Energy Regulatory Reform in Serbia

Predrag Rajkovich (AERS), Gordan Tanich (AERS), Branislava Marcenich (AERS), Nikola Radovanovich (AERS), Judith Aitken (KEMA) and Konstantin Petrov (KEMA)

***Abstract* - The electricity and natural gas industries in Serbia are currently under-going major structural and regulatory reform. The next significant step is the publication, scheduled for June 2006, by the regulator of the pricing methodologies for the electricity and natural gas industries. This paper provides an overview of the progress made to date with these reforms and of the proposed direction of further change. The paper was developed in the course of the EU project Europe Aid 114376/D/SV/YU "Creation and Operation of the Serbian Energy Agency" funded by the European Energy for Reconstruction. The content of the paper represents the personal view of the authors and should not be associated with the policy and position of the institutions they work for.**

***Index Terms*—economic regulation, prices, revenue requirements, operating cost, capital cost.**

I. The Energy Law

THE Energy Law (July 2004) sets the corner stone for creating and gradually opening the electricity and natural gas markets.

Among other things, it provides for:

- Regulated third party access to the electricity and natural gas networks and gas storage facilities;
- The legal possibility for certain customers to select their supplier of energy;
- Accounting and other forms of unbundling of entities carrying out specified energy activities;
- The ability for any company to perform specified energy activities, subject to meeting certain conditions; and
- The establishment of a body responsible for the development of the energy markets and regulation of the energy sector entities.

The conditions for obtaining the status of a customer eligible to select freely its energy supplier that are prescribed by the Law mainly appertain to the level of annual energy consumption (Art. 39). These are currently set at 25 GWh for electricity and 50 million cubic meters for natural gas, meaning that roughly 12% [1] and 53% of respectively electricity and gas annual consumption could legally be purchased by customers with eligible consumer status. However, as of May 2006, no consumer has chosen to take up its eligible status, presumably mainly because the alternative of purchasing at the regulated tariff currently offers a cheaper supply than that generally available elsewhere. The regulator can change the level of the consumption threshold for eligibility (Art.15).

The Energy Law requires unbundling in terms of accounts for vertically or horizontally integrated undertakings. An energy entity performing an energy activity and at least one other activity, whether or not an energy activity as defined by the law, is obliged to keep separate accounts for each energy activity in its internal accounting, as well as consolidated accounts for other activities (Art. 43). It is also required to prepare financial statements for each activity individually and in compliance with the Energy Law and other laws regulating activities of commercial entities, accounting and auditing.

Pursuant to the Energy Law (Art. 2) the energy activities for electricity and natural gas are defined as:

- For electricity – generation, transmission, transmission system operation, market organization, distribution, distribution system operation, and trade; and
- For natural gas – transport, transportation system operation, storing, storage operation, distribution, distribution system operation, and trade.

The trading activity has been elaborated in the Energy Law (Art.41, 42, and 105) and in the Licensing Code, by introducing the activities of trade for the needs of tariff customers (i.e. wholesale trade for tariff customers) and retail supply of tariff customers.

The Energy Law also provides the basis for the establishment of a body, The Energy Agency of the Republic of Serbia (AERS), responsible for, among other things, the development of the energy markets and regulation of the energy sector entities (Art. 10). The Agency is managed by the Agency Council, consisting of a

[1] Assuming that the key criterion for eligibility refers to consumption at a single metering point. If it refers to consumption at more than one point by the same customer, the number of customers meeting the criterion would be greater.

President and four other members, all elected with a cascading mandate (two for three years, two for four years, and the President for 5 years) by the National Assembly of the Republic of Serbia, on the proposal of the Government. The Council makes decisions on the basis of a majority vote and is accountable to the National Assembly, reporting to it at least once a year. The Agency is functionally independent from any government body and can be funded from license fee charges, a part of use of system tariffs, as well as other income.

I. Structural Reform - Electricity

Total installed capacity for power generation in Serbia amounts to more then 8.8 GW. In 2005, total output of the sector was about 38 TWh, with about two thirds generated by the lignite-fired, thermal generators and one third by the hydro sector.

Until July 2005, one vertically integrated and state-owned enterprise, Electric Power Industry of Serbia (EPS), owned and operated almost the entire electricity sector and the lignite mines[2]. In July 2005, the electricity transmission and transmission system operation functions of EPS were transferred, to meet the provisions of the Energy Law, into a legally independent entity, Electric Networks of Serbia (EMS). This company is 100%-owned by the Republic of Serbia and separate from EPS in terms of management and ownership structure. It is envisaged that as the wholesale market develops, EMS will also perform the function of market operator.

In November 2005, the remaining functions of EPS were organized into legally-independent subsidiary companies in full ownership of EPS, as follows:

- Lignite mining – one subsidiary owns and operates the mine that supplies one of the thermal generation subsidiaries. The mine that supplies the other thermal generator is owned by the subsidiary that owns that generator.
- Generation – five subsidiaries, two thermal, two hydro and one CHP.
- Distribution – five subsidiaries, each currently performing the functions of electricity distribution, distribution system operation, and retail supply for tariff consumers (defined by the Energy Law as consumers purchasing energy for their own needs under the prescribed tariff system).

EPS, as a mother company, itself performs the activities of purchase and sale at the wholesale level for tariff consumers, as well as for other customers. The Law treats wholesale purchase and sale for tariff consumers and that for other customers as separate energy activities. This means that the mother company needs separate licences and accounts for these activities. In addition to its wholesale activities, the mother company carries out a number of functions on behalf of its subsidiaries.

The licensee for wholesale supply of electricity to tariff customers (EPS mother company) will purchase most of the electricity needed from its subsidiaries performing power generation under an annual contract. The wholesale supplier can meet additional needs from the Serbian market or imports.

It is currently envisaged that the wholesale market in Serbia will be based on bilateral contracts, a power exchange and balancing mechanism. However, during the initial and transitional periods, there will be insufficient market activity to produce competitive market prices and it is envisaged that the Agency will regulate the prices of balancing energy and ancillary services at this time.

II. Structural Reform – Natural Gas

The natural gas sector in Serbia is relatively small; total consumption in 2005 was around 2,5 billion m3 split roughly on a 60%:20%:20% basis between industry, district heating and households. The gas infrastructure is in general developed to any significance only in the north of Serbia.

Serbia currently imports about 90% of its gas, almost all of it from Russia, under a Gazprom contract. The remaining 10% is provided by domestic supplies that are predicted to decrease in the future. There are no gas storage facilities in Serbia although they are planned for the near future. Shortages of supply at times of peak demand, due to a constraint of 10 mil m3/day at the Ukraine/Hungarian border, is generally met by interrupting supply to industry. Serbia also currently has the possibility to import gas via an interconnector at the Austrian/Hungarian border, subject to the limit on all imports at the Hungarian/Serbian of roughly 13 mil m3/day[3].

Until October 2005, most of the functions of the natural gas industry were undertaken by the vertically-integrated, state-owned company, Naftna Industrija Srbije (NIS). This contained activities such as oil production, trade and transport, engineering, and refineries, as well as the

[2] Before the breaking up of Yugoslavia, the structure of energy sector was more market oriented, with EPS taking a single-buyer-type role, eight separate electric power companies and no uniform national tariff.

[3] This limit has to cover the 1.8 mil m3/day or so of gas required for transit to Bosnia.

organizational units (NIS GAS and NIS ENERGOGAS) that performed the natural gas functions.

In October 2005, NIS was split into three companies that are independent legally and in terms of ownership structure. One of these, Srbijagas, conducts transmission, transmission system operation, storage and storage operation, distribution, distribution system operation, and trade of natural gas for tariff customers, and trade for other customers. It is also currently the sole purchaser of natural gas from imports and domestic supplies.

In addition to the gas distribution activities of Srbijagas, there are around 25 - 30 distribution companies in Serbia, of which most are owned by municipalities, while the remainder are privately-owned. The number of customers per company in Serbia varies considerably from less than 1,000 to over 30,000 customers, as in the case of Srbijagas.

It is not yet clear whether Srbijagas will go down the route of a combined system operator that can carry out the activity of natural gas transportation, distribution and storage system operation (Article 135). Supplying less than 100,000 customers, this approach would mean that it would be excluded from the separate accounting requirements discussed above. The regulator could, however, still require it to provide separate regulatory accounts for its different energy activities.

Another uncertainty is the boundary between the transmission and distribution networks, which is not yet determined. In addition, GazProm has a share in a small part of the transmission system, in the south of Serbia, owned by Yugorosgas, joint venture with Srbijagas as one of the shareholders. The implications of this for licensing and pricing are still unclear.

III. Price Reform - Price Control

The regulator considers that one of the main priorities for the current price reforms should be achieving a solution that can be implemented in the time available and that is practicable. The reasons for this include the short time available for the introduction of the methodology, the existing limits to data availability and price regulation familiarity, and the ongoing structural reform of the sectors.

Therefore the approach chosen by the Serbian regulator separates the process of price reforms in Serbia into two periods:

- *Transitional* in which prices are set annually using roughly the same revenue requirement methodology to that which would likely be used for cap regulation; and
- *Cap regulation* in which cap regulation[4] is introduced for those activities where it is considered appropriate at the time, in particular, electricity and gas transmission and distribution network activities.

The revenue from electricity tariffs currently roughly covers operation and maintenance costs, but not completely the capital cost, while for gas the gap between actual and required revenue is even larger in relative terms. The transitional period will also be used to ensure convergence towards cost reflective prices.

IV. Transitional Period

In the transitional period, the annual revenue covering the costs (including a return on capital) incurred by a licensee in the provision of services performed under its licence, will generally be calculated using the following standard formula:

$$MAR_t = Opex_t + Depreciation_t + ror * RAB_t + KF_t + CPT_t \quad (1)$$

Where

MAR_t = maximum allowed revenue for licensee for year t

$Opex_t$ = operation and maintenance costs

$Depreciation_t$ = regulated depreciation

ror = allowed rate of return

RAB_t = regulatory asset base and consists mainly of the net value of the assets

KF_t = correction factor (set at zero in first year of price control) to allow, in general, for any variations between the forecast values (as used for setting the price before the start of the year) and the actual values of the quantity sold or transmitted.

CPT_t = any cost pass through items, not included in the revenue requirements, e.g. the cost to the wholesale public supplier of purchasing electricity.

[4] Under cap regulation, prices, or revenues, are set in advance usually for a period of three to five years, allowing the company to benefit from any cost savings made during that period, but recalculated at regular intervals in order to bring them back into line with underlying costs. The term "cap" refers to the upper limit that is placed on prices or revenue including anticipated efficiency increase requirement of the regulator. In order to take account of unpredictable rates of price inflation, the cap is normally linked to the annual change in a published price index.

All the above values are projected for the year t, for which the prices are being set.

It is currently envisaged that the transitional pricing period will last at least two years, to enable sufficient time for any introduction of cap regulation to be made successfully.

V. Price Reform - Tariff Structure

The introduction of the new price regime will be accompanied by a move from bundled to unbundled pricing for both electricity and natural gas. It is expected that a similar approach will be taken to the unbundling of prices for electricity and natural gas; the Energy Law allows some flexibility over how this is done.

It is envisaged that transmission use of system (TUOS) tariffs will be charged for the use of the electricity and gas transmission networks. For both gas and electricity, the TUOS tariff will have capacity and energy components that together recover the allowed revenues for transmission infrastructure and system operation.

It is also envisaged that distribution use of system (DUOS) tariffs will be charged for the use of the electricity and gas distribution networks. The DUOS tariff will also have capacity (where metering permits) and energy components that together recover the allowed revenues for distribution infrastructure and system operation.

Little change is planned to the current structure of retail electricity tariffs. However, the methodology used to allocate costs to the individual tariff components is being revised, using causal cost allocation with differentiation by voltage level and time. This should result in tariff values that more accurately reflect the underlying costs than occurs at present. The existing uniform tariff is expected to be kept and the necessary revenue redistribution, between the retail supply arms of the distribution companies, will be achieved by adjusting the prices paid by the companies to the public supplier of wholesale electricity.

For gas, it is envisaged that the same retail tariff structure will be used by the retail supply arms of all the gas distribution companies, marking a change from current practice. However, as at present, there will not be a uniform tariff; the prices charged by individual companies will reflect regional variation in costs. Consideration is being given to introducing customer categories based on annual consumption, with tariffs having a commodity component and, for larger customers, a capacity component.

VI. Next Steps

Following the publication of the pricing methodologies in June, an important next step will be to calculate the values of the individual tariff components; it has not yet been decided when the reformed tariffs will be introduced. In short-term the price reform will focus on bringing the current tariffs towards cost-reflective level in terms of covering revenue requirements and fair cost allocation to customer groups. Once this has been achieved AERS will start moving towards more comprehensive models for incentive regulation. The chosen approach reflects appropriately the status-quo in Serbia and ensures the gradual development of new regulatory environment in accordance with the energy industry restructuring process and priority needs in the country.

VII. Biographies

Predrag Rajkovic was born in 1974. Graduated on Faculty of Economics in Belgrade in 1999. Obtained MSc. degree in Economics in 2005. From August 2002 till August 2005 was engaged as a local expert on the projects: Blueprint for the Establishment of the Serbian Energy Agency, and Establishment and Operation of Energy Regulatory Agency. From August 2005 till present employed as an expert for economics and finance with the Energy Regulatory Agency of Republic of Serbia, working on development of pricing methodologies and tariff systems for electricity. He is author of several articles on pricing issues and energy sector reform.

Gordan Tanic, graduated on Faculty of Economics in Belgrade, where he finished his master and doctor study. He has 25 years experience in energy sector. Most of these years he spent in Electric Power Company of Serbia, where he was on diferent possitions, from junior expert to director of economic sector. Last five years he was engaged as Energy task manager in European Agency for reconstruction, as well as Special advisor in Ministry of Mining and Energy responsible for restructuring of the energy sector. At present, he is Head of economic and financial department in Energy Regulatory Agency of Republic of Serbia.

Branislava Marsenic was born in 1977. Graduated on Faculty of Economics in Belgrade in 2002. Enrolled postgraduate course on the same faculty in 2003. From August 2002 till August 2005 was engaged as a local expert on the projects: Blueprint for the Establishment of the Serbian Energy Agency, and Establishment and Operation of Energy Regulatory Agency. From June until September 2005 attended a scholarship practice in E.ON Ruhrgas A.G. (Essen, Germany). From September 2005 till present employed as an expert for economics and finance with the Energy Regulatory Agency of Republic of Serbia, working on development of pricing methodologies and tariff systems for natural gas.

Nikola Radovanovic was born in 1976. Graduated on the Faculty of Law in Belgrade in 1999. Enrolled on the postgraduate course on the same faculty in 2000. Employed at the III Municipal Court in Belgrade from February 2000- August 2002. Passed the Bar Exam in April 2002. From August 2002 till August 2005 was engaged as a local expert on the projects: Blueprint for the Establishment of the Serbian Energy Agency, and Establishment and Operation of Energy Regulatory Agency. From August 2005 till present employed as senior legal expert for system affairs with the Energy Regulatory Agency of Republic of Serbia, working on tasks on the preparation of legal-analytical fundaments for determining the legal framework for regulatory issues within the competence of AERS, following the developments of EU law in the field of energy, agreements and other acts of obligational character concluded on the regional level or between energy entities, as well as assessing other acts from the aspect of legal system solutions. President of the internal WG of the Agency on licensing and responsible for covering the legal aspects of the pricing methodologies and tariff systems for natural gas.

Judith Aitken is an economist with nineteen years experience of providing regulatory and strategic advice in private consultancy and for government. Most of this experience is in the electricity and other energy sectors. She is currently working as a Senior Consultant with KEMA Consulting; her previous experience includes work with the regulator of the electricity industry in the UK, with the London office of National Economics Research Associates (NERA), an economics consultancy firm, and with The Treasury in New Zealand. She has a BA (Hons) degree in Economics. She has been involved in a number of projects related to economic aspects of restructuring and regulation in more than 10 countries in Europe including UK, the Netherlands, Bulgaria, Slovenia, Serbia, Romania, Montenegro, etc. In the period of 2004-2006 Judith led the consulting activities of KEMA to establish the new pricing and price control design for electricity and gas in Serbia.

Dr. Konstantin Petrov has degrees in Electrical Engineering and Economics. In 1997 he completed his PhD at the Institute for Energy Economics of Cologne University. Dr. Petrov joined KEMA Consulting in 1998 and is currently head of the Market and Regulation team of KEMA. He has been involved in a number of projects related to technical and economic aspects of restructuring and regulation in more than 20 countries Europe, Asia, Africa, Central America and Australia including Germany, UK, Belgium, Luxembourg, the Netherlands, Belarus, Bulgaria, Slovenia, Serbia, South Korea, Thailand, Singapore, Tunisia, and several locations in Central America. His major expertise is concentrated in the area of pricing and price regulation, market design, and market analysis and modelling. In the period of 2004-2006 Konstantin led the consulting activities of KEMA to establish the Energy Regulatory Authority in Serbia. Dr. Petrov is a member of the International Association of Energy Economists (IAEE).