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Financial Advisory

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# Market valuation of one common share and one preferred share in RAO UES of Russia

August 2006

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RAO UES of Russia  
101 Prospekt Vernadskogo, bldg. 3  
Moscow 119526  
Russia

Mr. Yakov Urinson  
Deputy Chairman of the Management Board

**MARKET VALUATION OF ONE COMMON SHARE AND ONE PREFERRED SHARE  
IN RAO UES OF RUSSIA  
(BRIEF SUMMARY OF VALUATION REPORT)**

Dear Mr. Urinson,

In accordance with Agreement No. 79-36/OTs-29 dated July 4, 2006, ZAO Deloitte & Touche CIS (the "Appraiser") has performed a market valuation of one common share and one preferred share in RAO UES of Russia (the "Subject Shares") as of April 1, 2006 (the "Valuation Date").

Following the instructions provided by RAO UES of Russian (the "Company", or "RAO UES"), our valuation aims solely to assist the Company's management in purchasing shares from RAO UES minority shareholders under the provisions of Article 75 of Law of the Russian Federation *On Joint Stock Companies*.

*Valuation Results*

Based on the adopted methodology, and subject to the assumptions presented below, we have concluded the market values of one common share and one preferred share in RAO UES of Russia, as of April 1, 2006, to be, respectively:

**16.41 RUBLES  
SIXTEEN RUBLES 41 KOPECKS**

AND

**14.54 RUBLES  
FOURTEEN RUBLES 54 KOPECKS**

### *Valuation Methodology*

The valuation was performed in accordance with the current laws of the Russian Federation and International Valuation Standards. In the course of the appraisal, we also referred to *Methodology and Guidance for Appraisal of Business and/or Assets of RAO UES of Russia and Subsidiaries and Related Companies of RAO UES of Russia*.

Due to the fact that RAO UES is a holding company with a complicated and diversified structure, its market value was estimated under the net assets method within the framework of the cost approach by consolidating (summing up) the value of investments in the production and non-production companies and the value of other assets and liabilities of the Company, reflected on its balance sheet as of the Valuation Date. In appraising the Company's assets, were used the following techniques:

- the *income approach*, used to estimate the business enterprise value of the generation, grid, and selling companies (discounted cash flow method) as well as the surplus assets<sup>1</sup> of the core institutes (income capitalization method);
- the *cost approach*, used to value the net assets of other core and non-core subsidiaries of the Company (net assets method), and to estimate the replacement cost of the core assets (replacement cost method) for the purpose of its subsequent utilization within the framework of the income approach;
- the *market approach* (transactions method), used to value the investments in non-core companies and the surplus assets.

Production companies were appraised on the basis of net cash flows, subject to RAO UES stake in each such enterprise. The present value of discounted cash flows was derived by using a weighted average discount rate equal to the weighted average cost of capital (WACC). The resulting estimate was adjusted for net debt and the value of other non-production assets, subject to the effective stake of RAO UES<sup>2</sup>.

The value of RAO UES non-production subsidiaries and related companies (SRCs) that are not directly engaged in the generation, distribution or sale of power in the Russian Federation, was taken equal to the value of their net assets as specified in accounting statements. The enterprises holding such non-core and surplus assets as recreation and leisure centers, design and development institutions, and organizations providing contracted services or acting as building owners, were appraised by the cost approach, based on the market value of their real property under the highest and best use assumption.

The Company's investments smaller than the blocking stake were appraised on the basis of information concerning the market quotes for the respective companies' shares as of the Valuation Date, taking into consideration RAO UES stakes in those companies.

The value of the Company's intangible assets and prepaid expenses attributable to the consulting services received in 2004–2006 was taken equal to zero. Other balance sheet items were recognized in line with the accounting statements data.

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<sup>1</sup> Real property.

<sup>2</sup> In estimating the effective ownership ratios, their potential changes that may result from the IPO proposed by generation companies were disregarded.

### *Important Note*

Due to the fact that this valuation was performed solely for the purpose of assisting the Company in buying out shares from its minority shareholders, in forecasting cash flows of RAO UES production companies, we assumed that the minority shareholders of RAO UES and its subsidiaries cannot participate in strategic decision making with respect to optimization of the production assets structure and the holding's fuel strategy, as well as concerning a shutdown or liquidation of certain operations and business units, and implementation of investment projects envisaging an increased social burden.

*Thus, our forecast of free cash flows of RAO UES production subsidiaries and related companies made under the income approach reflects the cash flows available for distribution among the minority shareholders, and the appraised value of 100% shareholders' equity of RAO UES reflects the market value of the Company for such shareholders.*

### *Information Sources and General Assumptions*

In performing our assignment, we relied on the following sources of information:

- the 2005 annual report of RAO UES
- statutory and management accounts of the Company and its SRCs as of March 31, 2006
- plans of the Company with respect to construction projects involving targeted investments
- information on the SDCs capital structure as well as equipment composition and specifications
- SDCs business plans for 2006 and investment forecasts
- information on the sale of electricity and heat by sectors and major consumers
- tariffs of RAO UES generation and transmission SDCs approved for 2006.

We also relied on a number of laws and regulations in the electric power sector, including:

- Laws of the Russian Federation *On the State Regulation of Tariffs for Electricity and Heat in the Russian Federation* and *On the Electric Power Industry*
- Ordinances by the Government of the Russian Federation and the Ministry of Industry and Energy issued within the framework of preparation for the sector reformation, in particular, *On the Pricing in Respect of Electricity and Heat in the Russian Federation*, *On the Criteria of Referring Electrical Business Facilities to the Unified National (All-Russia) Electrical Network*, *On the Rules of the Wholesale Market of Electricity (Capacity) of the Transitional Period*, *On the Approval of the Method of Estimation of Standard (Technological) Losses of Electricity in Electrical Networks*, and *On the Approval of the Standard Technological Losses of Electricity in the Unified National (All-Russia) Electrical Network for 2006*
- Ordinances by the Federal Tariff Service of Russia (FTS): *On the Maximum Levels of Tariffs for Electricity and Heat in 2005–2006*, *On the Approval of Tariffs for Services Related to the Transmission of Electricity in the Unified National Electrical Network, Provided by Federal Grid Company of Unified Energy System*, *On Tariffs for Electricity (Capacity) Supplied to the Wholesale Market of Electricity (Capacity)*, and *On the Approval of Tariffs for Electricity (Capacity) Sold on the Federal (All-Russia) Wholesale Market of Electricity (Capacity)*, and *Prices for Electricity and Capacity for Members of the Regulated Sector of the Wholesale Market*



- *Methodological Guidelines on the Estimation of Regulated Tariffs and Prices for Electricity (Heat) on the Retail (Consumer) Market* approved by FTS, *Energy Strategy of Russia for the Period Until 2020* approved by the Government of the Russian Federation; *Program of Social and Economic Development of Russia for the Medium Term (2006 to 2008)* and *Scenario Conditions of Social and Economic Development of the Russian Federation in 2007 and for the Period Until 2009, and Maximum Levels of Prices (Tariffs) for Products (Services) of Natural Monopolies for 2007*, prepared by the Ministry of Economic Development and Trade of the Russian Federation (MEDT RF).

In the course of our appraisal, we also considered historical and forecast data of Rosstat/FSSS, the Federal Reserve System, the Eurostat agency, MEDT RF, the Economic Expert Group under the RF Ministry of Finance, the Central Bank of the Russian Federation and the World Bank, as well as independent industry studies.

In estimating the market value of the Company, we assumed that upon completion of the sector reformation the Company would retain its core business units (unified generation company, regional generation company, interregional distribution grid company, and federal grid company), while its assets, stakes and equity investments in subsidiaries would be divided among the shareholders on a pro rata basis. However, due to the absence of an up-to-date market model, the main indicators of the electricity and capacity market (including forecast supply and demand, capacity utilization, prices for electricity, etc.) were projected on the basis of information of the Government of the Russian Federation, the RF Ministry of Industry and Energy, MEDT RF, and RAO UES.

#### *Underlying assumptions*

In making forecasts, we relied on the following:

- as to the trends in macroeconomic and industrial indicators of the Russian Federation and growth rates of prices for services of natural monopolies: scenarios specified in programs of social and economic development of the Russian Federation and the *Energy Strategy of Russia*
- as to fuel prices: analysis of the world and domestic prices for oil, natural gas and coal, trends in the relationship of world and domestic prices for main types of fuel and internal factors restricting the increase in prices for gas, and prospects for the electricity and gas market liberalization, etc.
- as to the electricity and capacity supply/demand balance: current and medium-term forecasts prepared by different governmental agencies of the Russian Federation, and the forecast electrical power industry balances currently being developed by the Company.

In forecasting electricity output, we took into account the projected national grid consumption, electricity imports and exports, available production capacities, grid limitations, transmission losses, and electricity consumption by generation companies for process needs. The electricity consumption forecast was made for the national grid (NG), regions, sectors, and groups of consumers.

In forecasting tariffs/prices for electricity, we assumed that the target market model would be a competitive market of electricity and capacity, and the wholesale price for electricity would be established on the basis of the marginal pricing principle, with the key price factor being the maximum offer of the closing plant whose electricity volumes were in line with the market demand.

We also assumed that starting from 2006 the market would be gradually liberalizing and leaning toward the sale and purchase of electricity and capacity on the basis of bilateral contracts. Another assumption was the emergence of short-term and balancing electricity markets as well as of a capacity market in 2006.

The forecast of tariffs/prices for end consumers was made according to voltage classes<sup>3</sup>, subject to the costs of electricity transmission and sale, abolishment of cross subsidizing and limitations on the ceiling growth rates of electricity tariffs imposed by the Government of the Russian Federation.

Free cash flows of the Company's subsidiaries were forecast by modeling the respective revenues, expenses, capital investments, and changes in working capital.

#### *Generation, Selling, and Auxiliary Companies: Forecasting Procedure*

##### Revenue forecast

Revenues of wholesale generation companies<sup>4</sup> from the sale of electricity were forecast on the basis of projected wholesale prices and forecast actual supplies of electricity. These indicators were estimated for each plant, subject to their generation efficiency, highest possible capacity utilization rates, changes in the installed capacity, etc. Revenues of heat power plants were estimated on the basis of forecast volumes of heat sales and the level of regulated tariffs.

In order to fully meet the objectives of our valuation assignment, revenues of the companies established after AO-Energo<sup>5</sup> reformation and engaged in the generation or sale of energy in the regions, provision of repair services, etc. were estimated on an aggregate basis, without analyzing individual plants, legal entities or types of activity. This approach ensures the most comprehensive consideration of the impacts of cross subsidizing abolishment and elimination of differences in the growth rates of wholesale and retail tariffs<sup>6</sup>.

Aggregate revenues from the sale of electricity were estimated subject to regional sales volumes, in accordance with the forecast consumption per each voltage class and the share of a particular selling company in the regional market. At the same time, in order to account for the growing competition in the retail market, we assumed that the share of selling companies would be reducing in line with the wholesale market liberalization.

The tariffs for electricity of the relevant voltage classes, forecast on the basis of historical data, were used as the selling prices. In cases where the volume of effective electricity sales exceeded the volume of electricity sales to the regional consumers, we assumed that the excess amount was sold at wholesale market prices. Revenues from the sale of heat were estimated on the basis of forecast heat supplies and the level of regulated tariffs.

Revenues of repair and other auxiliary companies are in most cases fully or partly attributable to the provision of services to other companies that emerged as a result of AO-Energo split-up (first and foremost to generation companies). In order to avoid double counting, such revenues were not

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<sup>3</sup> High, medium (1 and 2), and low.

<sup>4</sup> This category comprises large thermal power plants with mainly condensation generation (thermal power plants) and hydroelectric power plants.

<sup>5</sup> Regional energy companies.

<sup>6</sup> We believe that the impossibility of separation of market values of individual facilities or legal entities within AO-Energo is not crucial in the context of the valuation objectives.

estimated separately, and the income and expense balance of repair and other auxiliary companies was considered in estimating the aggregate cost of business of the newly created companies in the relevant region.

The revenues of wholesale and regional generation companies also include incomes attributable to demand charges payable by consumers. We assumed that the total amount of such payments would be decreasing annually in line with the pace the wholesale electricity market liberalization.

Furthermore, we estimated additional demand charges for some generation facilities, based on the system services provided by a particular plant. We assumed that such charges would be introduced as the wholesale market liberalization was gaining pace, and would remain applicable in the terminal period.

#### Forecast of expenses

The forecast of expenses was based on the results of analysis of historical data on the structure and trends in expenditures of generation, selling and auxiliary companies, provided by the management of RAO UES. All expenses were divided into operating (fixed and variable) and non-operating items.

Fixed expenses include labor, materials and supplies, maintenance and repairs, depreciation, and other operating expenses. Variable expenses include fuel and electricity, infrastructure services, and resale services.

Costs of materials and supplies, maintenance and repair costs, and other current expenses were forecast subject to inflation rates, based on the actual information for 2005 provided by the Company's management. Depreciation charges were forecast separately for the existing and newly commissioned fixed assets, based on the information concerning their gross book values and economic lives.

Fuel costs were forecast on the basis of projected fuel prices, the structure of generation plants' fuel balance for 2006–2015, unit indicators of equivalent fuel consumption, and information on the consumption of electricity for process needs, provided by the management of the Company.

Non-operating expenses that included social development, employee incentives, taxes, and other expenses, were forecast on the basis of actual information for 2005 provided by the Company's management, and subject to inflation rates.

#### CapEx forecast

In forecasting capital investments, the expenses attributable to the maintenance of the existing fixed assets in 2006–2009 were taken in line with the relevant forecasts of the companies' management (i.e. were not normalized). For 2010 and subsequent years, normalized capital investments were determined by estimating the replacement cost new (RCN) of the fixed assets (FA), their economic lives, and the share of non-recoverable costs in RCN. For certain companies, where it was impossible to estimate RCN due to lack of necessary data, the normalized capital investments were derived on the basis of a regression model, depending on the installed electric and heat capacity.

In addition to investments in the maintenance of the existing FA, for certain generation units, we estimated investments in the construction of new facilities in accordance with the investment program presented by the Company's management.

### Working capital forecast

The working capital of the generation, selling, and auxiliary companies was estimated on the basis of normalized average turnover rates in the industry.

### *Grid Assets: Forecasting Procedure*

#### Revenue forecast

Our forecast of the grid companies' revenues assumed a gradual transition to regulation on the basis of an economically substantiated rate of return on invested capital (ROR), where ROR would be estimated subject to a particular regulation basis.

Taking into consideration the world experience, we assumed that the regulation system in RF would be based on the replacement cost new of production assets less physical deterioration and functional obsolescence (Depreciated Replacement Cost, DRC), and on the market value of inventory. Our analysis showed that regulatory bodies in a number of countries use only a part of DRC as a regulation basis, which normally does not exceed 80%. Therefore, in our estimation we employed the 0.8 DRC value.

In estimating ROR, we assumed that the fair ROR would not offset all specific risks of investing in grid assets.

Effective laws provide for a gradual change in the existing tariff setting, from ensuring the current ROR to securing an economically justifiable ROR. According to estimates, a two-year transitional period can ensure the absence of intermittent growth in tariffs. Taking into account the current conditions, we assumed that the ROR method would be introduced in stages in the period from 2010 through 2012. Therefore, in the period until 2009, the ROR was taken equal to its current level, while in 2010–2012, the ROR is expected to gradually approach the average ROR determined by the regulatory WACC equal to 8.5%.

#### Forecast of expenses

In valuing the grid assets, we divided all expenses into operating (fixed and variable) and non-operating items.

Fixed expenses, depending on the type of assets, include materials and supplies, labor, maintenance and repairs, depreciation, and other current expenses. Variable expenses include the costs of OAO FGC UES and RGC, related to the coverage of electricity losses and the purchase of electricity for process needs. Variable expenses were projected on the basis of forecasts of effective electricity sales, purchase tariffs on the wholesale market, the share of electricity losses in the total electricity supply to a grid system, subject to normalization (2010), and the share of electricity consumption for process needs in the total effective supply, according to the Company's management data.

Non-operating expenses that include social expenses, employee benefits, taxes, and other items, were forecast on the basis of actual information for 2006 used in estimating the tariff for electricity transmission, subject to inflation rates.



#### CapEx forecast

In forecasting capital investments, the expenses attributable to the maintenance the existing fixed assets in 2006–2009 were not normalized and were taken equal to the respective depreciation charges. For the transitional period (2010–2012), we assumed that capital investments would be gradually increasing to reach an amount ensuring the complete renewal of the fixed assets throughout their economic lives. For 2013 and subsequent years, normalized capital investments were estimated on the basis of RCN of the fixed assets, their economic lives, and the share of non-recoverable costs in RCN.

In addition to investments in the maintenance of the existing fixed assets, we also considered CapEx envisaged by FGC UES investment program.

#### Working capital forecast

The working capital of the grid companies was estimated on the basis of normalized average turnover rates in the industry for each type of grid assets.

#### *Certification of Value*

We certify that, to the best of our knowledge and belief:

- the statements of fact contained in this letter are true and correct;
- the valuation was performed in conformity with the requirements of Law of the Russian Federation *On Valuation Activity in the Russian Federation* and regulations enacted on the basis thereof;
- our analyses, opinions, and conclusions have been developed, and the valuation report has been prepared, in conformity with the requirements of the Valuation Standards mandatory for application by all appraisers, enacted by Order of the Government of the Russian Federation No. 519 dated July 6, 2001, and subject to the International Valuation Standards;
- the valuation was performed in conformity with *Methodology and Guidance for Appraisal of Business and/or Assets of RAO UES of Russia and Subsidiaries and Related Companies of RAO UES of Russia* approved by the Board of Directors of RAO UES of Russia;
- the reported analyses, opinions, and conclusions are limited only by our reported assumptions and limiting conditions, and are our personal impartial, unbiased professional analyses, opinions, and conclusions;
- neither the Appraiser, nor any of its employees have any financial interest in the Company; our compensation for completing this assignment is not contingent upon the amount of the value opinion, the attainment of a stipulated result, or the occurrence of any event after the Valuation Date.

### *Limitations*

1. This Letter may only be made available to managing bodies of RAO UES of Russia and, in cases provided by law, to shareholders of the Company.
2. The legality of obtaining any assets or property rights by the Company or its affiliates was beyond the scope of our assignment. The Appraiser does not assume any responsibility for the completeness of accounting any assets or property rights or liabilities or encumbrances that might exist as of the Valuation Date in respect of any assets or property rights of the Company, or for the analysis of legal aspects of the arising of such liabilities or encumbrances.
3. In course of the appraisal, the management of the Company provided the Appraiser with information in written, oral, or electronic form in respect of the structure, activities, and financial performance of the Company. In course of the analysis and preparation of the Appraisal Report and this Letter, the Appraiser relied on the accuracy of such information. However, although a number of alternative sources were used for the purpose of verification of such information within and outside the Company, the Appraiser cannot share the responsibility with the management of the Company for the accuracy and completeness of such information.
4. The Appraiser has not audited or compiled the information concerning cash flows, provided to the Appraiser, in accordance with the International Auditing Standards. Furthermore, actual results will be, as a general rule, different from estimates, because actual events and circumstances often fall short of expectations, and such differences may be material.
5. The Appraiser is not responsible for any judgements in financial or tax statements, made by the management of the Company.
6. The Appraiser has not examined the technical condition of the Company's assets. In performing the valuation, the absence of any implicit factors affecting the value of the assets appraised was assumed. The Appraiser shall not be responsible for a failure to consider such factors, should such factors be detected.
7. The valuation results specified in this letter may not reflect the value of the Company's shareholders' equity on any date other than the aforementioned Valuation Date, and the Appraiser does not undertake to supplement or revise this letter or the valuation report in accordance with any events occurring after the Valuation Date.
8. The Appraiser shall not be liable for changes in the market conditions or inability of shareholders to find a buyer and sell their rights of ownership in respect of the Company at the price specified in this letter.
9. The Appraiser's assignment did not include the separation of the value of individual companies or groups of companies owned by RAO UES of Russia. Therefore, the valuation results specified in this letter may not serve as the basis for determination of the value of various companies and sub-holdings of RAO UES of Russia.
10. This letter may not be, in whole or in part, reproduced or published in promotional materials of any nature, news bulletins, business press, or other mass media without the written consent of the Appraiser.

11. Managing bodies or officers of the Company may not refer to this letter or its content or quote it in any registration statements, prospectuses, securities offerings, loan or other agreements or documents provided to third parties without the prior written consent of the Appraiser, except for proposals related to exchange of shares or purchase of shares from minority shareholders. In case of provision of this letter, in full or in part, for inspection to minority shareholders, the Company shall be fully responsible for maintaining the confidentiality.
12. Neither the Appraiser, nor any individual signing this letter shall be required by reason of this letter to give testimony or appear in court or other legal proceedings, unless specific arrangements have been made or by subpoena.

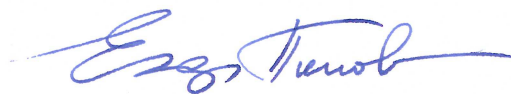
*Concluding remarks*

All forecast data are based on the circumstances existing as of the Valuation Date and the Company's management opinion as to the most likely economic environment of the Company. Any such data can be affected by unpredictable events and, as a consequence, may differ from actual results. Such events may materially affect the current forecasts of cash inflows and, accordingly, the reported valuation results.

We also understand that, in making decisions with respect to the Company's shares, the persons specified in Paragraph 1 of the Limitations above will not rely solely on our work, but would rather consider our findings as part of their overall analysis; therefore, our work will not supplant other inquiries, analyses and reviews which should be undertaken in the course of reaching business decisions regarding the shareholders' equity of RAO UES.

It was our pleasure to provide professional services to RAO UES of Russia. Should you have any questions or require additional information, please do not hesitate to contact me at +7 (495) 787-0600.

Sincerely yours,



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Yegor Popov  
Partner, Financial Advisory Services  
Head of Russian Practice