree of the President of Ukraine No.335 of April 21, 1998 responsibility for regulation of oil-gas sector was transferred from State Oil and Gas Committee to NERC.

The Commission is composed of 5 Commissioners, including the Chairman, working on a full-time basis. The activity of the Commission is ensured through

its staff (Working Body) and through local offices set up in every oblast of Ukraine.

Let's consider design and performance of the Ukrainian Energy Regulatory System using benchmarks for assessing regulatory regime proposed by Baldwin and Cave (1999, pp. 76-85).

#### *Legislative Mandate*

The legal framework of the Ukrainian Energy Regulatory System is weak and contradictory. Only two industry related laws are currently in force: "On the Electricity Sector" (1997) and "On the Natural Monopolies" (2000). The rest of the energy legislation is formed by the Presidential Decrees. The Laws of Ukraine "On the basic principles of the Energy Policy of Ukraine", "On the Bases of the State Regulation of Natural Monopolies and Related Markets in the Fuel and Energy Complex of Ukraine", "On the basic principles of the Wholesale Electricity Market operation", "On the Natural Gas Market" Laws are under development. The Parliament cannot pass them rather long time because of disagreement concerning further development of the energy sector.

A number of state agencies are involved in regulating the power industry:

- Presidential Administration
- Cabinet of Ministers
- Ministry of Economy
- Ministry of Fuel and Energy
- Antimonopoly Committee
- National Electricity Regulatory Commission
- State Committee for Energy Saving
- State Committee for Standardization, Metrology and Certification
- State Committee for Regulatory Policy and Entrepreneurship
- Licensing Chamber
- Local Administrations etc.

But powers and responsibilities of different agencies are not well specified. It leads to jurisdictional uncertainty and duplication of functions. For example dissipation of responsibilities on the matters of electricity metering between Energy Ministry, NERC, State Committee for Energy Saving, State Committee for Standardization, Metrology and Certification hampers the development of real time metering system which is crucially need for due operation of the Wholesale Electricity Market.

NERC was created by the Presidential Decree in 1995 as an independent state agency but formal safeguards of independence weren't provided by legislation. President and Cabinet of Ministers reserved leverage for total control of NERC activities. According to NERC Status (Presidential Decree #335 of 4/25/1998) President arbitrary appoints NERC Commissioners for 6 years and there are no legal provisions concerning conditions and procedures of appointment and removal regulators from office. Law "On Natural Monopolies", passed in 2000, sets that Chairman and commissioners are appointed by President according to submission of Prime Minister, and they may be removed by President from office in the cases of commissioner's resignation, proven commitment of crime, gross violation of his obligations, illness, if he permanently incapable of performing his tasks. Table 2 shows that President replaced the NERC Chairmen too often. In all cases removals of Chairman weren't duly motivated. Standard motivation – change of job – is used to bypass constraints on arbitrary removal. At least in one case President replaced NERC Chairman with representative of favored oligarchic group interested in energy business (according to mass media). Such a policy undermines independence of regulator and increases regulatory risk faced by private investors.

The Cabinet Resolution #1393 of 9/08/1998 sets that NERC activities are guided and coordinated by First Deputy Prime Minister. One more leverage to

Table 2. NERC Chairmen 1995-2001

Chairman of NERC	Occupation before appointment	Duration of appointment	Motivation of the removal from office in the Presidential Decree
Mr. Korotya	Deputy Energy Minister	12/1994 – 10/1995 (10 months)	Change of job
Mr. Butsio	Deputy Energy Minister	12/1995 - 4/1999 (3 years and 4 months)	Severe shortcomings in the work
Mr. Svetelik	Head of Department, Energy Ministry	6/1999 – 1/2000 (6 months)	Change of job
Mr. Gridasov	NERC Commissioner	2/2000 – 3/2001 (1 year and 1 month)	No motivation
Mr. Prodan	Director of the State Enterprise “Energy market”	3/2001 - present	

Table 3. Annual quantities of the special orders, given to NERC by Presidential Administration, Cabinet of Ministers, and Central Department of Civil Service (NERC, 1997-2000)

Year	Presidential Administration	Cabinet of Ministers	Central Department of Civil Service
1997	67	125	6
1998	54	427	14
1999	85	565	10
2000	81	1146	n.a.

influence NERC behavior is the subordination of the Commissioners and staff as civil servants to the Central Department of Civil Service. The Presidential Administration, the Cabinet of Ministers, and the Central Department of Civil Service control day-to-day NERC activities by means of special orders (Table 3).

Neither Constitution of Ukraine (1996) nor Conception of Administrative Reform (1998) provided for independence of utility regulators. As a result the independent status of NERC was cancelled (Decree of the President of Ukraine No.250 of March 13, 1999) and since then Commission was an executive body with special status and subordinated to the Cabinet of Ministers. NERC earmarked funding through levies on industry activities (licensing fees) was banned by the Law "On the sources of funding for the state bodies" (1999). Presidential Decree of October 2000 puts NERC under supervision of the President of Ukraine. The rest of NERC independence was eliminated as a result of so called Regulatory Reform.

The Conception of State Regulatory Policy was developed by State Committee on Entrepreneurship Development (since December 1999 State Committee on Regulatory Policy and Entrepreneurship (SCRPE)) in cooperation with International Center for Policy Studies (ICPS). The basic provisions of the Conception were put in force by the Presidential Decree of January 22, 2000 "On implementation of the uniform state regulatory policy in the sphere of entrepreneurship".

The main shortcoming of Regulatory Reform Conception is SCRPE right to final judgment on any regulatory agencies decision when generally defined principles of efficient regulation are used as a conclusive test whether regulatory proposal should be adopted. As matter of fact it provides SCRPE the right to reject or

approve arbitrarily any regulatory proposals and make all executive authorities dependent on SCRPE decisions. The right to control activities of the executive branch of state power gives to SCRPE's officials political power sufficient for forcing any state body to support their private interest. SCRPE has strong incentive for the maintenance of current state and so is interested in hampering regulatory reform.

The new regulatory regime leads to biased criteria of regulatory act quality. SCRPE right on final judgment on regulatory proposal of any agency rule out Ministers' accountability for results of regulation implementation. Under such circumstances developers of new regulatory acts have to aspire to meet SCRPE requirements (which may be biased by insufficient level of competence or private interests) rather than to prepare good quality regulatory act.

Proposed two-tier regulatory system is more costly and less efficient than even the existent one. Two-tier regulation multiplies transaction costs of regulation. Moreover, such a Regulatory Reform, which creates additional mechanism for political pressure on Utility Regulator, raises riskiness of investments and can become a serious obstacle for investment especially in public utility industries on the eve of mass privatization of Ukrainian electricity and telecommunication companies.

At present SCRPE can be used similar to Tax Administration for political pressure on NERC to influence regulatory decisions. For example in October 2000 SCRPE and Tax Administration inspected licensing activity of NERC according to special order of the Cabinet of Ministers.

### *Accountability*

Accountability of the Energy Regulator is not consistently provided with current Ukrainian legislation. Despite high level of NERC discretion in regulatory decisions there are no effective mechanisms providing accountability of NERC and Commissioners. Absence of checks and balances system (particularly any form of regulatory appraisal) creates fertile ground for abuses.

Parliament has little power over NERC – only through budget process.

Accountability of the NERC to the Government is provided by means of participation of the Government in Commissioners' appointment process. Law "On Licensing of Certain Kinds of Entrepreneurial Activities" sets that NERC is accountable to the Licensing Chamber on the matters of gas market licensing. According to Presidential Decree of January 22, 2000 "On implementation of the uniform state regulatory policy in the sphere of entrepreneurship" NERC, as executive body, is obliged to submit for approval to SCRPE all regulatory proposals with detail cost-benefit analysis of the expected results of their implementation. But these requirements are in contradiction with other legislative acts so they are ignored.

Really NERC is accountable only to the President, which can appoint Commissioners and voluntarily remove them from office. The NERC Annual Reports are submitted to the President.

Transparency of the regulatory process is the key requirement for accountability, which provides social control over regulators. NERC accountability to the participants of the energy markets, to the consumers and other interested parties is ensured by open NERC meeting in the form of public hearings. Information Bulletin of NERC provides brief information on regulatory decisions, but their

detail justification and analysis of their expected consequences is not accessible to public.

According to NERC structure proposed by international advisors, every regional NERC office established in 1995 Electricity Consumers Council. But Councils of Consumers disappeared in short period and at present the interests of consumers are not represented duly in regulatory process.

### *Expertise*

Economic regulation is costly process, which requires significant resources, both human and financial. Comparison of NERC budget, staffing and salaries with those in countries with more efficient energy regulation (Argentina, Poland, and UK) shows inadequate NERC provision with financial and human resources (Appendix 4). NERC was the first independent utility regulator in postsocialist countries. Because of the lack of the specialists in economic regulation in the Ukraine most of the NERC employees have engineering background. In December 1997 70% of specialists were with engineering background, 10% - lawyers and about 20 % - economists. All economists but one graduated from the soviet universities in 1965 – 1981. There are no specialists in regulatory economics as well as training system for energy regulators in Ukraine. The only source of information on the regulatory issues for NERC Commissioners and staff are training programs and presentations, provided by international advisers. The loss of independent status have led to “revolving door” effect - key specialists, including 5 CEOs, left the NERC for private companies regulated by NERC. For example, former heads of pricing and licensing departments left NERC for private distribution companies. They succeeded in the development of

two-part tariff beneficial for consumers. From the other side after losses of most key specialists NERC is unable to discharge one's obligations in full.

*Due process*

The lack of proficiency leads to undue performance. Commission uses price cap regulation for natural monopolies – electricity transmission and distribution. However, price cap is set every year or more often rather than every 4-5 years as e.g. in UK. Such a regulation eliminates the main advantage of price cap regulation – incentives for costs reduction.

Pricing is based primarily on accounting costs rather than on economic costs and significant part of fixed costs is not reflected in prices. Therefore, prices for power, produced by hydro- and nuclear plants, are understated. Distorted prices give a misleading signal to economy and lead to unjustified changes in the structure of generation (share of power, produced by nuclear power plants, is excessively large).

There is no system of regulatory appraisal for NERC decisions, which are made without due investigation and without explanation for stakeholders.

### *Chapter III*

#### ESTIMATION OF REGULATORY IMPACT ON THE PERFORMANCE OF REGIONAL ELECTRICITY DISTRIBUTION COMPANIES

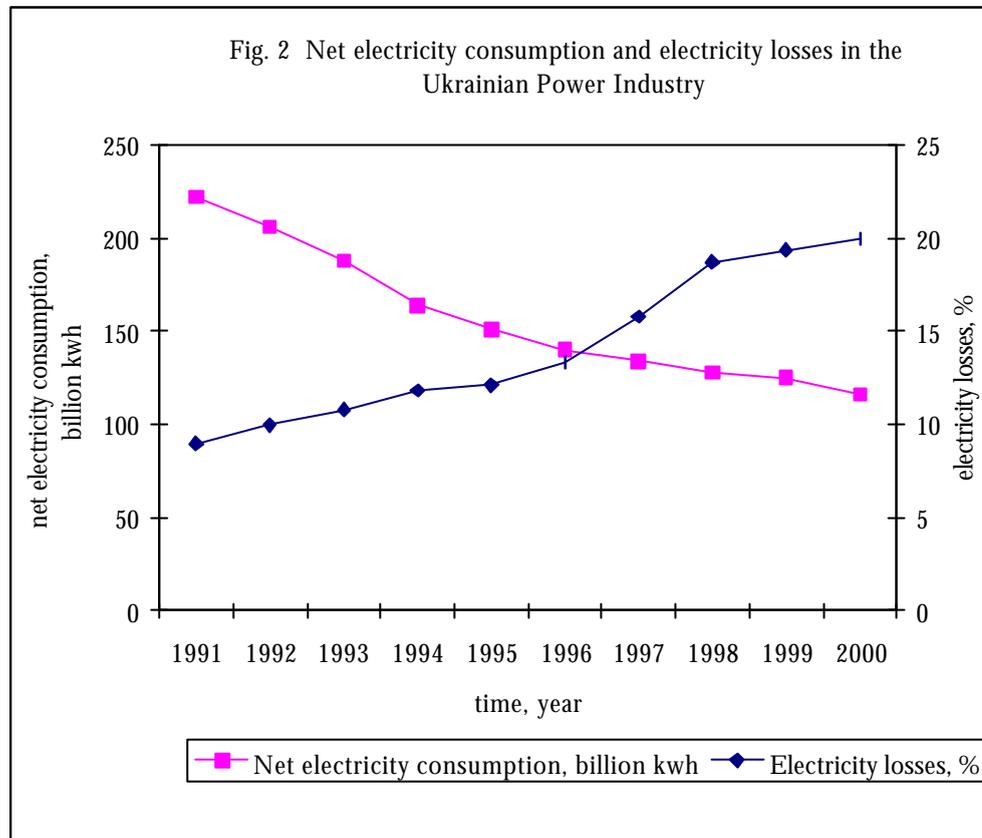
Application of generally used methods of economic analysis to power industry of Ukraine is complicated because input market (fuel) and output market (electricity) are severely distorted. High level of barter operations, chain of nonpayment and payment arrears between parties of electricity market leads to unreliability of standard measures of performance, such as total factor productivity, profit etc.

To avoid this problem we use physical electricity losses in electricity networks as a proxy for measure of performance for regional distribution companies - oblenergos. In spite of some deficiencies such a measure has an evident advantage – losses are measured as a difference between metering data so they can be considered as highly reliable.

#### **Electricity losses in the Power Industry of Ukraine**

Electricity losses consist of two components – technical losses and commercial losses. Technical losses are caused primarily by dissipation of energy in networks and they are generally referred to as line losses. The main part of technical losses occurs at low voltage distribution lines. Level of technical losses for Distribution Company (Oblenergo) depends on such factors as:

- Structure of distribution network (share of low voltage lines) ;
- Structure of consumers served by Oblenergo (share of low voltage consumers);
- Overloading distribution lines (the more heavily loaded the lines, the greater the line losses).



Technical losses can not be excluded in full therefore NERC sets acceptable level of technical losses for each distribution company. These so called normative technical losses are calculated by means of special software taking into account structure of network and records of electricity flows in networks. Normative technical losses are established in the transportation tariff and charged to all consumers. When losses exceed allowable level they are covered at the expense of the company's profit. The main cause of excessive technical losses is the delay or neglect of badly needed operation and maintenance expenditures. Technical losses drive-up cost of service and so lead to higher prices for consumers or lower profits for companies, or both. Reduction of losses below allowable level result in receiving a greater margin at existing tariff.

Commercial losses take place when electricity is delivered to consumer but not paid for. Commercial losses can be explained by:

- Thefts of electricity by tampering with meters or bypassing meters;
- Nonmetered supply;
- Metering errors;
- Non-payment by consumers.

So, commercial losses must be explained by bad metering, billing and payment collection. One can observe that commercial losses (thefts) in Southern steppe regions are higher than those in other regions with alternative sources of energy. In Ukraine commercial losses are not reflected in tariffs so they are not recoverable for distribution companies.

During last ten years total electricity losses in Ukrainian Power Industry have increased from 9% to 20% of gross electricity consumption (Fig. 2) and have amounted to 31 billion kilowatt-hour or \$660 million in 2000. Electricity losses are a major cause of lost revenues for electricity utilities in Ukraine. Revenue losses can be defined as:

**Revenue losses = avoidable technical losses + commercial losses**

The problem of revenue protection is actual for developed countries and, especially, for developing and transition countries. According to Singhal (1999) revenue losses on distribution in the USA are 4% of total revenue. Annual distribution revenue losses in UK are estimated in £50 million. In Pakistan total electricity losses can achieve 35% and commercial losses in India are greater than 10%.

Both technical and commercial losses can be reduced through investment in improvement of the technical state and structure of networks, improvement of dispatching to optimize electricity flows and exclude overloading, improvement in metering equipment, creation of efficient systems of billing and payment collection.

In the most cases Oblenergo's investment possibilities are constrained by company's profit and arrears of payments to wholesale electricity seller – Ukrenergo (Appendix 1).

Besides investments, the second main prerequisite of losses decreasing is efficient management. One can expect that privatization shifts distribution companies to profit maximizing behavior and the management of privatized companies will be aimed at diminishing commercial and avoidable technical losses.

Therefore, we can conclude that:

Losses = f(investments, management, normative losses, region, seasonality, regulatory and market events)

Normative losses = f(structure of network, operating conditions of network (technical state of equipment), structure of consumption, electricity flows)

Regulatory and market events - legislative and regulatory decisions which can influence electricity losses through changes in structure and mechanisms of the electricity market.

### **An Event Study**

The event study is typically used in economics to measure impact of market events on the value of firms (MacKinlay, 1997). The method is based on the fast response in security prices to actual and expected changes in market conditions.

Unfortunately, the security market in Ukraine is far from maturity and it can not provide effective pricing of energy companies' shares.

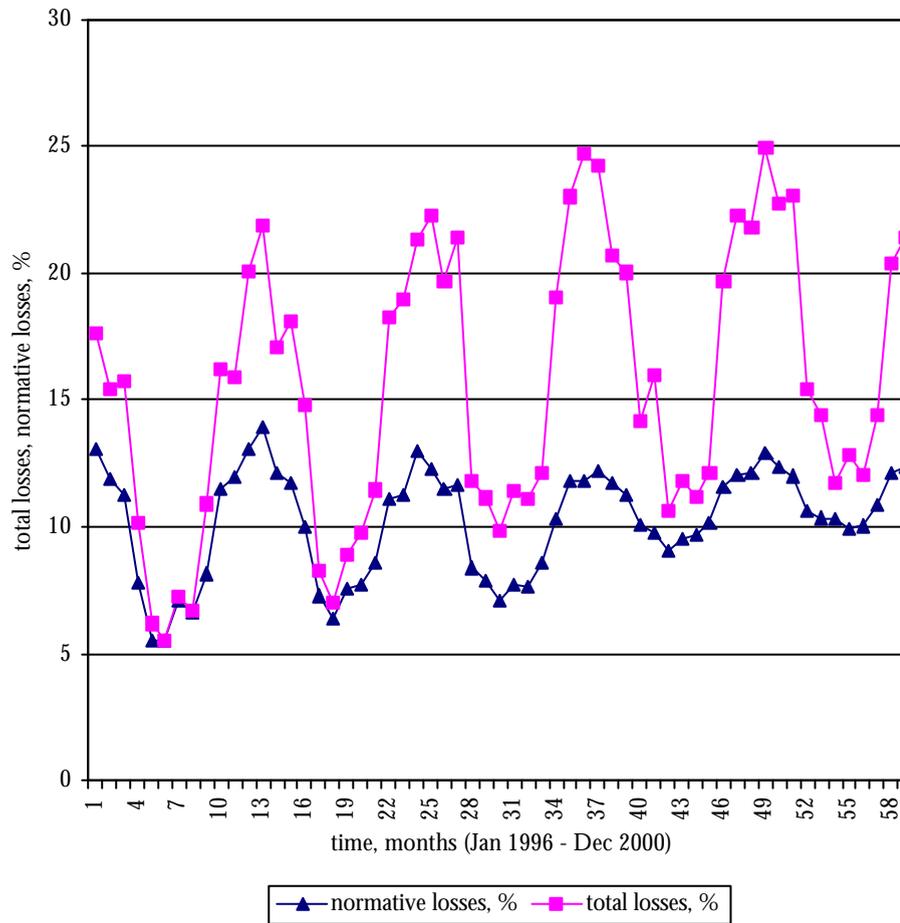
Unlike security prices, electricity losses are not as sensitive to market events, and response can be observed only with significant delay. Therefore, we can expect that the method will be sensitive only to events, which could significantly change market conditions. One should note that such measure of performance for event studies as electricity losses is reasonable only for countries similar to Ukraine (some transition and developing countries) where commercial losses are excessive and sensitive to regulatory and market events. In the developed countries electricity losses are explained, for the most part, by technical losses, which are usually quite stable.

To check our hypothesis on the applicability of electricity losses as a measure of Oblenergo's performance to estimation of regulatory impact let us consider the response of electricity losses to the most significant regulatory and market events in the Ukrainian electricity market during 1997-2000 (Table 3)

We estimate an econometric model with monthly panel data for 25 oblenergos during period 1997 – 2000 (1200 observations).

Taking into account strong seasonality of electricity losses (Fig.3) we include in the model electricity losses lagged 12 months. To tackle the Autocorrelation Problem we include total losses lagged 1 month. Normative technical losses term – permitted losses calculated by special software for specific conditions of each oblenergo – captures the structure and technical state of distribution networks and the magnitudes of electricity flows.

Fig. 3. Seasonality of total losses and normative losses (Fuel and Energy Ministry, 2001)



The estimated equation is:

$$LSF_{i,t} = C_1 + C_2 \cdot LSF_{i,t-1} + C_2 \cdot LSF_{i,t-12} + C_3 \cdot LSN_{i,t} + C_4 \cdot REG_t + C_6 \cdot LAW_t + C_7 \cdot OWN_{i,t} + C_8 \cdot FML_t + C_9 \cdot HPR_t + C_{10} \cdot AMD_t + \hat{O}_{i,t}$$

Where:

$LSF_{i,t}$  – actual electricity losses for oblenargo i during month t, in %;

$LSN_{i,t}$  – normative technical losses for oblenargo i during month t, in %;

$REG_i$  – dummy for region, 1 – steppe oblasts (Odesa, Kherson, Mykolaiv, Crimea), 0 - otherwise

The dummies for regulatory and market events are listed in Table 3.

Table 3. Regulatory and market events (1997-2000)

Date	Market and regulatory events	Dummies for events
16/10/97	Electricity Law	$LAW_t=1$ since 11/97; 0 - otherwise
6/1998-9/1998	Privatization of 7 Oblenergos	$OWN_{it}=1$ since month of privatization; 0 - otherwise
1/01/99	NERC decision on transition of oblenergos to retail pricing according to formula: $P_r=P_w+T_{tr}+T_s$ where $P_r$ - retail price, $P_w$ - wholesale price; $T_{tr}$ - transportation tariff, $T_s$ - supply tariff	$FML_t=1$ since 01/99; 0 - otherwise
5/05/00	Cabinet banned non-cash payments for independent electricity suppliers (Cabinet Resolution of 5/05/2000 N755)  Since 1/06/00 Oblenergos began purchasing electricity from WEM according to hourly wholesale price (NERC Resolution of 24.03.2000 '304).	$HPR_t=1$ since 05/2000; 0 - otherwise
22/06/00	Amendments to Electricity Law and subsequent regulations of NERC (NERC Resolutions of 24.07.2000, 27.07.2000, 18.08.2000)	$AMD_t=1$ since 08/2000; 0 - otherwise

*Chapter IV*

FINDINGS AND DISCUSSION

The results of econometric estimation are shown in Table 4.

Table 4. Regression Results for Total Electricity losses, 1997 – 2000.  
Method: Pooled GLS (Cross Section Weights)

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Dependent Variable: (LSF)				
Sample: 1997:01 2000:12				
Included observations: 48				
Total panel observations 1200				
<hr/>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
<hr/>				
C	0.587637	0.269558	2.180000	0.0295
(LSF(-1))	0.391933	0.019295	20.31282	0.0000
(LSF(-12))	0.500652	0.018916	26.46747	0.0000
(LSN)	0.188685	0.025906	7.283352	0.0000
REG	1.254396	0.375285	3.342519	0.0009
LAW	0.143903	0.259781	0.553940	0.5797
OWN	-0.625252	0.282516	-2.213153	0.0271
FML	-0.429695	0.228222	-1.882793	0.0600
HPR	-1.137215	0.390903	-2.909199	0.0037
AMD	1.913540	0.451371	4.239396	0.0000
<hr/>				
R-squared	0.818964			

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Estimation by Method of Pooled Generalised Least Squares for logarithmic functional form have a better goodness of fit as shown in Table 5.

Table 5. Regression Results for Log Total Electricity losses, 1997 – 2000.  
Method: Pooled GLS (Cross Section Weights)

Dependent Variable: log(LSF)  
Sample: 1997:01 2000:12  
Included observations: 48  
Total panel observations 1200

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.218466	0.034539	6.325191	0.0000
LOG(LSF(-1))	0.364306	0.018751	19.42879	0.0000
LOG(LSF(-12))	0.473061	0.017017	27.79872	0.0000
LOG(LSN)	0.136501	0.018750	7.279882	0.0000
REG	0.055282	0.014905	3.708918	0.0002
LAW	-0.013826	0.015019	-0.920601	0.3574
OWN	-0.031944	0.015396	-2.074769	0.0382
FML	-0.041214	0.013044	-3.159527	0.0016
HPR	-0.081186	0.022217	-3.654227	0.0003
AMD	0.118177	0.025633	4.610299	0.0000
R-squared	0.968377			

The estimated coefficients have the expected signs and are statistically significant for the most of events.

It appears that official implementation of Electricity Law (LAW dummy) is not significant event. This means that such an event rather strengthened the legislative basis of the market mechanisms created in 1995-1997 than changed market conditions.

According to the results of estimation, privatization (OWN) decreases total electricity losses by 3.1% (about \$18 million). Obvious shift of privatized

Oblenergos to profit maximizing behavior allowed essentially decrease revenue losses of privatized companies.

Transition from regulated retail tariff to cost based tariff (FML), that takes into account volatile wholesale electricity price, allowed Oblenergos better offset actual expenditures and improve performance. Therefore total losses were reduced by 4%.

Some important events occurred during 1 month in May-June 2000. Due to prohibition of non-cash payments for independent electricity suppliers (Cabinet Resolution of 5.05.2000 1755) significant part of independent suppliers reduced their operations. As a result oblenergos increased their share of market at the expense of solvent industrial consumers. Additional revenues could facilitate reduction of electricity losses.

According to NERC Resolution of 24.03.2000 1304 since June 2000 Oblenergos began purchase electricity from WEM according to hourly wholesale price (Appendix 3). Such regulatory decision leads to improvement of load balancing, decreasing of system electricity transfers. So one can expect decreasing of electricity losses in response to NERC decision. One important conclusion from this result is necessity of hourly pricing at least for large electricity users to adjust their electricity demand to the real time Wholesale Electricity Market price (Appendix 3). For example, as it was made in UK, where Electricity Industry Regulator (OFFER) obliged consumers with consumption more than 100 kW install the half hour meters.

The cumulative impact of these two events reflected in HPR resulted in decreasing of total losses by 7.7 % or about \$44 million.

Unlike Electricity Law (1997), the amendment to Electricity Law (June 2000) was followed by sequence of regulatory decisions (AMD), which essentially changed the system of settlement in the Wholesale Market. NERC Resolutions of 24/07/2000, 27/07/2000, 18/08/2000 strengthened oblenergos' discipline of payment for electricity purchased from WEM and decreased payment arrears. Oblenergos' possibilities to use payment arrears as loans were reduced and this could explain growth of electricity losses because of amendment to Electricity Law.

## *Chapter V*

### CONCLUSIONS AND POLICY IMPLICATIONS

Economic analysis, taking into account imperfect information and transaction costs of regulation, shows that regulatory decisions are affected by regulatory structure and regulatory process, and provides criteria for optimal regulatory system design. Testing Ukrainian Energy Regulatory System for compliance with criteria of good regulation detected its significant deficiencies.

The legislative framework of the Ukrainian Energy Sector is incomplete, inconsistent and ambiguous. Spheres of jurisdiction of the state bodies, involved in regulation of electric utilities, are not correctly specified. Energy regulatory framework was developed in 1994 – 2000 without coordination with development of Constitution, Administrative and Regulatory Reform. Because of that, the Energy Regulator, created in 1995 as independent body, lost its independent status in 1999. Lack of NERC independence, as well as accountability and proficiency, increases riskiness of private investment in Ukrainian Energy Sector.

Current NERC status does not provide relevant system of checks and balances and, therefore, creates preconditions for regulatory capture by influential interest groups. To mitigate such a risk new energy legislation should to prescribe obligatory procedures, which could to ensure NERC accountability to Parliament, consumers and investors. To provide adequate level of NERC expertise, urgent measures must be taken for adequate provision of regulatory process with

financial and human resources, for development of researches in the field of regulatory economics and for creation training system for utility regulators.

It is very important thing to have an instrument for quantitative estimation of the regulatory impact on the performance of regulated utilities. The standard event study method is not applicable in Ukraine because of absence of mature security market. It appears that, under certain conditions, physical electricity losses is a parameter, sensitive to changes in the market conditions. If the share of commercial losses in total electricity losses fairly high (about 50 % in the case of Ukraine), one can use them as dependent variable in the event study for estimation of the market response on regulatory decisions.

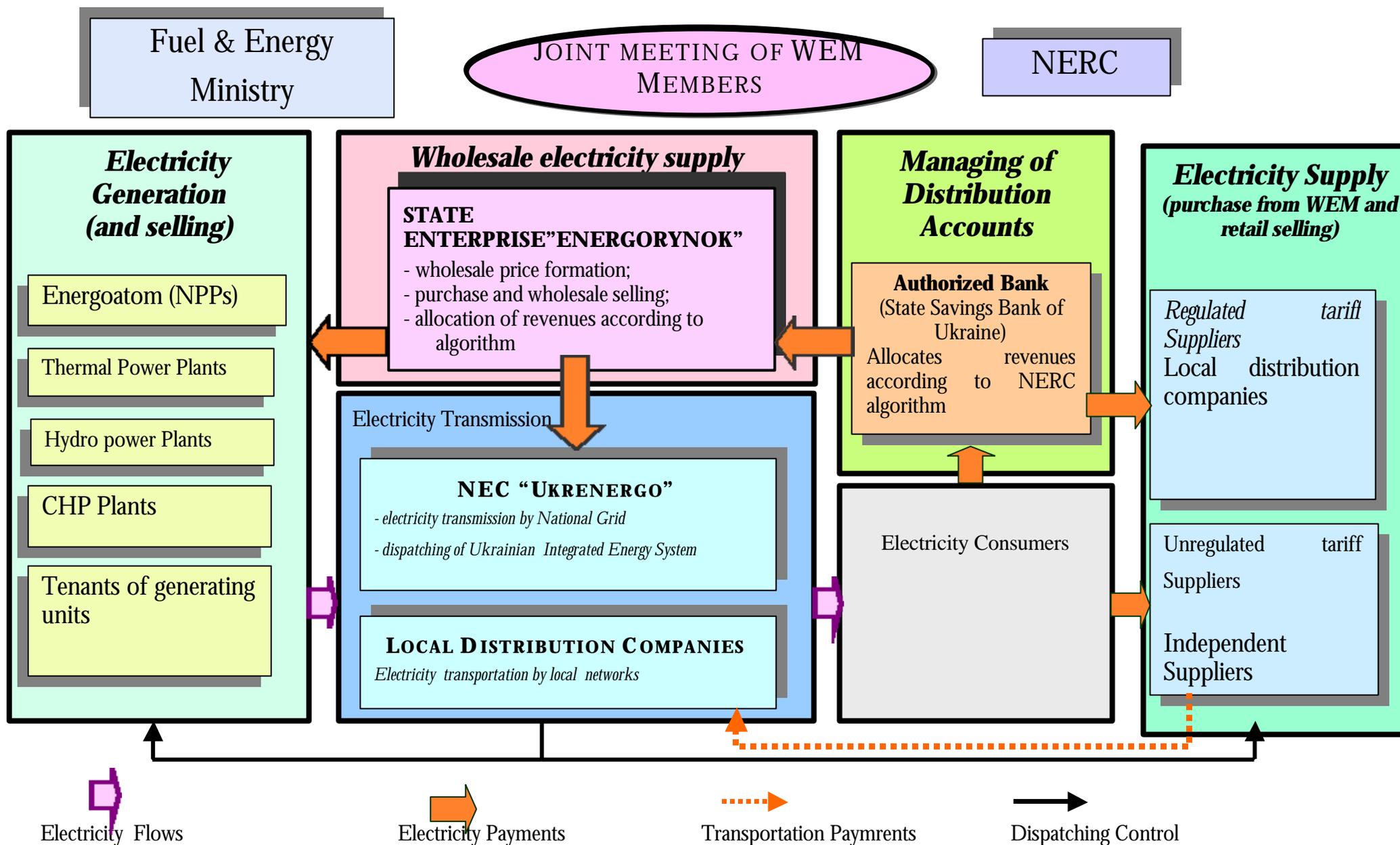
According to results of the event study such legislative and regulatory decisions as privatization of electric distribution companies, implementation of cost based retail electricity tariffs, implementation of hourly pricing resulted in decreasing electricity losses. We can conclude that delay of some regulatory decisions, such as mandatory hourly metering for large electricity consumers, leads to significant revenue losses of Ukrainian electric companies.

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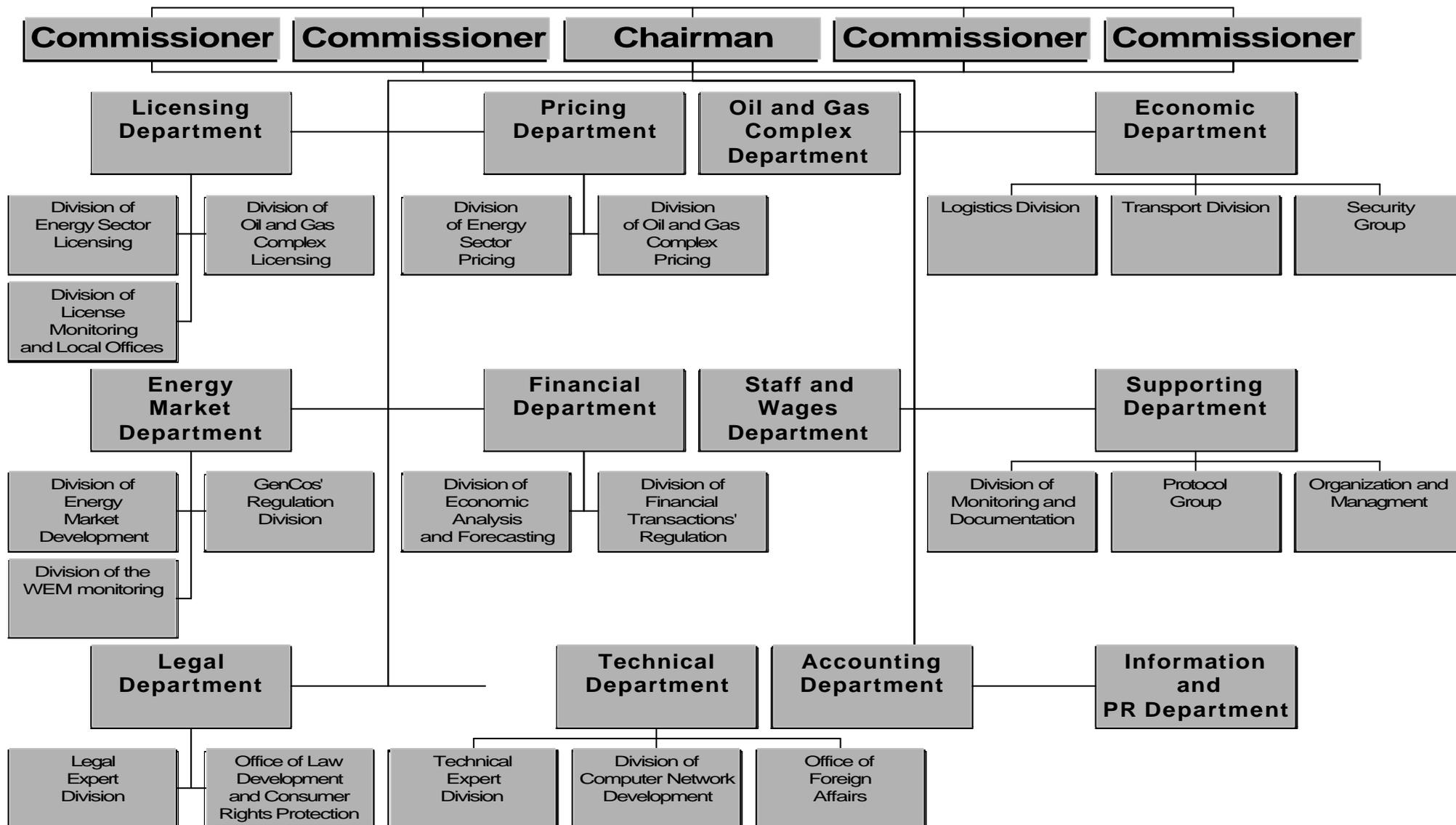
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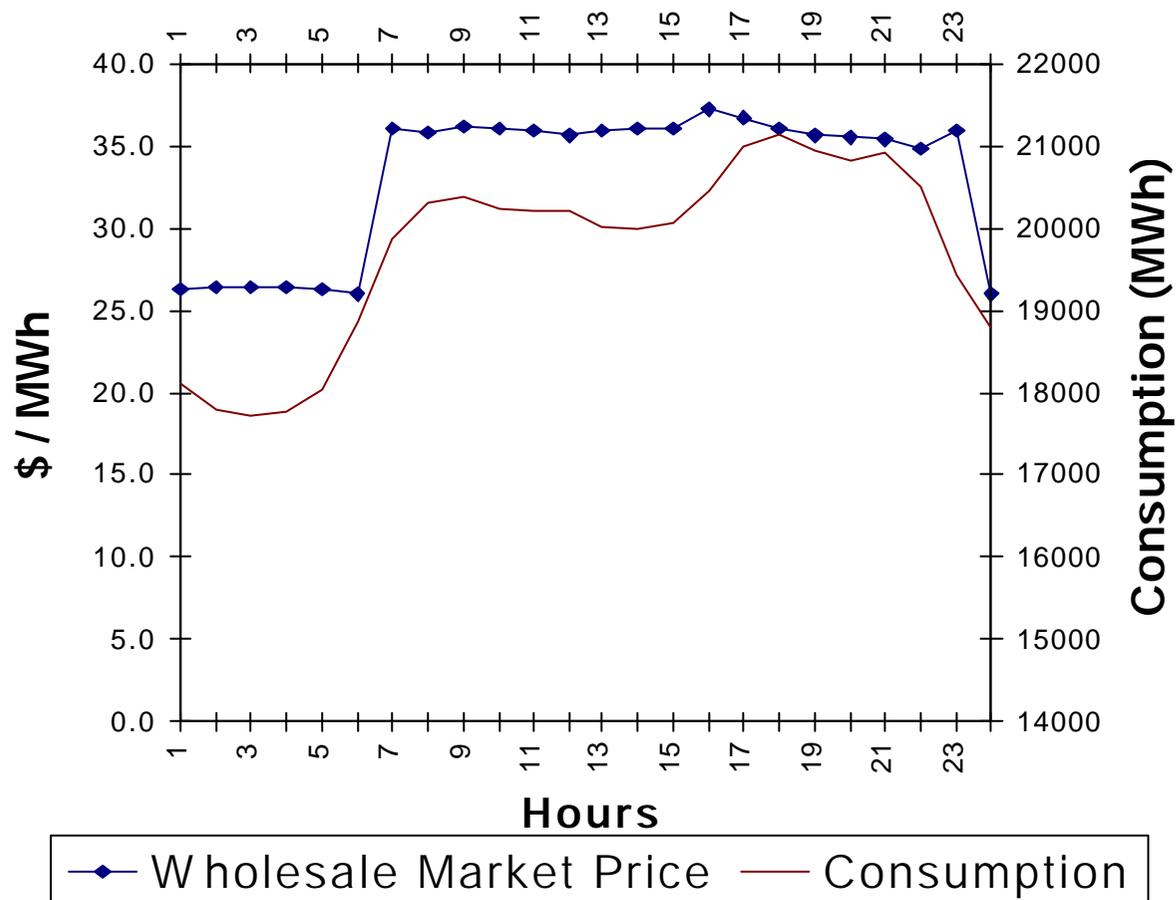
The Wholesale Electricity Market (WEM) of Ukraine (NERC, 2001)



National Electricity Regulatory Commission of Ukraine (NERC, 2001)



### Average Daily consumption and prices for Dec. 1998 (Hagler Bailly, 1999)



## Energy Regulatory Institutions (Argentina, Poland, United Kingdom, and Ukraine)

	Argentina (World Bank, 2001)	Poland (World Bank, 2001)	United Kingdom (World Bank, 2001)	Ukraine (NERC, 2001)
<b>Regulatory Institution</b>				
• Name	National Electricity Regulatory Agency (ENRE)	Energy Regulatory Agency	Office of Gas and Electricity Markets (OFGEM)	National Electricity Regulatory Commission (NERC)
• Sector scope	Power	Electricity, gas and district heating	Electricity and gas	Electricity, gas and pipeline transportation of oil and petroleum products.
• Year established	1992	1997	1986 (OFGAS), 1989 (OFFER)	1994 (Electricity), 1998 (Gas and Oil)
• Staffing	141 (Gas Regulator - 130)	290 (in 2001)	558 (in 2001)	223 (133 in Central Office and 90 – in regional (oblast') offices)
• Annual budget	US \$19 million (Gas Regulator - US \$17 million)	US \$6.7 million (in 1998)	US \$124 million	US \$1.03 million (in 2000)
<b>Sectorial Context</b>				
• Market size	24 GW installed capacity in 1998	Electricity 33 GW installed capacity Gas: 10 BCM consumption and 4 BCM production	Electricity: 75 GW installed capacity Gas market – 1,150 TWh (in 2001)	Electricity: 52 GW installed capacity Gas: 78.8 BCM consumption and 18.1BCM production
• Number of players	Unbundled sector with large number of generators and transmission and distribution companies. A competitive mandatory pool market is in operation with distribution and large consumers are allowed to choose their own suppliers.	30 power generating companies, wholesale trading, 33 distribution companies	Both sectors have been privatized, commercial players exist.	7 power generating companies, 27 distribution companies (7 privatized in 1998), hundreds of independent suppliers, state company Ukrenergo – operator of National Grid.  Ministerial type National JSC “OilGas of Ukraine” (daughter companies: gas producer “UkrGasExtraction”, gas transporter “UkrTransGas”, Trade House “Gas of Ukraine”), 45 gas distribution companies and 450 independent gas suppliers.
<b>Legal Basis</b>				
• Established by	Electricity Regulation Act (1992)	Energy Law (1997)	Gas Act 1986, the Electricity Act 1989, gas Act 1995 and the Utilities Act 2000	Presidential Decrees on NERC 1994, 1998, 2000., Electricity Law 1997, Law On Natural Monopolies 2000.

• Linkage to other laws	The Law of State Reform (1989))	Geological and Mining Law (1994) and Laws on Taxes and Accounting, Administrative Procedures Code		Law on Licensing 2000, presidential Decree on Regulatory Policy 2000.
• Jurisdiction	National Provinces share with ENRE regulatory jurisdiction in electricity distribution.	National	National	National
<b>Regulatory Governance</b>				
• Number of commissioners	President, Vice-president and 3 board members	Chairman, Vice-chairman	Director General	Chairman and 4 Commissioners.
• Term of office	5 years, staggered terms, can be reappointed.	5 years	5 years, renewable	6 years, renewable
• Annual Gross Salary level	US \$84,000-96,000	According to civil service rules (lower than in Sector)	US \$150,000 (in 1999)	According to civil service rules (average annual salary for NERC Commissioners and staff in 2000 US \$1,020)
• Qualification criteria	Technical expertise with selection by committee	Senior Government official	No specific requirements	No specific requirements
• Who appoints	Appointed by President with opinion from congressional commission.	Chairman appointed by Council of Ministers and Vice-chairman appointed by Prime Minister	Appointed by Secretary of State for Trade and Industry	Appointed by President according to submission of Prime Minister
• Ground for removal	Only by Executive decision, with previous opinion from Congress and reasons provided for decision.	Illness, if he permanently incapable of performing his tasks; gross violation of his obligations, and commitment of certain sorts of crime.	Misbehavior or incapacity	Commissioner's resignation, proven commitment of crime; gross violation of his obligations; illness, if he permanently incapable of performing his tasks. (in most cases these requirements are ignored or bypassed)
• Source of funding	Annual budget is approved by Congress and included in the Budget National Law. Levy on regulated companies, proportional to revenue in the prior year is basis for annual budget.	Funded from the state budget. The companies pay regulatory fee (related to revenues). The fees are however state income and do not directly go to the account of the regulator. Budget is approved by Parliament.	Levies on regulated firms via general budget. OFGEM's costs are recovered through the annual license fees paid by licensees. The license fees are based upon an objective measure of market activity, namely megawatt hours (MWh) generated, transmitted, distributed or supplied.	Funded from the state budget. The companies pay licensing fee (related to MWh generated, transmitted, distributed or supplied). The fees are however state income (since 2000) and do not directly go to the account of the regulator. Budget is approved by Parliament.
• Reporting responsibilities	Annual Reports presented to Parliament	Annual Reports presented to Parliament	Annual Reports to Parliament	Annual Reports to President

<ul style="list-style-type: none"> <li>Policy oversight</li> </ul>	Ministry of Economy, Public Works and Services	Ministry of economy, Department of Energy and Environment	Ministry of Energy (within Department of Trade and Industry)	President. Ambiguous authorities of the State Committee for Regulatory Policy and Entrepreneurship and Licensing Chamber.
<b>Regulatory Process/Conduct</b>				
<ul style="list-style-type: none"> <li>Principal responsibilities</li> </ul>	Regulatory authority for transmission and three distribution companies (in Capital).			
	<p><u>Licenses and concessions:</u> Concessions issued via public bidding for transmission and distribution by the Ministry.</p> <p>Regulator monitors compliance with concession obligations and applies sanctions and penalties.</p> <p>Assists in resolving disputes.</p>	<p><u>Licenses and concessions:</u> Does not grants licenses.</p> <p>Implements regulations issued by the Ministry of economy in sectors: gas, electricity and district heating.</p> <p>Resolved consumer complaints, disputes and appeals.</p>	<p><u>Licenses and concessions:</u> Gas transmission, distribution, supply, shipping and storage licenses issued by Energy Ministry within Department of Trade and Industry.</p> <p>Monitors and enforces conditions of issued licenses.</p>	<p><u>Licenses and concessions:</u> Grants licenses for electricity generation, transmission, distribution and supply, and for gas transmission, distribution, supply, and storage.</p> <p>Monitors and enforces conditions of issued licenses.</p>
	<p><b>System development/Investment:</b> No current role.</p>	<p><b>System development/Investment:</b> None</p>	<p><b>System development/Investment:</b> No formal approval or monitoring of investment plans. National Grid and Transco issue 7 and 10 year, respectively, rolling statement for future development. Monitoring upgrades to be completed.</p>	<p><b>System development/Investment:</b> No formal approval or monitoring of investment plans. According to License Conditions operators of electricity and gas networks issue statement for future development. Monitoring upgrades to be completed.</p>
	<u>Tariffs:</u>	<u>Tariffs:</u>	<u>Tariffs:</u>	<u>Tariffs:</u>

	<p>Approves price cap for retail/small consumers and sets maximum retail tariffs based on indexed rate formulas.</p> <p>Large consumers who are free to choose suppliers have network tariff regulated.</p>	<p>Regulates tariffs of all electricity companies, generation, transmission, and distribution, and end-user tariffs.</p> <p>An RPI-X price cap on the tariffs was introduced for transmission and distribution.</p> <p>A revision in Dec 2000 sets limits for tariff increases that may be charged to residential consumers.</p> <p>Companies operating in competitive environment may not need to submit tariffs for approval.</p>	<p>Sets average revenue price control cap for power transmission system and for 12 electric distribution companies.</p> <p>Sets average revenue price control cap for gas transmission and distribution.</p> <p>Retail prices set by market.</p> <p>Monitors retail prices to ensure suppliers behave in a competitively.</p> <p>Voted by Parliament and accounted for each year through the Appropriation Account.</p>	<p>Sets distribution and supply tariffs for electric distribution companies and retail prices for residential consumers.</p> <p>Retail prices for industrial and commercial consumers set by market.</p> <p>Sets transmission, distribution, supply and storage tariffs for gas transmission and gas distribution companies and retail prices for residential consumers.</p>
	<p><u>Market and trading arrangements:</u> Regulator supervises the market to ensure competition. Market rules are responsibility of ministry.</p>	<p><u>Market and trading arrangements:</u> Direct trades between large generators and distributors or large users do not require any approval from URE.</p>	<p><u>Market and trading arrangements:</u> Forced large generators to sell plants to encourage competition and market pricing.</p>	<p><u>Market and trading arrangements:</u> Participates in development of energy markets' rules and in supervising electricity and gas markets.</p>
	<p><u>Quality Standards:</u> Set service and quality standards in concession contracts.</p>	<p><u>Quality Standards:</u> None.</p>	<p><u>Quality Standards:</u> Sets performance standards via consultative process with National Grid and Transco.</p>	<p><u>Quality Standards:</u> Sets Electricity and Gas Usage Codes</p>
<ul style="list-style-type: none"> <li>Decision making process</li> </ul>	<p>Quorum (3) at the Board and simple majority. Public Hearing required for some issues.</p>	<p>Administrative Code type decision from 30 to 60 days, when not satisfactory – appeal to the Antimonopoly Court</p>	<p>No specific requirements. Consultation papers usually produced. Workshops and conferences on specific topics are sometimes convened.</p>	<p>Quorum (3) at the Board and simple majority. Public Hearing required for some issues.</p>
<ul style="list-style-type: none"> <li>Appeals process</li> </ul>	<p>Both Administrative and Jurisdictional decisions can be appealed to the secretary of energy and to the Court.</p>	<p>Administrative procedures code.</p>	<p>Appeals to Competition Commission (antitrust authority)</p>	<p>Decisions can be appealed to the Court.</p>