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**DELIVERY ORDER No 8
RESTRUCTURING AND PRIVATIZATION
OF THE ELECTRIC POWER SECTOR
Russia**

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Final Report

Prepared for

U S Agency for International Development
MISSION to Russia
Office of Economic Reform

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INTRODUCTION

Hagler Bailly's participation in the USAID effort to introduce market reforms into the Russian power system began in 1993 with an evaluation of the Russian power sector. This became the 'The Joint Electric Power Alternatives Study' (JEPAS), which contained recommended steps for continuing restructuring and privatization of the Russian electric power system. The JEPAS report was published in June of 1995 and several conferences held to promote its findings.

Delivery Order 8 was issued to complete some of the recommendations made in the JEPAS report and meet USAID's strategic goals and objectives. These goals and objectives are to foster the emergence of a competitive, market-oriented, and more economically and environmentally sound energy system in which the majority of economic resources are privately owned and managed.

Due to the shifting political and economic conditions within Russia, DO 8 was modified several times, although the strategic goals remained the same. This report summarizes the work delivered under DO8, Phases I, II and III, during the period of July 1996 through September 1998.

This report describes what work was accomplished and how the contract deliverables were met. It is divided into five sections. The Executive Summary Section provides a condensed review of the project and the work delivered under DO8. The Background section provides an overview of the history of the project, structure of the Russian electric power sector, and specific tasks of the delivery order. Accomplishments highlight the work performed by Hagler Bailly's during the term of the delivery order and summarize the status of each deliverable, including work performed in addition to the tasks required in the Delivery Order. The final two sections, Lessons Learned and Recommendations, can help guide future USAID work in the Russian power sector. The appendices contain information on counterparts, work plans and work performed.

Attached to this Final Report are all documents that constitute deliverables under DO8 Modification 4. These documents are referred to in the text of the Final Report. Deliverables prior to Modification 4 have already been given to USAID.

EXECUTIVE SUMMARY

This report summarizes five years of Hagler Bailly activities supporting the objectives of the USAID/Russian Ministry of Energy Agreement on Assistance in Reform of the Russian Electric Power Sector. The work began in September of 1993 with the signing of the initial agreement with USAID and closed in September 1998. A great amount of work was accomplished in supporting investment and open markets for the Russian Electric Power sector, but this report only reviews the work done with regard to meeting the deliverables in Delivery Order 8.

PHASE I

The initial project work was designed to first analyze the current condition of the Russian electric power system and the issues effecting its future development.

Task 1

Provide assistance to RAO UES Rossii through final approval of their proposal for a Government of Russia vision for the electric power sector.

Deliverable - Phase I Final Report Five working groups were assembled to develop the report. The various working groups extensively analyzed the potential for improving energy efficiency, the costs of modernizing and building thermal power plants, the economics of investing in nuclear safety and new nuclear power plants, investment in transmission and control, power needs and electricity demand scenarios. This research was assembled into a single Joint Electric Power Alternatives Study or JEPAS report. The report was presented to the RAO Unified Energy Systems (UES) Board of Directors in June 1995. The report was published and distributed at a two-day seminar in Moscow on November 16-17, 1995.

PHASE II

Phase II work under DO 8 was designed to promote the implementation of certain recommendations in the JEPAS report and to promote investment through institutionalizing privatization of the power sector. Specific goals were to attract investment to the power sector from international sources, advance the restructuring program of the power sector, prepare the adoption of International Accounting Standards by RAO UES, and assist in developing regulatory agencies. The deliverables in Phase II were superseded or deleted by Phase III modifications to the delivery order. Investment Promotion, for example, was completely dropped from the agenda as the Russian government and RAO UES generally rejected foreign direct investment in the power sector.

Task 2A

Assist RAO UES in the development of international accounting standards and practices.

Deliverable 1 – Develop an applications manual An application manual, “IAS Accounting and Financial Manual for Russian Electric Utilities”, was created and delivered by Price Waterhouse in 1996. Price Waterhouse, acting as the subcontractor responsible for this deliverable, conducted a pilot IAS audit and training at Lenenergo during 1996.

Deliverable 2 – Develop a work plan for implementation A model annual report and financial statements developed from the Lenenergo IAS pilot. A work plan for implementing IAS accounting at regional electric power companies (energos) was developed in 1997 by Hagler Bailly. It was then implemented at two energos under Phase III.

Task 2B

Conduct at least 4 seminars regarding financial and accounting practices

Deliverable 1 – Conduct 4 financial/accounting seminars outside of Moscow Price Waterhouse conducted a seminar on IAS conversion on May 1996, attended by over 100 accounting personnel from energos and generators (gencos). Two Seminars on financial management and accounting were conducted at Novosibirskenergo by the subcontractor, Arthur Anderson, in May and July 1998. Another accounting seminar was conducted by subcontractor, Moscow Business Consulting (DKM), at Permenergo in March 1998.

Task 3

Assist RAO UES in finalizing their plans for the wholesale market including developing within UES an understanding of wholesale market operations and the REPMOFF model methods for system dispatch tariff models (including TOU and efficiency incentive tariffs), market operation and financial settlement models. Assist RAO UES in developing reporting systems on wholesale market operations suitable for operational reports to a regulatory agency.

Deliverable – Develop plans for operating a Russian wholesale market for electric power and capacity, and an understanding of the REPMOFF model, system dispatch, tariffs and financial settlements Hagler Bailly developed with RAO UES three alternative wholesale market designs based on the REPMOFF model, and submitted the report “Modeling and Analysis of Alternative Market Structures of the Russian Electric Power system using REPMOFF (Russian Electric Power Operational and Financial Framework)”, March 15, 1995. Hagler Bailly participated in the design of the Wholesale Market Supervisory Counsel, Market Pricing Rules and Settlements Procedures.

Task 4

Develop with RAO UES plans for commercializing those sectors of the power system identified for privatization: AO Energos, Generating Companies, Transmission Company and Service Companies. Together with UES develop a master implementation plan for commercializing the principal sectors of the power industry and submit it to USAID for consideration as a future task.

Deliverable – Develop master implementation plan for commercializing sectors of the power system identified for privatization In 1994-95 Hagler Bailly surveyed distribution and generation companies (Energos and Gencos) to develop recommendations for improving the ability of these companies to operate as profitable, private companies in a competitive market place. The recommendations for commercializing the power sector were presented to RAO UES as the report "Observations and Recommendations for the Commercialization of the Russian Electrical Power System," in March 1996.

Task 5A

Assist USAID and other donor agencies in the establishment of the Federal Regulatory Agency by arranging study tours to review regulatory options suitable for adaptation to the Russian system – a tour to the UK and to the US. At the conclusion of the task the contractor will write a report assessing the need for and applicability of federal and regional regulatory schemes for Russia. Indicate the needs being addressed by the participants and particularly the needs not being addressed. The contractor will present a work plan to USAID addressing these needs and how this work plan can be accomplished with other participants.

Deliverable 1 – Arrange study tours in the UK and the US to review regulatory options suitable for the Russian system. A UK tour of the National Power Pool was conducted December 10-17, 1995, with the participation of Russian regulators and RAO UES senior executives. The second study tour was arranged but then canceled when the key attendees withdrew.

Deliverable 2 – Write a report assessing the need for and applicability of federal and regulatory schemes for Russia and present a work plan for addressing regulatory needs. The USAID COTR instructed Hagler Bailly to cease work on regulatory issues as it duplicated work being done by another USAID contractor – IRIS.

Task 5B

Support USAID program on Natural Monopolies and the British Know-How Fund in their work with the Regulatory Agency and Anti-Monopoly Committee utilizing the REPMOFF model to understand the operation of and tariffs associated with a wholesale market for electric energy. Recommendations will be made defining training and consultancy assistance required for the regulatory agencies.

Deliverable – Support work with the Regulatory Agency and Anti-Monopoly Committee using the REPMOFF model and make recommendations defining assistance required. The Energy Research Institute (ERI), an advisor to the Federal Energy Commission and Anti-Monopoly Committee, adopted the REPMOFF model as one of the two modeling and simulation programs to be employed by the modeling working group of the World Bank Interagency Task Force. Hagler Bailly assumed the role of advisor to ERI and the Ministry of Economy on market and regulatory issues as part of the task force.

Task 6A

Promote investment in the Russia power sector by arranging a tour for RAO UES executives to major international finance centers (UK Hong Kong) to present the investment opportunities available in the Russian power sector and discuss the financial position of the sector

Deliverable – This task was deleted in Modification #4 issued September 24, 1997

Task 6B

Promote investment in the power sector by arranging two business round tables one in New York City and one in Russia to bring together representatives of the international power business, financial and investor community with Russian power sector executives and Russian Government agencies

Deliverable - This task was deleted in Modification #4 issued September 24, 1997 but not before being partially completed. An investment round-table was organized and held in Moscow on June 3, 1996. The results of the JEPAS report were presented to investors.

PHASE III

Phase III began in the fourth quarter of 1996 with a modification of the original tasks for the wholesale market and commercialization projects. The tasks for modification 4 (DO8 MOD4) were divided into two separate, yet interdependent objectives.

Objective 1 – Wholesale Power Market

Objective 2 - Commercialization of the Power sector

The wholesale market project was to design and implement a competitive wholesale power market in the Russian Federation. The main counterpart was the Russian State Power Company, Unified Energy Systems. The issues these activities were focused around ranged from general topics, such as the organizational structure of the wholesale power market, to very specific issues, such as periodic data collection required from a wholesale market entity. Many sub-tasks were completed and several joint documents written, including a report recommending complete restructuring of the wholesale market. The Russian government has passed several decrees mandating the recommendations, which are specified in joint reports.

The Commercialization project was designed to improve management and operations to meet the demands of a privatized, restructured and competitive power sector. The main activities were focused on improving financial management, budgeting, planning, human resource development, and customer service. Two regional electric power companies were chosen to participate in this program: Novosibirskenergo and Permenergo. All the objectives were met, although considerable work remains to be done to get the energos positioned for a free market economy. Much was accomplished in the areas of financial management (accounting and financial planning) and customers service systems.

(metering and billing) The result has been improvements in cash collection, cash flow management, and operations.

The contractual deliverables, and descriptions of how they were satisfied, are summarized below. More detailed information on the project and work performed can be found in the Background and Accomplishments sections of this report.

Task 1

The contractor will plan and conduct the work associated with this task in order to support the formation and operation of the wholesale market by September 1998. Rules will be drafted, settlement procedures proposed for agreement between members, pricing schemes developed, licensing arrangements prepared and direct access to the wholesale market for large users will be proposed. The concepts of capacity and energy contracting will be developed and made available to the market members. A competitive wholesale market will be in force at the end of the contract.

Deliverable 1 - Market Rules Drafted A set of procedures related to power system operation, methodology for developing and reporting market related information, identifying potential market products, and settlement and billing for market products and services was developed.

Deliverable 2 - Settlement procedures proposed Hagler Bailly drafted a document (**Russian Wholesale Power Market Settlement Procedures**) providing the principles of the settlement procedures. This document was provided to the National Energy Market Supervisory Board for their consideration. When the National Energy Market (NER) committee dealing with settlement procedures is formed and commences its activities, the committee can use this document as a framework for the development of more detailed procedures.

Deliverable 3 - Wholesale market pricing rules developed Existing tariffs in the Russian wholesale power market were analyzed and many inconsistencies and shortcomings identified. An improved tariff structure and mechanism was developed and proposed to the Federal Energy Commission (FEC). In addition, an entirely new wholesale market pricing mechanism was developed and presented to the Federal Energy Commission. This new mechanism ensures higher efficiency of electricity generation and lower electricity cost to customers by encouraging economic dispatch of all generation.

Deliverable 4 - Licensing arrangements prepared A multi-agency task group, which included representatives from RAO UES, Federal Energy Commission, Antimonopoly Committee, St. Petersburg Regional Energy Commission and IRIS, was formed to support this effort. The group drafted Licensing Regulations, provided comments by other working groups on all of its revisions, and prepared draft of Terms and Conditions for the Licenses. The final version of the draft of the Licensing Regulations has been presented to the Federal Energy Commission. A generic Form for a License has also been developed. Presently the licensing regulation is on hold pending adoption of the Licensing Law by the Russian State Duma. It is anticipated that the Law will be adopted by the end of 1998. Accordingly, the process of licensing of electric wholesale power market members by the

FEC and Regional Energy Commissions (RECs) may commence no earlier than first quarter of 1999

Deliverable 5 - Direct access to the wholesale market for large users proposed

Proposals for direct access have been developed. Direct access has continued to grow steadily over the last two years. At this time about 20 direct customers are purchasing power from the wholesale market through the independent financial operator (IFO)

Deliverable 6 - Concepts of capacity and energy contracting developed and made available to market members As a result of Hagler Bailly's work in this area a standard agreement was formed, between the IFO and a generator, for sale of electric energy and capacity, and made available to market participants. Additionally, the direction of future development of the wholesale power market contracting activities were identified.

Deliverable 7 - A competitive wholesale market in force by the close of the contract

There were and still exist major obstacles, identified in this report, which prevent development and implementation of the truly competitive wholesale power market. Hagler Bailly made it clear to all entities who have a stake in the wholesale power market the essence of these obstacles and what has to be done to overcome them. There has been significant progress made in this area, but not sufficient to achieve a truly competitive market by the end of contract. The work has to continue in the area of providing support to the National Energy Market (NER) committees developing ways to transition from current market arrangements to the truly competitive market.

Task 2A

In at least two local electric power Energos senior management will be operating with principles of a market driven competitive environment by September 1998. Key management improvements will be instituted in the areas of budgeting, cash flow, organization and human resource development, financial management, customer relations, operational efficiency improvements and stockholder relations and collections particularly cash collections.

Deliverable 1 - Improvements in budgeting and cash flow management A customized financial planning model has been installed at both Novosibirskenergo and Permenergo. This model is a decision support tool for financial management that allows management to improve cash flow management, resource allocation and purchasing.

Deliverable 2 - Improvements in organization and human resource management At both energos new organizational structures were prepared and delivered to management. Based on these recommendations both energos have created new positions in financial management and have begun the process of eliminating the management structures that were part of the prior system of centralized planning. New human resource management manuals were delivered to both energos to assist in developing human resource programs.

Deliverable 3 - Improvements in customer relations and operating efficiency Entirely new customer contracts for energy, based on Western standard practices, have been introduced at both energos. A new, automated customer service system (the Abacus billing and collection system) has been introduced and is in the process of being

implemented on a pilot scale. Based on our studies of commercial and technical losses and resulting recommendations, a new distribution network and metering system was designed and being implemented in Novosibirsk as a pilot. This re-designed system will greatly reduce losses, increase power factors, and improve the overall operating efficiency of the system.

Deliverable 4 - Improvements in stockholder relations Management at two energos received information and informal training of stockholder relations. Stockholder relations have been greatly enhanced by the introduction of IAS standard financial reports at the participating energos.

Deliverable 5 - Improvements in cash collections At our recommendation, both Novosibirskenergo and Permenergo introduced minimum cash payments for all customers. This, and other measures taken, has significantly increased cash as a percentage of collection, at Novosibirskenergo from 10% to 20% and at Permenergo from 15% to 30%. Most significantly, strides have been taken to improve metering and billing procedures and techniques.

Task 2B

Basic financial reports (balance sheet, operating statement, and cash flow statement) in accordance with International Accounting Standards will be used by target Energos by September 1998. Derivative management information to enable financially-driven decisions will likewise be used by Energo management. The program will be expanded to include other regional power sector entities.

Deliverable 1 - International Accounting Standards in use September 1998 At both Novosibirskenergo and Permenergo prior financial statements have been restated according to IAS standards. In addition, dual Russian-IAS financial reporting systems have been installed that will allow both energos to state their balance sheet, income statement, and cash flow statement in IAS standard going forward.

Deliverable 2 - Financial information used by energo management All senior management and financial managers at the participating energos received training on how to analyze and use financial data. At each energo the financial model introduced for analyzing various financial scenarios are being actively used by management for planning purposes.

Deliverable 3 - The program expanded to include other regional power sector entities When the MOD4 deliverables were written it was expected that the UK, Canada, the EU, and the World Bank would be funding similar programs at other regional power companies. This has not occurred, and therefore there have not been the resources necessary to expand the program beyond presentations of recommendations and results to the management of eight energos from the Ural zone and eight energos plus five generators from the Siberian zone.

Task 2C

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A concept paper will be prepared describing alternate structures for a regional or zonal electricity market in each pilot region by March 1998 and presented to senior management at RAO UES Rossu and regional sector entities

Deliverable 1 - Wholesale market zones identified and a concept for regional or zonal wholesale markets presented To fulfill this deliverable a multi-agency task group was formed that included Hagler Bailly, RAO UES, FEC IFO and IRIS. It was found to be operationally rational due to organizational structure and physical constraints to divide the Federal Wholesale Market for Electric Power and Capacity (FOREM) into 7 zonal markets, each with its own member organizations, along the lines of the 7 Regional Unified Power Systems. Two conceptual documents were produced from this work: "Model Agreement on Joint Activities of Participants in the Inter-zonal Federal Wholesale Market for Electric Energy and Capacity" and "Model Agreement on Joint Activities of Participants in the Zonal Wholesale Market of the Unified Power System."

Task 2D

Training-Contractor will assist the RAO UES Rossu training working group in constructing a management training program addressing the needs of the power sector based on the training implemented at and the experience obtained with the pilot energos through this delivery order. This training program will be completed and turned over to RAO UES Rossu by the end of this contract for future use in the sector by RAO UES Rossu training institutes and/or other power sector training entities

Deliverable 1 - Training-Contractor will assist in constructing a training management program A Management Development Program manual was developed as a tool to educate managers in leadership skills. The program is designed for classroom training but can also be used by an individual manager as a study guide. It was delivered to RAO UES in September 1998.

BACKGROUND

CREATION OF THE RUSSIAN POWER SYSTEM

After the events of 1991 Russia embarked on an ambitious program to create a market economy. The centerpiece of this program was the privatization of state industries. As a step toward privatization it was decided to corporatize the entire power system, excluding nuclear power. Complete privatization was considered too risky, and instead the government of the Russian Federation transferred the power assets of the Ministry of Fuel and Energy into the Russian Joint-Stock Company (RAO) Unified Energy Systems (UES). The distribution and thermal generation assets would be held by RAO UES and readied for sale in the future.

RAO UES was established in 1992 as a government owned holding company owning the high-voltage transmission grid, national and zonal dispatch centers, large thermal and hydro power plants and research and design institutes. In addition, RAO UES was to have received a controlling interest in all the regional, integrated generation and distribution companies, called "energos." The purpose of maintaining central control was to maximize the efficiency of the integrated system. In theory, by controlling the high-voltage transmission, dispatch centers and scattered large generators RAO UES could maintain system reliability at the lowest cost.

UES received controlling interest in almost all the energos (between 49% and 100% of the voting shares), although a few regions succeeded in privatizing their local power companies before the Federal Government could take control. The Russian government has sold some of its holdings in UES, but still maintains a controlling interest with some 52% of shares.

The energos retained ownership of the combined heat and electric generation plants and remained the local monopoly distribution companies, supplying both electricity and central heat to their service areas. Because energy has always been a vital social service for Russian cities, most of the energos are under tight political control in their regions. Therefore, even where RAO UES maintain majority voting rights it has very limited power in exercising its ownership rights. This has somewhat defeated the purpose of creating RAO UES, as control over dispatch, cash flow and investment has been lost due to the conflict between the regions and the center.

The organization created as the dispatch, clearing and settlement center for large deliveries of and purchases of power was the Federal Wholesale Market for Power and Capacity (FOREM). All Federal (UES) generators and the seven nuclear power plants operated by Rosenergoatom sell directly to the FOREM. Of the 72 regional power companies about 20 have surplus capacity to sell to the FOREM. The remainder of the energos are either self-sufficient or purchase their residual power requirements from the FOREM. The rates that buyers pay is the summation of the costs of all the generators available to sell on the market divided by the total energy sold. In addition, buyers pay a large subscriber fee that is supposed to cover operating costs for the FOREM, plus a large investment component.

RAO ULS was charged by the Federal government to organize and develop the FOREM into a competitive wholesale market. The Federal Energy Commission (FEC) is the regulator for the wholesale market and its associated power entities as well as the coordinator of the Regional Energy Commissions (RECs). The FEC is responsible for developing the methodologies of rate making on both the Federal and regional (Oblast) level. The REC's have exclusive authority to set retail rates in their territories. The Federal government (Prime Minister) appoints the FEC commissioner. The RECs commissioners are appointed by their local administrations.

FAILURES IN THE POWER SYSTEM

Almost immediately following this initial restructuring major deficiencies came to light with regard to the operation of the sector, including high operating costs, inadequate cash generation through the system, and questionable use of investment funds. In addition, the federal government's inability to control its budget has created a payment crisis in the Russian economy that created enormous non-payment problems in the power sector.

While generally maintaining system reliability, RAO UES and the FOREM have largely failed to introduce economic efficiency. This, in turn, has led to a steady rise in system operating costs and increased non-payments. The main reasons for the lack of economic benefits in the system are:

- Absence of comprehensive electricity law to dictate how power is bought and sold in Russia
- Energy and capacity balances developed with little regard to economic dispatch and system reliability. No formal grid code to clarify power system rules and operations
- Complicated and non-transparent settlement and billing procedures, aggravated by the lack of cash and subsequent use of barter or non-payment
- Buyers on the FOREM must subsidize excess system capacity, driving up costs
- Large "investment" payment in the subscriber fees, which market members have no control over, creating a misallocation of system investment funds
- Existing tariffs provide no incentives for cost control
- Absence of a reliable database of generator data and system requirements
- Absence of a market member organization to represent energos and to lobby for fair market rules
- Lack of understanding of market economics and reluctance to introduce the changes required to develop and implement a competitive electric power market

Exacerbating the problems with tariff policy and market mechanisms has been the general lack of commercial management principles within the newly created energos. While the energos were nominally "privatized," they retained both government control and the central planning based management system.

In this environment, regional governments gained considerable control over the energos, and subsequently have been using them as the main vehicle for supporting local social policy.

- Customer cross-subsidization is used to keep residential tariffs below cost, and to support industries favored by the local administration
- Hidden borrowing, in the form of non-payment for power consumed by local services, is used to balance regional budgets
- Political pressure is applied to have the energos fund everything from election slush funds to hockey teams
- The energos have become somewhat the employer of last resort in each region, with payrolls swelling in the last few years even as capacity and sales have been falling

Under these conditions, the profit motive has not been allowed to develop in the sector. Reinforcing this attitude that the power companies are part of the command economy has been the fact that the management procedures in the power sector are hold-overs from central planning (Gosplan)

- The Russian statutory accounting system is not designed to track profits and losses, but to track the movements of resources
- Resource allocation is based on Gosplan production targets rather than return on investment measures
- Customers were expected to consume planned amounts of energy, so there is no proper metering installed
- Tariffs are based on cost plus formula so there is no need to control costs
- Collections do not matter because all assets had always belonged to state
- Low "allowable" profits for shareholders discouraging investment

ASSISTANCE PROVIDED TO THE RUSSIAN FEDERATION

To address the above-mentioned shortcomings, the Russian government began studying concepts for further reform and restructuring. The first stage of fixing the problems was to identify them. Following an agreement between Vice President Gore and Prime Minister Chernomyrdin it was decided to undertake the Joint Electric Power Alternatives Study (JEPAS). The study addressed a broad range of issues affecting investment, such as the scope for more efficient generation and end use technologies, nuclear safety upgrades, environmental standards, sources of financing and energy policy impacts on investment choices.

The JEPAS analysis indicated the following ranking of priorities during the period 1995-2000

- 1 improvements in the efficiency of end use,
- 2 nuclear safety upgrades,
- 3 further development of the Unified Power System (UPS) through the improvement of inter-regional and intra-regional transmission and the modernization of dispatch and control centers,
- 4 thermal plant modernization and rehabilitation,
- 5 completion of those nuclear power plants in advanced stages of construction,
- 6 construction of new gas-fired simple cycle and combined cycle plants
- 7 completion of design for new-generation nuclear power plants

The JEPAS report was discussed and distributed at several conferences for investors. What became apparent though, was that investment would not be forthcoming in the sector unless the economics of the sector promoted the rational use of resources. What was required was the introduction of a profit motivation, transparency and a mechanism to improve the allocation of investments.

Some plans under the JEPAS study included the separation of generation from distribution, the development of a competitive wholesale market for electricity, and the separation of the energos from UES as separate commercial entities. USAID decided to address these specific issues as a way to modernize the Russian power system. The development of a competitive wholesale market and independent regional power companies became the objectives of Delivery Order #8.

The JEPAS report forecast a need for \$2-5 billion for high priority projects in the power sector before the year 2000. Because of a lack of resources in Russia, much of this money would have to come from outside sources. Phase II of DO8, which began in July 1995, was designed to promote investment in the sector by improving the commercial viability and transparency of the sector. Specific goals for Phase II were:

- attracting investment to the power sector from international sources,
- advancing the Power Sector Restructuring Plan
- adopting International Accounting Standards (IAS) by RAO UES Rossi and affiliated companies,
- creating Federal and regional regulatory regimes

Attracting investment into the sector would be next to impossible unless there were clear tariff and market rules. Therefore, most of the Phase II work focused on developing clear market rules for RAO UES and assisting the Federal Regulatory Commission in establishing new tariff rules that promoted more efficient and rational use of resources. Much of this work was done in conjunction with the World Bank Wholesale Market Task Force for the Russian Ministry of Economy.

Commercialization in Phase II was focused on developing IAS accounting for Lenenergo and an accounting manual, as well as promoting investment in the sector. Investment promotion was eventually downgraded as a task because of a lack of interest on the side of RAO UES. The management of RAO was not interested in further privatization or in welcoming outside partners. Instead, their interest was in increasing the investment portion in the tariffs, which Hagler Bailly was advising against to the FEC. The investment promotion task was eventually dropped from DO8 by USAID.

Due to several changes in the political situation in Russia, especially the change in the top management at RAO UES brought about by Deputy Prime Minister Boris Nemstov, the scope of DO8 was modified several times before the start of Phase III. The objectives of the delivery order for Phase III are:

- 1 – Wholesale Power Market, which will establish
 - a systematic modeling and simulation approach, market rules, licensing, price formation and tariffs models,

- collection and settlement procedures,
- market access, power purchase contracting principles and market computer modeling

2 – Commercialization of the Power Sector, which will develop

- financial management and budgeting manuals and training at selected energos,
- planning for divestiture of distribution and generation,
- IAS accounting conversion procedures and manuals,
- better cash flow through more efficient collection procedures

The final modification (MOD4) was concluded on September 24, 1997. This modification was made to accommodate some of the wishes of Boris Brevnov, the recently appointed chief executive of UES. DO8 MOD4 states that the contractor Hagler Bailly Consulting, will complete the following tasks:

Task 1

The contractor will plan and conduct the work associated with this task in order to support the formation and operation of the wholesale market by September 1998. Rules will be drafted, settlement procedures proposed for agreement between members, pricing schemes developed, licensing arrangements prepared and direct access to the wholesale market for large users will be proposed. The concepts of capacity and energy contracting will be developed and made available to the market members. A competitive wholesale market will be in force at the end of the contract.

Task 2

- In at least two local electric power Energos senior management will be operating with principles of a market driven competitive environment by September 1998. Key management improvements will be instituted in the areas of budgeting, cash flow, organization and human resource development, financial management, customer relations, operational efficiency improvements and stockholder relations, and collections, particularly cash collections.*
- Basic financial reports (balance sheet, operating statement and cash flow statement) in accordance with International Accounting Standards will be used by target Energos by September 1998. Derivative management information to enable financially-driven decisions will likewise be used by Energo management. The program will be expanded to include other regional power sector entities.*
- A concept paper will be prepared describing alternate structures for a regional or zonal electricity market in each pilot region by March 1998 and presented to senior management at RAO UES Rossii and regional sector entities.*
- Training-Contractor will assist the RAO UES Rossii training working group in constructing a management training program addressing the needs of the power sector, based on the training implemented at and the experience obtained with the pilot energos through this delivery order. This training program will be completed.*

and turned over to RAO UES Rossu by the end of this contract for future use in the sector by RAO UES Rossu training institutes and/or other power sector training entities

Because these tasks could be naturally divided between federal (Wholesale Market) and regional (Commercialization) issues, work was divided between two teams. The Wholesale Market group concentrated on Task 1 and Task 2c. The Commercialization group concentrated on Task 2a, 2b and 2d. The Wholesale Market program was primarily concerned with developing market rules and tariffs for an open, competitive wholesale market for electric power and capacity. The main counterparts were RAO UES and the Federal Energy Commission.

The Commercialization program addressed issues of the regional energos concerning independent operation in a competitive market for electricity. It was designed to go hand-in-hand with the overall reform efforts, including the creation of a competitive wholesale market, underway with the Russian government, RAO UES and FEC. To create the economic conditions necessary to implement a competitive wholesale market, it is necessary to have market participants who try to maximize their profits. To maximize profits, the energos must be able to properly measure profits, and this requires new customer service, accounting, and management systems.

Unfortunately, many of the reforms were stymied for numerous political, economic, and social reasons. But through DO8 a significant number of recommendations for new tariffs, market rules and market concepts are ready and available to be implemented by the new management of UES. In addition, the work done at the regional energos in developing new metering, billing, accounting and financial management systems is being implemented by two energos and watched as an example by many more. The following section on Accomplishments describes in detail the work accomplished in fulfilling the deliverables for DO8.

ACCOMPLISHMENTS

Resistance to change and the ever-changing political landscape created a challenge in meeting the objectives of the Delivery Order. Yet USAID and Hagler Bailly maintained sufficient flexibility in meeting the demands of the situation to remain at the forefront of changes occurring in the Russian power sector. Much of the work done will take many years to come to fruition as the recommendations are too radical to be implemented in the current political climate. Much of the work necessary to improve the efficiency of the power system will be hindered by the lack of capital available to Russia at this time.

Despite obstacles, much work was accomplished in the execution of DO8. New dispatch rules, direct contracts for energy, tariff methodologies, accounting procedures, financial management tools and collection procedures have been developed and put into use. These accomplishments, ordered by DO8 phase and task, are detailed below.

JEPAS - PHASE I

The initial DO8 project work (Phase I) was designed to complete and distribute the JEPAS report on the Russian electric power system. Phase I was effective from July, 1995 to September, 1996.

Task 1, Deliverable - Phase I Final Report

The goal of Phase I was to assist the power sector in evaluation options for restructuring. This assistance took the form of major evaluation of the Russian Power System and recommendations to the Government of Russia (GoR) on its future development. This task built upon prior work accomplished by Hagler Bailly and others in the Joint Russian-American Working Groups on Power Sector Restructuring and Privatization. Prior work included the initial preparation of the Joint Electric Power Alternatives Study (JEPAS report) and a presentation to RAO UES and the Ministry of Fuel and Energy on Restructuring Russia's Electric Power Sector. Task 1 of DO was to assist the GoR in developing a specific energy strategy, based on the recommendations contained in the JEPAS report.

Work Accomplished

The JEPAS report provided, on the basis of an extensive, objective assessment of the condition of the Russian Electric Power System and Russia's energy alternatives, a time-phased investment program for 1995-2000. In this, five working groups extensively analyzed the potential for improving energy efficiency, the costs of modernizing and building thermal power plants, the economics of investing in nuclear safety and new nuclear power plants, investment in transmission and control, power needs and electricity demand scenarios.

The JEPAS report was published in June, 1995. The JEPAS report was widely distributed and discussed, including a November 1995 seminar in Moscow organized with the Ministry of Economy. In June of 1996 a conference was held for investors where the results of the JEPAS report were discussed and further distributed.

Status of Deliverable

The deliverable in Task 1 was completed and submitted to USAID. Work relating to the key recommendations contained within this report was carried forward and continued in Phases II and III of Delivery Order 8.

WHOLESALE MARKET

RAO UES Rossiya has been the main Hagler Bailly counterpart for the Wholesale Market team. The organization of work was through task groups with representatives from RAO UES Rossiya, Hagler Bailly, Central Dispatch Administration, Unified Dispatch Organization, Anti-Monopoly Commission, various Federal Ministries, Russian state institutions, other foreign consulting companies, the Federal Energy Commission, and nuclear power company Rosenergoatom. Each task group lasted six to nine months and was responsible to research and develop recommendations for change on one specific issue. These issues ranged from such general topics as the organizational structure of the wholesale power market to very specific issues such as the hourly/daily/monthly data collection required from a wholesale market entity.

RAO UES Rossiya and Hagler Bailly have completed many tasks and written several joint documents including reports recommending complete restructure of the wholesale market. The Russian government has passed several decrees mandating the recommendations that were specified in those joint reports.

WHOLESALE MARKET TASKS – PHASE II

During Phase II of DO8, covering the period of October 1996 – September 1997, the wholesale market team completed the deliverables in Tasks 3, 5A and 5B.

Task 3, Deliverable – Develop plans for operating a Russian wholesale market for electric power and capacity, and an understanding of the REPMOFF model, system dispatch, tariffs and financial settlements

The Russian dispatch system operates on a cost-plus tariff system, creating no motivation for cutting costs. The settlement system is opaque, with no clear connection between buyers and sellers. To make investment more attractive it would be necessary to create an economic dispatch model and a transparent clearing and settlements procedure. The REPMOFF model was applied to the Russian power system to develop an optimal structure for the future power market.

Work Accomplished

To develop dispatch, settlement, and tariff rules the Hagler Bailly Wholesale Market team worked with the RAO UES Central Dispatch Organization (CDU), the Federal Energy Commission and World Bank Wholesale Market Task Force. The Team participated in the design of the Wholesale Market Supervisory Counsel, Market Pricing Rules and

Settlements Procedures As a result the basic Wholesale Market pricing rules and related contracts have been defined

The original version of the Russian Electric Power Market Operational and Financial Framework (REPMOFF) model was conceived and developed by Tabors Caramanas & Associates The optimization program for multi-zonal inter-connected network with transmissions losses is based on the algorithm developed by Bahman Daryanian while at MIT REPMOFF simulates the physical operation of the Russian electric power system and determines the physical and economic features of different market structures, operational rules, and pricing schemes The simulation results include optimal generation mix transmission usage, plant and power line shadow prices zonal wholesale prices, and plant, company and zonal cash flows REPMOFF also analyzes the consequences of various physical changes to the system, such as changes in demand generation and transmission capacities

Status of Deliverable

The activities to meet this deliverable included work on the wholesale market principles and structure, supervisory council, market trading rules nonpayment problem and settlement procedures, market participation of AO Energo generators and direct access policy Work produced was done in cooperation with Russian team members from RAO, ERI IRIS, FEC and other organizations

In addition to the REPMOFF model that was put into use at ERI the following work was delivered in support of the task during Phase II

- Principles and Structure of the Wholesale Market for Electricity in Russia
- Wholesale Market Governance and Supervisory Counsel
- Wholesale Market Trading Rules
- Improvement of Non-payment Problem and Settlement Procedures
- Participation of AO Energo Generators in the Wholesale Market
- Customer Direct Access to the Wholesale Market
- Role of the Supervisory Counsel in the Wholesale Market Operations

The final result of this work was the delivery to RAO UES of a comprehensive market model and restructuring plan for the power system titled Recommended Plan for the Continued Restructuring and Privatization of the Russian Power Industry” July 4, 1995

Task 5A, Deliverable 1 – Arrange study tours in the UK and the US to review regulatory options suitable for the Russian system

The purpose of this task was to raise the awareness of Russian regulators by introducing them to regulatory practices in countries with a long history of regulating privately held energy companies Both the UK and US are particularly relevant because of the development of competitive energy markets in these countries

Work Accomplished

A UK tour of the National Power Pool was conducted December 10-17, 1995 with the participation of Russian regulators and RAO UES senior executives. The objective of the tour was to provide an opportunity for a delegation of Russian power system policy makers, experts, and regulators to engage in an intensive study of the UK power system, and to review the roles and functions of the UK power pool participants and its principal regulator.

The tour visited representatives of all major private and statutory organizations constituting the UK electric power system including the Electricity Pool of England and Wales, National Grid Company, Office of Electricity Regulation National Power, SEEBOARD (a major regional distribution company) and an industrial electricity purchasing consultancy. Hence, the tour covered the complete spectrum of UK Power system activities, namely, generation, transmission, distribution regulation, contracting, and consumption of electric power.

Status of Deliverable

The UK study tour was a success, but the US tour was not conducted. This tour was fully prepared, but then canceled one day before it was to begin when the key participants from the FEC and RAO UES were forced by events to withdraw. Hagler Bailly was not able to re-schedule the tour as the management of RAO UES was shortly-there-after changed, and the removal of the CEO, Mr. Brevnov created too much uncertainty to make new arrangements before the expiration of the contract.

Task 5B, Deliverable – Support work with the Regulatory Agency and Anti-Monopoly Committee using the REPMOFF model and make recommendations defining assistance required

The Russian Federal Energy Commission (FEC) was created to set energy tariffs and electric power trading policy. But this organization had little organic knowledge of how to conduct rate analysis and rate setting, other than the Soviet cost plus system, and no knowledge of how to promote economic dispatch and least cost pricing. The Wholesale market team assisted the FEC and its sister regulatory agency the Anti-Monopoly Committee, with reports and tools for analyzing power production and transmission costs.

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Work Accomplished

The Energy Research Institute (ERI), and advisor to the Federal Energy Commission and Anti-Monopoly Committee, adopted the REPMOFF model as one of the two modeling and simulation programs to be employed by the modeling working group of the World Bank Interagency Task Force

Three different generation market structures were modeled by REPMOFF. These are differentiated by the settlement methodology in effect between the grid company and the generators. The three generation market settlement methodologies considered were a) system-wide pricing, b) zonal marginal pricing, and c) plant marginal pricing. The data used in simulations were collected from RAO UES. The work was conducted with the cooperation of the Energy Research Institute of the Russian Academy of Sciences. Based on this modeling, analysis was developed and presented to RAO UES in the report "Modeling and Analysis of Alternative Market Structures of the Russian Electric Power System Using REPMOFF", March 15, 1996.

In addition, many reports on creating market and settlement mechanisms were delivered to the FEC (see Task 3) to assist in policy making.

Status of the Deliverable

The REPMOFF model was adopted by the ERI for work on the World Bank Wholesale Market Task Force. A Russian summary version of the REPMOFF report was delivered to the FEC. Hagler Bailly also delivered to the FEC several documents on UK incentive regulation and other alternatives to cost-based regulation. Hagler Bailly also provided considerable analysis and comment on proposed federal regulations and recommendations on regulation prepared by the Task Force.

WHOLESALE MARKET TASKS - PHASE III

For Phase III Wholesale Market Team addressed the deliverables in Task 1 and Task 2c of Delivery Order 8 Modification 4.

Task 1, Deliverable 1 – Market Rules Drafted

"Market Rules" includes, a set of procedures related to power system operation, methodology for developing and reporting market related information, generators' data and demand requirements, identifying potential market products and settlement and billing for market products and services.

Work Accomplished

For the wholesale competitive power market to function properly, it must be based upon a set of rules and procedures that will assure that the bulk power supply of the integrated power system conforms to proper standards of reliability. At the same time it should create and maintain open, non-discriminatory, competitive, unbundled market(s) for energy, capacity, and ancillary services that function efficiently in a changing electric

power industry, while attaining maximum practicable economy. The rules should also provide access to competitive markets within the unified dispatch zones and to neighboring dispatch zones. It should allow market participants to conduct both bilateral transactions and transactions through the power exchange and to provide a mechanism for fair and equitable allocation of costs and obligations associated with market operation.

The process of developing the market rules is not simple. As of now there are only a few wholesale power markets functioning or under development in all the World. While the concepts around which these markets are built are different, the one common thing among them is that market participants themselves agreed upon the main principles of market operation, jointly developed the basic model of the market, and only then jointly started the process of designing the market rules. In New England, for example, the process of restructuring the wholesale power market began in 1995, the final market concepts took shape by the fall of 1996, and only by the end of 1996 did market participants enter into an agreement. Since then, representatives of the market participants together with the staff of New England Independent System Operator were engaged in the process of developing market rules and procedures. Even now, more than a year since the rules development process has begun, some of the rules are still under development. And this is in the system where very sophisticated cost-based power market already existed for more than twenty-five years, and where extensive library of criteria, rules, standards, and operating procedures has existed for years to support both the system operation and the marketing activity.

No stakeholders in the overwhelming majority of the competitive wholesale power markets would accept the approach where in essence they are given the set of rules and told that now they may start designing the market. Market rules should be designed with an active involvement of market participants to enable market operation, not the other way around.

The situation in Russia was very different. Although the wholesale power market does exist here, it operates under rules that were set arbitrarily, without input from most of the market participants, which is not conducive to the promotion of principles of efficiency and fair competition. Significant obstacles existed and still exist on the road to a competitive market. The natures of these obstacles, which are identified further in this section, are both technical and political. Hagler Bailly consultants work extensively with representatives of RAO UES, the Federal Energy Commission (FEC), Regional Energy Commissions, and various AO Energos, attempting to help to overcome the obstacles, to explain the process of developing the market rules and laying the groundwork for possible joint work processes. As a result of these activities, significant progress was achieved. These achievements, as well as the key issues remaining to be resolved, are identified further in this section.

Hagler Bailly concluded that given the specificity of the process of transition to the competitive wholesale power market in Russia, the market rules can be designed even before the final concepts of the market take shape. As long as they are developed in close consultations with major Russian market stakeholders, and are flexible enough to be modified without altering major principles. When the final vision of competitive wholesale power market is formed, and specific steps of transition to the final stage are identified and agreed upon by market stakeholders, the various committees of market

participants will use these rules as a basis for the actual market design. Hagler Bailly consultants' efforts helped to convince RAO UES and Federal Energy Commission to undertake following action:

- Federal Energy Commission issued an order, directing to develop future energy and capacity balances based on principles of optimal planning using economic unit commitment and dispatch
- Organizational structure of New Energy Market is developed and a Supervisory Board of New Energy Market is formed

The following documents are developed by Hagler Bailly and/or by Russian specialists with close involvement of Hagler Bailly consultants and should be used as a draft of the market rules for future competitive wholesale market:

“Electricity Wholesale Pricing Recommendations” (Attachment 1 01)

This report contains a description of the current pricing methodology, as well as proposed pricing methodologies for the interim transitional market and final wholesale competitive market, as envisioned by Hagler Bailly. These methodologies address development of capacity and energy balances, capacity and energy tariffs and pricing for the products purchased by market participants from the wholesale market.

“Assessment of System Hardware and Software requirements (Attachment 1 02)

This document contains an evaluation of software and hardware requirements for system and market operation. Requirements include computers, computerized databases, database programs and computing information needed for unit commitment, economic dispatch and real time unit operation and settlement. In addition, telecommunication systems are needed to collect and transmit the power system's data and carry dispatch instructions, display equipment to show the system's status to the power system operator and simulators to train the system operator.

“ Additional Services” (Attachment 1 03)

This document contains definitions of ancillary services such as operating reserve, load following, automatic generation control, energy balancing, and reactive power/voltage control. The document also reviews the situation in Russia power system with regard to ancillary services and identifies a need for market compensation to providers of these services.

“Grid Code for the Russian Federation” (Attachment 1 04)

This document contains a set of rules for operation and development of Unified Electric System (UES). The original draft document was largely created by specialists of the Central Dispatch Administration (CDA) of RAO UES at the urging of Hagler Bailly, with close association and assistance from Hagler Bailly. The grid code is a cornerstone of market rules development, since all market rules should be in conformance with a grid code. Lately, a number of additional “ Operating Procedures” (Attachment 1 05) were developed by Hagler Bailly and added to the grid code. These additional procedures relate to establishment of installed capability requirements and auditing of installed capability entitlements, development and submittal of generators' data (capabilities, heat inputs, heat rates, ramp rates, etc) to the system operator, methodology for determining generators'

fuel and energy prices, metering and telemetering requirements and a methodology for defining generation units and generating system availability

‘ Proposals for Changing the Cash Payments System in the Federal Wholesale Market ’
(Attachment 1 06)

This document contains methodology to calculate cash discounts for certain volumes of electric energy traded in the wholesale market. The size of the discount and volumes of energy to which discounts apply would be determined by conducting centralized auctions. At the auctions, energy suppliers and consumers would submit bids identifying how much energy they would be willing to sell (by) at a discounted price if paid by cash and the size of desired discount. Based on the bids received the balancing point will be calculated, which determines the final volume of energy to be traded for cash and the size of a discount. It is expected that implementation of this proposal would provide a strong incentive to market participants to conduct their transactions in cash. In May of 1998 Hagler Bailly jointly with Promradtechbank developed draft of “Rules for the Organization of Centralized Competitive Determination of Rate Discounts Used in Cash Settlements among Subjects of FOREM” (Attachment 1 07). These rules establish the procedure for auctions, govern relationships between auction participants, and establish auction settlement procedures.

“Presentations to Federal Energy Commission on Pricing Principles”

During February and March of 1998 Hagler Bailly made two presentations to Federal Energy Commission on the subject of pricing of energy products. The first presentation in February of 1998, entitled “Russian Wholesale Market Pricing Principles” (Attachment 1 08), identified principles of wholesale market pricing, key issues and structure of pricing regulations. The second presentation in March of 1998 entitled “Proposed FOREM Pricing Mechanism Changes” (Attachment 1 09) identifies the need to change the current pricing mechanism with the one that provides for transition to wholesale market prices that better reflect time and location-related cost of supplying electricity from the wholesale market.

The proposed mechanism encourages economic dispatch of all generators by using marginal energy prices. Marginal pricing leads to a reduction in total fuel expenses for all generators, and also creates a mechanism for a gradual reduction in electricity generation fixed costs by providing incentives for taking inefficient generating facilities out of operation. These presentations were among key factors in convincing Federal Energy Commission to issue a resolution establishing new rules for selecting suppliers of electric power to the wholesale market and determining tariffs. According to these rules the energy and capacity balances should be developed based on optimal generation planning, including centralized economic dispatch.

In June-August 1998, Hagler Bailly assisted Mr. Chubais, new CEO of RAO UES Rossiya, in preparing the “Action Program to Improve Efficiency and to Further Reforms in the Power Sector of the Russian Federation” (Attachment 1 10). This document, much of which is based on prior work done by Hagler Bailly, will become the basis for the future strategy of the Russian Power System.

Status of Deliverable

Presently, the majority of the supporting documentation for development of the market rules is in place. A significant amount of work remains to be done in the area of market rules development, which can be done before actual market design takes specific form. This would mainly involve development of operating procedures relating to operating reserve, loss allocation, actions during capacity and energy deficiency, scheduled maintenance of transmission and generation facilities, etc. However, without undertaking the most critical steps, identified below, the final set of detailed market rules can not be developed.

These further steps are required:

- Formation by NER Supervisory Board of special committees as envisioned in NER organizational structure
- Committees staffed by people competent in the areas of system operation, reliability planning, economic dispatch and power marketing representing all major stockholders in the competitive wholesale power market
- Committees meet regularly to develop an agreement on the final shape of the competitive wholesale power market and on transitional steps to reach the final shape
- After agreement is finalized and approved by the Supervisory Board, committees start developing of detailed market rules based on the draft documents presented in this report

There is not much experience so far in Russia on reaching a consensus in resolving such important and complicated technical and economic issues as those which will surface during the process of development of competitive wholesale power market concepts and rules. At every step of the process the NER committees as well as Supervisory Board will need help on the technical and economic matters and in creating consensus among market participants. Hagler Bailly is well equipped and willing to provide that help.

Task 1, Deliverable 2 – Settlement procedures proposed

The settlement procedure of a wholesale power market refers to the rules for the accounting of purchases and sales of energy. It includes the calculation of payments to power providers (generators) and service providers (wheeling and dispatch), calculation of payments from power purchasers (distribution companies, resellers and direct customers), the invoicing of power purchasers, and accounting for all settlements. Information on monthly cash flow is provided by the settlements service organization to the financial organization responsible for the flows of market funds.

The settlement procedures provide the details of all work activities of the settlements organization and are based upon the market rules and tariffs of the service organizations.

Work Accomplished

The monthly settlements of the Federal Wholesale Market for Electricity and Capacity (FOREM) is performed by the Contracts and Settlements Administration (RDC) of RAO UES. The RDC procedures are not transparent and are closely held within its

organization. Due to the secrecy and opacity surrounding this organization the complete structure of the wholesale market is still unknown.

The tariff structure of service providers is under consideration by the FEC. Hagler Bailly provided a critique of the RAO UES fixed rate in September 1997. The critique provided recommendations on the unbundling and restructuring of the rate. The recommendations were used in the new Regulations for Electricity and Heat Pricing Policy developed by the FEC with assistance from Hagler Bailly.

Many of the market rules have been drafted but not approved. The NER committee responsible for market rules will refine and ultimately recommend for approval the market rules. Once approved, the settlement procedures can be refined in accordance with the market rules.

Status of Deliverable

Hagler Bailly drafted a document providing the principles of the settlement procedures (Attachment 1.11). This document was provided to the National Energy market Supervisory Council for their consideration. When the NER committee for Settlement Procedures is formed and commences its activities, the committee can use this document as a framework for the development of the procedures.

Because the delivery order ended in September 1998, Hagler Bailly was not able to support the soon-to-be formed NER committee responsible for developing settlement procedures. The FEC has not decided on the final structure of the wholesale market rules, including which entities should have market-based rates and which should have tariff-based rates. They also need to decide which services are unbundled. Until they decide on these matters, settlement rules can not be fully developed.

Task 1, Deliverable 3 – Wholesale Market pricing rules developed

The objectives of this task were to develop new pricing methodologies for competitive wholesale electricity market in Russia, stimulating economic dispatch and increasing efficiency of power sector and also to improve existing two-part tariff methodology during the transitional period before complete restructuring occurs.

Work Accomplished

The work was conducted by a joint working group of Hagler Bailly and Russian experts from FEC, RAO UES and the CDU. To justify the proposed methodology, a simulation of wholesale market operation was performed in cooperation with the VNIIE and ENIN energy institutes.

Under the agreement with FEC, Hagler Bailly developed "Regulations on pricing fundamentals for electric and thermal power within the Russian Federation". These regulations have been submitted by the FEC to the Government of the Russian Federation and approved by the Government in execution of the Federal Resolutions "On Fundamental Provisions of Tariff Setting, Regulation and Application of Tariffs for Power and Heat" (Attachment 1.12) and "On Natural Monopolies". The regulations set normative and legal pricing fundamentals for electric and thermal power within the

Russian Federation The principal objective of state pricing regulation is to guarantee the balance of interests of buyers (customers) and electricity and heat generators in their interrelations on the wholesale and retail markets of electric and heat power The proposed regulations introduce a pricing scheme with elements of competition Three different stages of wholesale market development were included ranging from limited competition on fuel component of the cost to advanced level of competition

An analysis was made of existing two-part tariff implemented in the Russian wholesale electricity market and many inconsistencies in that tariff were pointed out The improved version of the two-part tariff was developed and proposed to FEC

An entirely new FOREM pricing mechanism was developed and report on "Proposed FOREM Pricing Mechanism Changes" was presented to FEC (Attachment 1 09) The proposed pricing scheme ensures higher efficiency of electricity generation and lower electricity cost to customers by encouraging economic dispatch of all generators (including AO-energo generation) To provide the right pricing signal for AO-energos the energy rate is based on marginal variable (fuel) costs A gradual reduction in electric generation fixed costs was included by providing incentives for taking inefficient generation out of operation

The new pricing mechanism includes optimal generation planning for the next period of regulation and marginal price determination Appropriate computer models were developed under the contracts with VNIIE and ENIN and various wholesale market simulations were carried out on those models In accordance with proposed pricing mechanism on April 17, 1998 FEC adopted the resolution No 17/6 on "Rules for selecting providers of electricity (capacity) to the Federal Wholesale Market for Electricity and Capacity" By that resolution electricity and capacity balances are based on optimal generation planning assuming economic dispatch of the generators

In July 1997, when the National Energy Market (NER) was established Hagler Bailly developed a pricing scheme for that market based on marginal energy price and equal participation of all wholesale market generating facilities ("Pricing Methodology for the National Energy Market" Attachment 1 13) That pricing scheme was not implemented and was replaced by contract prices and that is one of the reasons for very small volume of transactions on the NER In March 1998 a pricing scheme for National Electricity Market was developed and "Recommended Wholesale Market Pricing Mechanism" (Attachment 1 14) was presented to the NER working group

In September 1997, the report on "Issues Relating To Transmission Services Rates for RAO UES Rossiya" was developed and presented to Sergei Obratsov, Head of Economic Department of RAO UES (Attachment 1 15) It includes a critique of the existing fixed rate for RAO UES services, details of typical services provided by a transmission company or transmission corporate function, the cost to be included in those services, and the various rate designs for providing transmission capability Practical steps for changing the existing fixed rate for RAO UES were planned under the agreement between Hagler Bailly and the FEC A proposed methodology was supposed to be finished in September

Under the agreement with the FEC the report on "Economic Development Rates" (Attachment 1 16) was developed, presented to the FEC and discussed on the FEC

seminar It contains the proposed methodology for introducing economic development rates for industrial customers

Status of Deliverable

The FEC will send the draft Regulations on Electricity and Heating Pricing Policy to the Prime Minister for signing The FEC will then develop tariff structures according to the Regulations and send a notice of new tariff structures to the service providers requesting that proposed rates according to the new Regulations be filed with the FEC by a specified date

Task 1 - Deliverable 4 – Licensing arrangements prepared

The scope of work in realization of the licensing arrangements included preparation of the licensing regulations and drafting licenses for the members of the wholesale market of electric power and capacity

Work Accomplished

A multi-agency task group was formed to support this effort Hagler Bailly was working on this project in close cooperation with RAO UES, Federal Energy Commission, Antimonopoly Committee, St Petersburg REC, and IRIS A detailed Work Plan for the task was prepared in August of 1997 Beginning from August 1997 Hagler Bailly arranged and conducted meetings of the task group on a regular basis to discuss the issues The group drafted Licensing Regulations, provided comments on all the revisions of the Licensing Regulations by other working groups, and prepared drafts of Terms and Conditions for the Licenses Essentially, two major sub-tasks were performed First, the Licensing Regulations were drafted, and second, the commercial licenses were prepared The Regulations covered terms and conditions for the following 5 categories of the licensed activities

- Selling of electric power (capacity) to the wholesale market
- Electric power (capacity) supply based on (1) a regulated tariff and (2) a non-regulated tariff
- Transmission of electric power through high-voltage transmission lines
- Distribution of electric power
- Independent Financial Operator activities in organizing transactions on the zonal wholesale markets and between different zones of the Federal wholesale market

In addition, based on the current structure of the Russian electric power industry, the Regulations determined an appropriate set of commercial licenses to be issued to each of the legal entities working in the electric power sector According to the Regulations, AO “Long-distance Transmission Lines” shall have a License for transmission of electric power through high-voltage transmission lines Electric power plants owned by RAO UES, its subsidiaries, nuclear power plants and concern “Rosenergoatom” shall have Licenses for selling electric power (capacity) to the wholesale market and, possibly, for electric power supply based on a non-regulated tariff The IFO and other similar organizations (energy brokers and aggregators) shall have Licenses for power supply based on a non-regulated tariff The IFO license shall be granted to the RDC, or to the NER IFO if the IFO assumes functions of the RDC in one of the energy zones of the

wholesale market AO-Energos supplying power to the wholesale market shall receive the Licenses for selling power, distribution power, and for power supply AO-Energos purchasing power from the wholesale market shall have the Licenses for distribution of electric power, and for power supply AO-Energos that own and operate high-voltage transmission lines shall obtain the License for the transmission of electric power

Status of Deliverable

The task was completed. The final version of the draft of the Licensing Regulations has been presented to the Federal Energy Commission. A generic Form for a License has also been developed (Attachment 1.17). Presently, the Licensing Regulations are on hold pending the adoption of the Licensing Law by the Russian Duma. We anticipate that the Licensing arrangements will be signed into Law by the end of 1998. Accordingly, the process of actual licensing of the electricity wholesale market members by the FEC and RECs may commence no later than first quarter of 1999.

Tasks of getting the Licensing Regulations adopted and issuing the Licenses was more complex than was originally thought due to various obstacles and delays associated with the Russian Government and Legislature bureaucracy. The origin of complexity of the task was related to the lack of legislation in the field of licensing. In May of 1996, the Russian Government prepared a draft Federal Law regulating the licensing of various types of business activities and passed it on to the Russian Duma for review and approval. So far, the Russian Duma has conducted two readings of the draft Law and the third reading is pending.

The Ministry of Fuel and Energy has effectively challenged FEC with regard to its jurisdiction over the licensing of the electricity market members. Currently, the Ministry issues technological licenses to generate, transmit and distribute electric power. The controversy stems from the absence of a Russian Electricity Law and clearly defined jurisdiction of the FEC over commercial licensing of the electricity market members. Therefore, in October of 1997, FEC proposed a revision of the draft Licensing Law which would incorporate also licensing of the commercial activities on the wholesale market of electric and thermal power and capacity as a distinct process versus technological licensing performed by the Ministry of Fuel and Energy.

Task 1, Deliverable 5 – Direct access to the wholesale market for large users proposed

Energy-intensive customers, markets such as the metal, automobile and chemical industries, depend upon a low cost reliable source of electricity to compete in domestic and world. Locally approved retail rates are often politically determined. Cross-subsidies for other rate classes drive the large industrial customer class rates very high. Across Russia the average retail rate for large industrials is three times the average rate for residential customers even though the cost of service for residential customers is typically higher than for large industrial customers. In addition, the AO Energos usually pressure industrial customers to pay in barter in order for the AO Energos to bypass Federal taxation. Hagler Bailly provided assistance to the power sector to allow energy-intensive customers the opportunity for direct access onto the wholesale market.

Work Accomplished

The number of energy-intensive customers receiving direct access to the wholesale market has grown steadily over the last two years

- RAO UES Rossi signed three contracts with direct customers in 1996,
 - A large zinc-producing company, and
 - Two coal-producing companies
- In early 1997, RAO UES Rossi signed three more direct customer contracts,
 - A manufacturer high equipment for the nuclear power industry,
 - An aluminum producing company, and
 - A railroad company
- In June 1997, RAO UES Rossi with assistance from Hagler Bailly created the National Energy Market, also known as the 'Overlap Market'. This new system was created to initiate cash payments to the wholesale market, introduce competition to the AO Energos, and to allow transparency in the prices negotiated between buyers and sellers of electricity (Attachment 1 18)
- The NER, again with assistance from Hagler Bailly, created the Independent Financial Operator (IFO) in June 1997. The role of the IFO is to negotiate and sign contracts with both generators and direct customers. The price of deliveries is lowered in exchange for up-front cash payments for deliveries.
- The IFO began its first purchase and sale of electricity in August 1997
- The market increased to about 20 direct customers purchasing power from the IFO. Unfortunately, many customers cannot purchase from the IFO because of local opposition from their AO Energo or the Regional Energy Commission. Specific rules or regulations for access to and wheeling across a distribution company's facilities have not been developed.
- Hagler Bailly contracted with EconoTech, a Russian company, to research existing rules and regulations and develop a distribution wheeling methodology (Attachment 1 19). The methodology was tested at AO Energos. Hagler Bailly has provided the results of the initial work on open access rules and distribution wheeling methodology to the FEC. Once approved by Russian government, the direct customers will have a legal basis for obtaining access to the wholesale market.

Status of Deliverable

The deliverable has been more than met. Not only have there been proposals for direct access, direct access has continued to grow steadily over the last two years. The FEC will continue to develop rules for open access and distribution wheeling tariffs. When that occurs, the RECs will be required to develop rates according to the methodology and allow access to the wholesale market for all customers satisfying the conditions of open access rules.

Task 1, Deliverable 6 – Concepts of capacity and energy contracting developed and made available to market members

Ideally all market participants should be able to engage in power contracts with the system operator to participate in the power exchange, and among themselves on bilateral basis. Hagler Bailly has been closely working with RAO EES Rossi to introduce and implement the concepts of capacity and energy contracting in the wholesale power market. This work began even before the Independent Financial Operator was created in June of 1997. Hagler Bailly provided assistance to the market participants and operators to facilitate wholesale power contracts.

Work Accomplished

As a result of this work in July of 1997 the standard agreement between Independent Financial Operator and a generator for sale of electric energy and capacity was formed. The agreement entitled "Agreement on Sale of Electric Energy and Power by Generator to Independent Financial Operator" (Attachment 1.20) specifies the following:

- The amount of energy and capacity to be supplied by the seller to the buyer
- The price for the agreed upon amount of energy and capacity
- Settlement procedures
- Liability of the parties
- Provisions for amendment and termination of the agreement

Although this agreement is somewhat restrictive with regard to abilities of other parties to engage in contracts it is nevertheless a very important step which lays groundwork for wider contractual activities in the future as market develops.

Status of Deliverable

The deliverable has been met. This agreement was made available to market participants in March of 1998 and a number of contracts are actually in place now. However, there is still room for future development in this area which should go together with a future development of the wholesale power market. A properly designed wholesale power market should not only provide the opportunity for participants to conduct transactions through the power exchange, but also should be able to accommodate bilateral transactions between participants. Depending on the type of transactions the system operator, when necessary, should be able to physically execute the market transaction, and a set of special procedures should be developed to spell out the rules that would ensure that system reliability is not jeopardized as a result of any given transaction. In addition, settlement should be made in a way that does not result in cross-subsidies from participants not involved in the transaction.

Depending on the actual design of the market, bilateral transactions may involve trading of resources, trading of obligations, or both. It is preferable that market participants will be able to conduct trades of unbundled products (i.e. energy and capacity as separate products) although the sophistication level of available software may put a restriction on the type of transactions allowable, at least at the beginning phase of the market operation.

There may be two categories of contracts, those not affecting system operation and those physically affecting real time system operation. Bilateral contracts involving physical resources located in the same dispatch zone fall into first category. These contracts should not cause changes in the physical centralized economic dispatch within the dispatch zone, and contractual requirements should be satisfied by the settlement system, which has to be sufficiently flexible to be able to accommodate different kind of transactions.

Contracts involving physical resources located in different dispatch zones fall into the second category. To accommodate these contracts the system operators in each affected zone will have to take into account the ability to accommodate changes in energy flow through transmission interfaces between respective zones caused by the contract, and alter real time dispatch in each affected dispatch zone. Because of this in addition to the required settlement procedures there should be specific operating procedures to ensure that the required criteria of system reliability is maintained.

The contracts in this category can be made between market participants or between system operators (financial operators). Generally, the philosophy of truly competitive wholesale power market should be to provide the utmost opportunities and flexibility for the market players to engage in the bilateral contractual activities. The system operators should not compete with participants in the market activity and should only step in when there are market opportunities that can not be explored by participants (i.e. very short notice transactions).

Task 1, Deliverable 7 – A competitive wholesale market will be in force by the close of the contract

The contractor was to provide assistance to the RAO EES Rossiya Energos, Federal Energy Commission, Regional Energy Commissions in the development and implementation of the competitive wholesale power market.

Work Accomplished

The major accomplishments are the creation of the National Energy Market (NER), establishment of its Supervisory Board, and development of organizational structure of the New Energy Market. The NER envisions functional committees dealing with all aspects of the electric power market operation. It remains to convince the FEC to issue an order that future energy and capacity balances should be performed based on principles of economic dispatch and optimal generation planning.

Accomplishments listed in other parts of this report are also an integral part of the development of the competitive wholesale power market.

Status of Deliverable

The wholesale power market in its present form has a long way to go before it becomes truly competitive. In March of 1998 Supervisory Board of National Energy Market was formed. It is expected that after September this board will form functional committees,

which will begin to meet regularly to deal with all aspects of market operation. Support of these committees will be crucial to the success of the competitive power market.

The major obstacles that still must be overcome to allow the development of a competitive wholesale power market are

- Absence of comprehensive electricity law for the Russian Federation
- Energy and capacity balances developed with little regard to economic dispatch and system reliability
- Absence of reliable database of generator data and system requirements
- Absence of market member organization
- Existing tariffs provide no incentives for economic dispatch and competition
- Complicated and non-transparent settlement and billing procedures, aggravated by barter and wide spread non-payment
- Vested interests oppose the changes required to develop and implement competitive market

Task 2C, Deliverable 1 - Wholesale market zones will be identified and a concept and structures for a regional or zonal wholesale markets will be developed

The scope of the work in realization of the zonal wholesale market arrangements included elaboration of the concept of governance of commercial operations in the nation-wide and zonal wholesale electric power markets and preparation of the corresponding draft (model) market members agreements

Work Accomplished

A multi-agency task group was formed to support this effort. Hagler Bailly was working on this project with RAO UES, Federal Energy Commission (FEC), IFO (Independent Financial Operator) and IRIS. In compliance with a detailed Work Plan for the task prepared in October 1997, Hagler Bailly arranged and conducted meetings of the task group on a regular basis to discuss issues and consider proposals and papers submitted to the task group.

For Russia, with its power system spread across a large landmass, it is extremely important to implement a new way of the governance of commercial operations in the nation-wide wholesale electric power market (FOREM). The aim of the task group was to submit proposals regarding how to best organize a self-governed market organization with a broad and balanced presentation of interests of all market members located in the different regions of the country. The market members would decide on the trading rules and settlements arrangements and control the result of market operations while respecting the technological arrangements and constraints existing today in the Russian electric power sector.

It was found reasonable to transform the existing single governing structure (with a dominating commercial functions performed by the RAO UES and its 100% subsidiary – CDU) into a new system consisting of 7 zonal market-member organizations. Each zonal organization would govern the power trade within each of existing 7 Regional Unified Power Systems (UPS) of Russia. There would be one national organization established by

those zonal organizations to govern inter-regional issues. The results of this work is summarized in two basic documents:

- Model Agreement on Joint Activities of Participants in the Interzonal Federal Wholesale Market of Electric Energy and Capacity of the Russian Federation (Attachment 1 21)
- Model Agreement on Joint Activities of Participants in the Zonal Wholesale Market of the UPS (Attachment 1 22)

The purpose of these agreements is to legally get market members and market service organizations bound with a predetermined set of obligations and to bestow them appropriate rights to assure the efficient, fair and transparent wholesale power trades in Russia, when a market-based power supply system is implemented. The agreements cover such issues as:

- governance structure, competence, formation procedures and powers of the zonal (interzonal) market-members organizations
- requirements for market servicing organizations (dispatch organization, transmission provider, financial operator)
- settlement of disputes
- procedures for joining the Agreements

Status of Deliverable

The task was completed and draft Agreements implemented. The Agreement signed by the NER members is based on the Zonal Agreement proposed by the task group, as if there is a single market zone. The FEC believes (and Hagler Bailly supports this) that this organization can be later transformed into the interzonal-zonal arrangement. This will require substantially more organizational efforts and resources to implement, and the major role to conduct further changes belongs to the holding company - RAO UES.

Implementation of this zonal wholesale market will be a lengthy process. Joining all market members to the proposed market-members' driven organization should be a voluntary act, requires time to explain the rationale and benefits and convince people to do it. It cannot be enforced or accelerated. RAO UES started this process in April 1998 by creating and expanding National Energy Market (NER) organization – a non-for-profit partnership that should unite all FOREM's members. Presently more than 30 Energos, some wholesale power producers and large industrial customers have already joined the NER. This work is on temporary hold due to the changes in RAO UES's senior management.

Transition from a nation-wide wholesale market to interzonal-zonal arrangements may be inhibited by concerns of political separatism if more powers to manage the electric power system and its financial flows are given to regions. Further development of Russian legislation and regulations that establish new principles of federal-regional relationships with clearer delineation of responsibilities can help overcome this concern. Significant consulting support will also be required to implement the zonal markets.

Other Activities – Economic dispatch and plant efficiency evaluation

A change from the current loading schedules of the power plants based on the electric power supply and load balances to an economic dispatch of the power plants was the essence of this task. Economic dispatch means least cost dispatching of generation to meet demand while maintaining an appropriate level of reliability of the grid. Introduction of economic dispatch in Russia is estimated to result in annual fuel savings of at least \$1b.

This was a four-fold problem. First, modification of the present tariff system should have been implemented. Second, transparent market settlement procedures should have been created. Third, hardware and software capabilities for dispatch control, communication, and data acquisition need to be evaluated and possibly upgraded. Finally, the heat rate curves of thermal power plants used for the dispatch model should be verified to ensure optimization of the dispatch.

Development of the market settlement procedures is addressed in more detail in other sections of this report. In this section a description of the development of the methodology and corresponding software for evaluating the effectiveness of the tariff structure modifications, implementation of the work plan for the heat rate curves determination (plant efficiency evaluation), and, hardware and software capabilities evaluation's is presented.

Work Accomplished

In order to optimize economic dispatch in the long-term thermal characteristics of the generating facilities need to be reevaluated, because current incremental heat rate curves are obsolete and inaccurate. Between July 1997 and April of 1998 Hagler Bailly, jointly with the CDA (Central Dispatch Administration), VNIIE (Russian Energy Institute) and the ORGRES energy consulting group, developed a program for fuel efficiency testing. In addition, Hagler Bailly was working closely with VNIIE on developing the mathematical model and computer program for evaluation of the tariff structure using dispatch optimization and minimization of the system-wide fuel consumption as the criteria (Attachment 1.23). During this period of time, Hagler Bailly arranged and conducted a number of meetings with VNIIE and other industry experts to discuss the issues associated with the project and its framework. In April of 1998 Hagler Bailly selected Energoeffect Consulting Ltd. for evaluation of the thermal and economic characteristics of thermal power plants and development of a model. The project was completed at the end of July of 1998.

The major results of this work were

- a model and computer program for evaluation of various modifications to the tariff structure
- investigations and computations conducted to confirm the proposed tariff structure supporting optimal economic dispatch and least-cost balance planning
- marginal prices for the dispatch zones of the wholesale market determined
- a survey of the available thermal and economic characteristics of power plants

- thermal power plants test results were obtained and their actual heat rate curves were determined
- methodology for evaluation and applicability assessment of the thermal characteristics developed

Hagler Bailly performed assessment of the hardware and software requirements for economic dispatch, communication, control and data acquisition system. This task was accomplished in cooperation with the CDA in the Fall of 1997. Among other issues, the project focused on the development of a conceptual design for the required hardware and software, and on the preliminary determination of costing. In brief, the CDA estimation is that the cost of the required hardware and software would be \$173. Hagler Bailly estimates that the cost will be significantly higher.

COMMERCIALIZATION

The Energo Commercialization Project was developed to address the lack of commercial management discipline in the regional energy system, without which it will be impossible to develop a competitive power market

When RAO Unified Energy Systems of Russia (UES) was established in 1992 it received majority ownership in nearly all regional generation and distribution companies, called "energors" These energors remained the local monopoly distribution companies supplying both electricity and central heat to their service areas Following restructuring, it became apparent that RAO UES was not managing its energo assets as commercial companies This, in turn, has helped lead to high operating costs, inadequate cash generation through the system, and inadequate investment to meet current and anticipated needs in the sector To address these shortcomings, the Russian government agreed to conduct pilot programs at several energors to introduce commercial management techniques The Commercialization program has demonstrated through these pilots that using the principles and procedures of commercial management can bring benefits to both the energors and their customers

COMMERCIALIZATION TASKS - PHASE II

Phase II of DO8 focused on attracting investment into the power sector and on adopting International Accounting Standards (IAS) All the deliverables for Phase II were superseded or eliminated by modification 4 of DO 8 at the start of Phase III Although modified, most of the deliverables for Phase II were nonetheless completed and submitted in Phase II Deliverables completed in Phase III are attached

Task 2A, Deliverable 1 – Develop IAS accounting applications manual

The main objective of accounting is to accumulate information about corporate financial status and related changes, performance measures, and cash flows This data is essential for decision making by corporate management lenders and investors To attract foreign investment, it is necessary that accounting information is in a format familiar to foreign investors

Work Accomplished

Price Waterhouse was sub-contracted to complete this deliverable The materials are based on work done at the regional power company Lenenergo, where Price Waterhouse conducted a pilot audit and accounting conversion The manual created describes a business accounting system that lends itself to reporting data once correctly accumulated, in compliance with Russian Accounting Standards (RAS) and International Accounting Standards (IAS)

A model chart of accounts was developed to accumulate detailed information on all transactions and properly classify assets, liabilities, equity, income and expenses Each account has additionally been classified in the accounting system as a monetary or non-monetary account for the purpose of revelations The reports produced by the accounting

conversion are based upon management's judgment of what information it considers to be important and what information it needs to make knowledgeable decisions to best run its business. The IAS manual also includes instructions on financial reporting, including income statements.

Status of Deliverable

An application manual, "IAS Accounting and Financial Manual for Russian Electric Utilities", was delivered by Price Waterhouse in 1996. Price Waterhouse, acting as the subcontractor responsible for this deliverable, conducted a pilot IAS audit and training at Lenenergo during 1996. This accounting manual is a basic guide that requires additional training to use properly. Hagler Bailly developed a more sophisticated IAS conversion model in Phase III.

Task 2A, Deliverable 2 – Develop a work plan for IAS implementation

IAS can be introduced through a simple restatement of accounts. A restatement is not sufficient to use for management decision making. To operate as a commercial company it is necessary to eventually convert to a dual accounting system. To fully convert to IAS requires significantly more work and new accounting and management information systems. A work plan was developed for the introduction of IAS at energos as a management tool using a forward oriented approach rather than a restatement.

Work Accomplished

The backward oriented approach is generally used by external accounting professionals and is usually referred to as 'transformation'. Information is produced using Russian statutory accounting practice. First it is reclassified into IAS format. Further adjustments are made by going back to the source documentation, Russian statutory balance sheet and profit and loss statement. From this, an IAS balance sheet, income statement and cash-flow statement are produced. Next these are restated into foreign currency with the necessary adjustments to the financial information for financial reporting in a hyper-inflationary economy. Price Waterhouse used this approach for its initial conversion to IAS at Lenenergo.

The backward oriented approach is a one-time exercise that is easier to organize and control. It can be implemented in a shorter period of time. The work-plan for implementing the backward approach included three major stages: provide the necessary training, develop and implement a system for transformation to be run by trained utility professionals and restate 1997 financial statements as a test case for the system for transformation. Unfortunately it cannot be used as a tool to improve utility management and operation. The information generated using the backward approach is generally meant for external users.

In order to move to IAS when recording company operations in the day-to-day activities of the utility a second work-plan was prepared to introduce the forward oriented approach. Through this approach the utility will record each transaction in a system in which financial data is recorded with sufficient detail and in a format suitable for reporting in both Russian statutory and IAS accounts. This approach is usually referred to as dual.

accounting The dual accounting system is based on the introduction of a new chart of accounts with a set of rules for recording transactions From this chart information is posted into both the Russian and IAS set of financial statements at the same time The advantage of this way of organizing a dual accounting system is that transaction information is entered only one time and in one place

Status of Deliverable

A work plan for implementing IAS accounting at Energos was developed in August 1997 by Hagler Bailly (Attachment 2 01) The initial stage of this work plan was then implemented at both Novosibirskenergo and Permenergo, including the installation and operation of a new chart of accounts, during Phase III

Task 2B, Deliverable 1 – Conduct 4 financial/accounting seminars

To be able to properly use IAS it is necessary to properly understand the concepts Many of the basic concepts of Western accounting practices, such as accruals, write-downs, mark-to-market, are alien to Russian accountants Even the definition of profits can vary widely between Russian and International accounts Therefore significant resources need to be devoted toward training a new generation of accountants

Work Accomplished

A seminar on IAS conversion was held by Price Waterhouse on May 1996, attended by over 100 accounting personnel from energos and gencos This seminar reviewed the main concepts of IAS accounting, including accrual accounting, continuity of operations, and circumspection Power sector accountants were shown how to conduct a general IAS restatement based on RAS data A restatement of RAO UES financial statements was presented along with an overview of international accounting standards, financial analysis and financial indicators

Two seminars on financial management and accounting were conducted at Novosibirskenergo by the subcontractor, Arthur Anderson in May and July 1998 during Phase III The first seminar, Introduction to International Accounting Standards (Attachment 2 02) covered basic IAS concepts over two days Participants worked through examples to produce their first IAS statement The second seminar lasted three days, with the first block covering Western Accounting Practices (Attachment 2 03), and the second, Financial Analysis (Attachment 2 04) In Western Accounting Practices, the energos' accountants learned in more detail what financial statements are required under IAS, how to record transactions, make end-of-period adjustments, account for receivables and extraordinary items In Financial Analysis participants were taught how to analyze financial statements, calculate the main financial ratios and do financial planning

A two-part accounting seminar "Introduction of Financial Accounting with International Accounting Standards" (Attachment 2 05) was conducted by Moscow Business Consulting for Permenergo in March 1998 This seminar also covered all the concepts of IAS accounting, in comparison to RAS Participants were taught IAS entries, adjustments and compilation of financial statements and financial analysis Additionally, all

participants received accounting software to help organize IAS ledgers and financial reports

Status of Deliverable

All the deliverables of this task were met. The amount of work accomplished is insignificant in comparison to the needs of the power sector if IAS accounting is to be widely adopted. Thousands of bookkeepers will need to be trained before there is a broad enough base to begin wide-scale conversion. Accountants can be quickly taught basic backward conversion, by simply plugging the number from the RAS accounts into IAS conversion formulas. Significantly more knowledge is required to be able to create forward-looking accounts. That is, recording the actual book entries using IAS methods as they occur. The forward method is the only way to get true IAS accounts, as backward conversion will always be skewed by the use of improperly recorded entries.

Task 4, Deliverable – Develop master implementation plan for commercializing sectors of the power system identified for privatization

When RAO UES was created as a government holding company, it was deliberately divided into transmission, generation, and distribution companies. The eventual goal is to fully separate and privatize thermal generation and local distribution. The purpose of this task was to recommend programs for improving the ability of these power companies to operate on a profitable, self-sustaining basis in a competitive market place.

Work Accomplished

In 1994-95 Hagler Bailly surveyed five electrical distribution companies (energos) and four generation companies (gencos) to develop recommendations for improving the ability of these companies to operate as private companies. This survey reviewed operating and physical plant conditions, tariff policy, dispatch and the relationships with RAO UES, the municipalities, regulator and customers. Problems were identified in the areas of concentration of control, market anomalies, fuel supply and pricing problems and opaqueness in dispatch settlements and regulatory processes.

An action plan was proposed to revise management and planning processes at the energos and gencos and improve financial management as precursors to privatization. In addition, significant management training for power sector personnel was advised due to weaknesses created by the central planning system.

Status of Deliverable

The recommendations for commercializing the power sector were presented to USAID and RAO UES as the report "Observations and Recommendations for the Commercialization of the Russian Electrical Power System," in March 1996. The next step was to select energos to participate in the commercialization program. The evaluations were conducted at the end of Phase II and the recommendations were put into practice in Phase III of DO
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COMMERCIALIZATION TASKS, PHASE III

Commercialization work identified in Phase II was implemented in Phase III. Implementation began by selecting participant energos for the initial "pilot" program to demonstrate the positive effects of commercial management practices.

Pilot Energo Selection

The first step in developing this new program was to determine needed areas of regional work and to choose pilot energos that would be good partners. Ten energos were nominated by Boris Brevnov, CEO of RAO UES, on April 18, 1997 as potential candidates for pilot projects under the Commercialization Program. Hagler Bailly undertook the task of developing the proper diagnostic criteria and completing diagnostic evaluations of those energos, and making recommendations as to their suitability for the program. The report "Diagnostics of the Candidate Energos for the Commercialization Program, July 10, 1997" (Attachment 2.06) provides the detailed results of these evaluations, including trip reports and raw data collected.

Of the ten candidate energos, three had been visited during the previous phase of the project (Nizhnovenergo, Sverdlovenegero and Tyumenergo) to discuss the original commercialization program, so there was some information available. With seven energos (Saratovenergo, Krasnoyarskenergo, Novosibirskenergo, Orelenergo, Dalenergo, Rostovenergo, and Permenergo) there had been no previous contact. Hagler Bailly therefore completed diagnostic visits of all seven new candidate energos, and revisited Nizhnovenergo and Sverdlovenegero.

Diagnostic Criteria

The results of the visits were summarized by a table evaluating each energo on a scale of 1 to 5 (5 being the best) on fifteen selected criteria that Hagler Bailly considered important in evaluating their suitability as pilot energos. In completing the diagnostic evaluations, a particular effort was made to identify those energo managements that would be proactive partners in the commercialization program efforts. This was not a test of "political correctness" as to whether they supported a certain direction of reform. Instead, Hagler Bailly evaluated the management's understanding of the need for reform, their desire to cooperate, and the possibility of successful implementation given the regional political and economic constraints each faced.

Finally, each energo was placed into one of three categories as follows:

Type 1 - Recommended as a Phase III pilot

Type 2 - Recommended as a future pilot should more funding become available

Type 3 - Recommended that no work be done at this energo

These rankings and evaluations were intended only as a means for summarizing and understanding the results of the evaluations. Precise evaluations were not feasible in such brief evaluations.

Results Summary

Three energos were categorized as Type 1 - Recommended as a pilot

- Novosibirskenergo
- Permenergo
- Rostovenergo

Permenergo and Novosibirskenergo were chosen in agreement with UES, the International Financial Corporation (which was advising Mr Brevnov) and USAID. Only two were chosen due to the available budget, plus the fact that other donor programs including World Bank, British Know-How Fund, Canadian Assistance Program, etc., were at that time expected to fund similar, complimentary, programs at an additional five energos.

Work plans

Separate work plans were created for both Novosibirskenergo and Permenergo to address the issues most needing reform in concurrence with wishes of the management and the tasks of the delivery order. The initial stage of the work at both energos was the completion of detailed two-week diagnostic visits to determine specific areas where the work should be concentrated. Detailed work plans were then drafted and submitted to the senior management of each energo for their comments and review. Final work plans were then signed by each energo's general director, and by representatives of the regional administration. They were then submitted to Mr Boris Brevnov of UES and USAID Moscow for final approval. The work plans then became the guiding document for each energo.

Each work plan for both Permenergo and Novosibirskenergo provide a description of the main points of the scope of work for the commercialization programs undertaken. The areas of concentration and the tasks recommended were prioritized so as to allocate resources for maximum immediate impact while strategy for the reform of the Russian power sector remains under development. The first priority, per request of UES was cash collection, with all the remaining deliverables covered in the second part of the work plans.

The work plans are referred to below in the review of deliverables completed. A condensed review of the detailed work plans and the specific work completed is provided in Attachment 2.07.

Task 2A, Deliverable 1 – Improvements in budgeting and cash flow management

Both Novosibirskenergo and Permenergo are large companies with over 20 subsidiaries, representing generators, grid companies, repair workshops, etc. Financial management functions were performed in an uncoordinated manner at scattered locations. The Planning Department at each subsidiary was managing its own budgeting, and in most cases finding its own financing through barter. This often meant that the head office did not know how much money the company had spent, and what customers had already settled their debts with subsidiary branches. The sales department would send out

disconnection notices for non-payment, only to be informed that the bill had already been settled with another part of the company. Similarly, the various accounting departments at each subsidiary were responsible for completing the accounting functions required for budgeting. Monthly, quarterly and annual financial reports used for budgeting were produced by each accounting department in a format developed primarily for tax reporting to the federal government or in submitting tariffs and not suitable for management purposes. These problems lead to a constant cash crisis and lost revenues. Without a budget management system a company cannot properly allocate its funds and control expenses or plan its finances and investments. Hagler Bailly undertook the task of reforming the budgeting process.

Work Accomplished

The first recommendation made was to create a financial department to take control over the financial planning and control, which was at the time being split between the planning department and accounting. Novosibirskenergo structured a financial department with our assistance, and carefully chose a new financial director from outside the company. Permenergo had recently hired financial director, and Hagler Bailly worked with management to organize the functions of the financial department to increase overall control over accounting information and company settlements.

Neither of these new financial departments had many of the tools and training necessary to manage the finances of such large companies. Therefore Hagler Bailly developed and installed for each energo a customized financial management software program (Attachment 2 08). The financial management software was created by collecting all the financial data from each company and using it to model all expenses and financial flows. Now each financial director can accurately see how changes in costs and expenditures will directly effect the bottom line. This model is a powerful tool that will assist these companies in controlling costs, managing cash flow and planning investments and in accurately assessing their tariff needs.

But no tool is fully effective if the user is not properly trained to use it. Therefore a special seminar on the fundamentals of financial analysis was conducted at each energo for the staffs of the financial, accounting and planning departments. Staff from all subsidiary companies also participated.

Status of Deliverable

The budgeting and cash flow management at two regional power companies has been greatly enhanced due to this effort. New managers and financial management tools are in place and are in use. While more work needs to be done to improve the financial management of Novosibirskenergo and Permenergo much of the initial restructuring work has begun. This will have a great long-term effect on the profitability of these companies. As a follow-on project it would be advisable that the initial decision support system installed be enlarged and expanded to allow real-time management of these companies' working capital assets. Assistance should include training and coaching in financial management.

Task 2 A, Deliverable 2 – Improvements in organization and human resource management

As with all of the regional energos in Russia, Novosibirskenergo and Permenergo's management was structured and trained to operate under a planned economy, and therefore the normal structures to manage financial and commercial activities simply did not exist. Under central planning regional energy companies were given orders from Moscow to fulfill technical plans. This allowed for a simple management structure, where technical directors were required to ensure planned output was met. Other questions, such as operating costs, investment needs, and load forecasts were decided in Moscow. Since the introduction of market reforms in 1992 energos have been increasingly responsible for managing their own costs, investment program and tariffs. Yet the normal structures to manage these activities simply do not exist. This created problems such as the following:

- Despite having more than 22 major affiliates the General Director was personally responsible for overseeing each functional area. The energo still retained its flat management structure, with each director and officer of the company reporting directly to the General Director. The General Director therefore spent the vast majority of his time on operational questions leaving little time for strategic management.
- Even though the energos are now responsible for their own financing, there was no financial director. There was no central control over finances and the accounting department reported directly to the General Director. Accounting, Sales and Planning departments operated independent of each other sharing little information. There was a lack of control over finances as affiliate directors had excessive freedom to commit resources, and accounting information was not collected in a timely manner. Without an internal audit department there was no verification that financial resources were used for their intended purposes. As such if the planning department, sales department, and accounting department each were asked how much cash was collected for any given period, three different answers were given.
- Though newly responsible for proposing regional tariffs and controlling costs the planning and economic department was still the same size (7 persons) as when this entire function was managed in Moscow. In addition to being understaffed, the economics director and most of the staff were engineers with little or no training in economic or financial analysis. This condition allowed for little control over costs and resource management, and had contributed to a steady rise in the cost of service, as all costs are passed along to consumers under a cost-plus system. The budget process was based on unrealistic assumptions on cash flow and prices leaving the management to constantly scramble for working capital and allowing better operations to control costs.
- The accounting department continued to operate under Russian Accounting Standards (RAS) only. These standards are inappropriate for a commercial business and provide misleading information about an energo's financial condition. As long as the financial reports continued to hide the true financial condition of the company, management would continue to make improper operating and investment decisions.

- The Information Systems Department only concerned itself with collecting and disseminating technical information. Those departments that collected revenue, spent resources and accounted for these transactions hardly communicated with each other. Accounting information was generally collected and consolidated three months after a transaction had occurred. This left management with little information from which to operate with and meant that decisions were made with incomplete and outdated data.

Much of the problems facing an energo are outside of its control, due to regional political control over the tariffs (which dictates payroll) and outdated centralized control over staffing levels. An outdated staffing department at UES still dictates the number of employees needed in each department and their pay levels. This means that energos are limited in hiring more financial experts, and eliminating unneeded positions. Even though the energos are nominally independent in managing their internal affairs, regional energy commissions (RECs) use the outdated UES employment instructions to set the payroll component in the tariffs.

Work Accomplished

With about 7 times the number of employees per kWh sold to the ultimate consumer in comparison to Western utilities, no strategic management and weak control over subsidiaries, Russian energos require major organizational restructuring and re-staffing. Hagler Bailly analyzed the senior management structure at both Permenergo and Novosibirskenergo. New organization charts were developed to better reflect the type of management structure needed in a commercial company. Senior management was told that they needed to stop managing the day-to-day operations of their companies and concentrate on strategic issues. This could only happen if management structure became more vertical. Operational efficiency was enhanced by adding key financial control positions, and defining responsibilities of executive and managerial positions inside the corporate office and its affiliates.

In addition, Hagler Bailly addressed the lack of human resource management in these companies. Work was begun to clearly define and better analyze employees work. Previously, the bonus portion of compensation was often based on factors totally out of the control of the employees. For example, at the Sales department their premium was based on technical losses, which was the responsibility of the grid company. New compensation schemes were proposed and adopted at Permenergo and Novosibirskenergo. In addition, a Human Resources Manual and Management Development Program were developed and delivered to provide a basis for developing new human resource management procedures.

The Human Resources Manual provides comprehensive advice on developing a human resources department. It includes recommendations on organizational structure and staffing, hiring, employee retention, employee development and compensation. This manual also provides examples and sample forms for many of the human resource functions, such as Position Description, Employment Application and Performance Evaluation.

A proposed curriculum for a management development program was developed for each energy. This program provides instruction on developing management skills in the areas of Managing Interpersonal Skills, Managing Individual Performance, Managing Team Performance and Managing Change. It is designed to be used either for individual study or classroom training.

Status of Deliverable

Hagler Bailly has delivered a program for developing new organizational structures at two regional power companies (Attachment 2.09). New financial management structures are already in place at both pilot energies. In addition, new human resource management procedures and manual have been developed that provide a basis for taking human resource management out of the Soviet era (Attachment 2.10).

The most likely place to concentrate future efforts is at RAO UES, which controls staffing standards. The entire industry needs to develop a new human resource policy. Hagler Bailly has proposed a new organizational structure for RAO UES. At the most recent shareholders' meeting, organizational restructuring, management development, and other issues identified by Hagler Bailly were included in RAO's action plan. As it lacks sufficient organic management resources, RAO UES will require significant support for the next 3-5 years to implement the plan.

Task 2 A, Deliverable 3 – Improvements in customer relations and operating efficiency

Customer service is an enormous problem throughout the Russian power system. Under the Soviet system of production, industrial customers were given a "planned" amount of power that they were obligated to consume. In addition, customers were responsible for maintaining their own meters and transformers. Reading the meters and tracking losses was not important for the power supplier because the only measure that counted was reported consumption. As the customer had an obligation to consume the planned amount, the entire concept of customer service was unthinkable. Residential customer had little or no consumer electronics, so their consumption was negligible. So low was residential consumption that power companies' did not even bother to meter it.

Since the break-up of the planned economy the situation has changed drastically.

- Industrial demand has fallen steeply
- Residential demand has jumped
- Theft has become epidemic as tariffs have risen
- Technical losses have risen dramatically from the shift in demand and lack of maintenance

At the same time Regional power companies did not have the typical tools to combat losses. Metering was of poor quality or absent, making it impossible to calculate power balances to track losses. Customers were still reporting their consumption, creating opportunities to cheat. Metering and billing systems for residential customers were absent.

Work Accomplished

The Number of personnel supporting the customer service operation of Novosibirskenergo and Permenergo was insufficient to handle all customers in the region. In order to implement an aggressive metering and billing policy, Hagler Bailly recommended an increase in the number of meter reader/inspectors, the installation of new meters, the introduction of meter reading cycles, and the adoption of an automated billing and metering system. The management of the Sales (Energosbyt) department of Permenergo was not active in supporting necessary changes to the system. Alternatively, the management of the Sales department of Novosibirskenergo was more recently installed and very enthusiastic about improving collections and customer service. Therefore most of the work was accomplished at Novosibirskenergo.

To address customer relations with large customers several steps were taken. New contracts were prepared, based on examples from US power companies. These new contracts give the energo much more control over metering, reward customers for managing their consumption, and stiffen control over payments. At the same time Hagler Bailly worked with senior management to allow the Sales department more control over barter, which represents about 70% of collections. Assistance was given in the initial development of a new software system for tracking barter payments. In addition, cash minimums were introduced for all customers to begin the process of squeezing barter out of the system.

A significant portion of the work was spent assisting Energosbyt in completing the development of an automated meter reading system for large customers. At issue has been over control of the meters, and convincing senior management to allow the Sales department to have full access and control over metering systems. Technical assistance has also been given in planning the metering system and in selecting the necessary communication support system. Pending final selection of the communication supplier the system should be operational by the end of the year. The system will allow the energo to both accurately bill customers, better manage dispatch, offer time-of-use (TOU) tariffs and increase the power factor for customers.

The most work to date has been in creating a billing and metering system for the residential sector. Previously, these customers were ignored and payments were not tracked. But as industrial demand falls and individuals purchase more electric appliances the residential sector demand has soared from a nearly negligible amount to almost 30% of the useful output of electricity from Novosibirskenergo. This sector is now a major source of cash in the system.

Previously, customers read their own meter and decided how much they would pay. Because the energo rarely verified meter readings, and losses were ever increasing as demand and tariffs rose. Disconnection for non-payment is not effective because customers routinely reconnect themselves. The existing low-voltage network design creates many opportunities for theft. The initial step was to measure the actual losses. Energosbyt was expecting losses of 20-30%, which they considered pessimistic. When group meters were installed and control readings taken it was shown that actual losses were as high as 80% in some areas, particularly in winter. Theft is the main reason for such high losses. It was also discovered that technical losses were higher than

anticipated. This is due to voltage drops from increased demand, overloading the primary and secondary distribution grids, as well as old equipment.

To address this problem Hagler Bailly relied upon its experience in other CIS countries. The recommendation was to re-design the system by having the meters taken out of homes and placed in metal boxes to limit access. The standards for this project are that moving the meters should

- 1 Provide Energosbyt employees with unhindered access to the meters
- 2 Maximize the use of the existing power supply system
- 3 Limit electricity theft possibilities
- 4 Minimize costs

The project has also been expanded to rehabilitate and upgrade the low-voltage network in some areas so as to reduce technical losses and increase the operating efficiency of the network. Customers have been harmed by the poor condition of the network as it has been demonstrated that they generally receive only 130-160V in their homes, rather than the 220V that they are paying for. One side-benefit of this work has been that the grid company and the sales company have begun to cooperate working as a team for the first time in reducing technical losses and commercial losses.

In conjunction with moving meters Hagler Bailly developed an automated metering and billing system, adapted from the system developed under USAID assistance for the Armenian power system. Even before meter readers have full access to the meters they will begin reading meters on cycles and inputting all data on the billing system. This system will not only print bills, but track payments, financial balances, power balances, print disconnection notices and much more. The REC and Energonadzor, the Energy Inspectorate have approved the project and customers have already voluntarily signed new service contracts in the pilot project zones. The initial individual meter boxes have been installed at the first two pilot project sites and Novosibirskenergo's management has approved the installation of new metering systems at a third site.

Status of Deliverable

New residential metering systems are completed in two of the five pilot project zones, with work continuing. The five zones will be the testing sites and the model for further system upgrades. These experiments, or 'pilots', are being conducted to demonstrate that losses can be reduced by controlling access to the meter and controlling the reading and billing cycles. Under this system the power company will now own and control the meters. The meter boxes will greatly increase access to the meters for inspectors. This will allow the power company to move away from customer initiated metering and billing to meter reading cycling. They will also reduce theft by reducing access to the electric power lines before the meter.

A beta version of the Abacus billing and collections software package has been installed, allowing the Sales company to begin metering cycles. Even without the new metering hardware, cycles can be initiated. To begin the process of moving to metering cycles we are recommending that Energosbyt begin with six (6) month cycles. We came to the conclusion that given the current number of agents (inspectors) and the amount of meters

that can currently be read in a day, shorter cycles will not be feasible. Eventually, as more meters are moved out of homes, and thereby made accessible, the metering cycle can be shortened. At this point the length of the cycle is not as important as simply beginning the process. Already, other energos have expressed great interest in adopting this system, which will greatly enhance customer service, increase operating efficiency and save energy.

Novosibirskenergo has been very supportive of these efforts and the deliverables have been fully met (See Customer Service Review - Attachment 2.11). Yet much more work needs to be done, especially in industrial metering where we only scratched the surface. The main obstacle has been the lack of cash in the system. Much of the equipment needed has to be purchased and cannot be bartered for. Senior management has already allocated 1 million rubles for the purchase of new meters, meter boxes and insulated power lines. But finding sufficient resources for the complete system upgrade at this time is very difficult.

Task 2A, Deliverable 4 – Improvements in stockholder relations

To be commercialized, the company has to be freed from government control and subsidy and be able to rely on its own ability to raise capital through retained earnings as well as selling securities in the open market. To be successful, the company has to be viewed as financially viable and attractive to potential investors. This implies that the company can demonstrate a reasonable profit on its operations, and that investors and regulators can be reasonably sure that financial information and reports used by the company to demonstrate financial viability are accurate and timely.

Raising capital also requires that the government provide the right environment to attract investors. Lack of a clear government policy or even unambiguous laws addressing shareholders' rights are a major problem in Russia, and reforms need to occur at the Federal level first. The ballooning government deficit is also driving investors out of Russia, making the raising of additional capital very unlikely at this time.

Work Accomplished

Hagler Bailly provided information and informal training concerning the maintenance of shareholder relations. Although both energos had been privatized a few years earlier in the initial stages of reform, management had a weak concept of shareholders' rights and little understanding of the importance of shareholder relations. The management understood enough to know that IAS accounts, financial management, and better metering and billing systems are needed. Therefore, they were very supportive of our program.

Hagler Bailly has arranged that both energos will give presentations at an investment conference. Assistance was provided to the management to prepare their presentations. This will be an excellent opportunity for both energos to promote the changes that are occurring in their companies that address shareholder needs.

Status of Deliverable

In the current situation of low confidence in the Russian government and no liquidity in the Russian stock market it is impossible to judge whether the project had any impact on shareholder relations, as the proof would be in the share price. However, in the long run we believe both Novosibirskenergo and Permenergo will be better prepared to go to the capital markets. They will be able to show their accounts in IAS format and demonstrate that concrete measures, such as corporate restructuring and new metering and billing systems, have been implemented.

Task 2A, Deliverable 5 – Improvements in cash collections

When the work plan for the Commercialization project was written in the summer of 1997, Boris Brevnov was the newly appointed President at RAO UES. The Government of the Russian Federation gave Mr. Brevnov one overriding task – increase cash collections. The newly modified DO 8 and the work plan reflected that priority. Hagler Bailly was under pressure from both Mr. Brevnov and the IFC Reform Implementation Unit to construct a program that solved the collections problem as soon as possible.

During our work, it became increasingly clear that most of the immediate cash collection problems are political rather than technical or organizational in nature. The government was financing its budget shortfall by not paying its energy bills. This, in turn, forced the power companies to avoid collecting cash as the only way to avoid paying taxes. In accordance with Article 855 of the Civil Code of the Russian Federation and Order Number 1212 of the President of the Russian Federation, an energy company that is a debtor to the federal government has to make payments in the following sequence:

- 1 Satisfaction of damages to life and health and claims for child support (elements)
- 2 Compensation to contracted private individuals
- 3 Payroll and payments to pension fund, social insurance fund, occupation fund
- 4 Payments to budget and off-budget funds which are not included in number 3
- 5 Payment of all other court-ruled invoices
- 6 Payment in accordance with other invoices

This means that even though the Russian government is creating the non-payment problem, it is the energy company that loses its freedom to manage its financial resources. Based on this list, all cash collected that exceeds about 20% of revenues must be automatically paid to all budget levels (i.e., taxes). At the same time, the government is forcing the power companies to supply it with credits by not paying its power bills. These conditions encourage the energy companies to maintain in its bank account only the minimum amount of cash to cover payroll obligations and some other cash expenses. Consequently, all payments that exceed payroll requirements, even if it were possible to receive them in cash, are being demanded in the form of promissory notes (veksels) and goods. Withholding taxes forces the government to settle its outstanding payables to the power sector through tax cancellations. Due to this unusual situation, it is ill advised for us to recommend to the energy companies to raise cash collections any further.

Therefore, the Commercialization team shifted the focus in the energy companies from simply raising cash to developing systems that would improve billing and collections and customer relations. When the financial situation in Russia stabilizes, these systems and procedures will help the energy companies collect additional cash.

Work Accomplished

Hagler Bailly pushed for government control over energy spending. One of our original recommendations (11 October, 1997) for resolving the non-payment issue was for the government of the Russian Federation, plus regional and city governments limit its consumption to that level for which it could pay. The Federal Government adopted this recommendation, and on January 5, 1998 issued a decree limiting energy consumption for all federal agencies and services (Decree #1). This decree is currently being implemented and all government agencies have received energy limits for 1998 from the Ministry of Energy.

It is crucial to break the barter chain that has gripped the country. Barter arrangements inflate the cost of service, and allow profits to flow to middlemen. This produces a negative affect on the Company's financial health and results in the deterioration of Company assets. It also affects the ability of the energos to pay their employees on time and in cash.

Barter arrangements are not transparent and provide the opportunity for hidden deals, especially at the level of intermediate companies. Promissory notes are a type of barter and also result in a financial loss to the company since they also inflate the value of goods and services. It will not be possible to develop a competitive wholesale market for energy in Russia as barter renders tariffs, and therefore prices meaningless. Negotiating prices and making settlements in such a system would be too complicated.

The barter system is also unfair to customers as it defeats the purpose of having regulated tariffs. As barter prices are negotiated, customers that are friendly with the power company, or well connected can receive considerable discounts on their energy. These losses incurred by favoring one company must be recovered by imposing higher tariffs (through tougher barter conditions) on other customers. For example some companies can pay in 100% barter, while others are forced to pay in cash. Barter payments are always at a discount. A power company should have some flexibility in rates, based on consumption patterns and preferences. But the power company's tariff policy should be approved by regulatory authorities due its to monopoly position. The barter system is unfair because it is opaque and cannot be regulated to ensure that monopoly power is being abused.

To raise cash levels, and support more fairness in the system we proposed cash minimums for all customers. Our team was concerned that many customers had become to believe that they would never need cash to pay energy bills. The cash minimum was adopted and implemented at both energos and RAO UES (Attachment 2.12). Hagler Bailly recommended that the cash minimums be slowly raised to gradually squeeze barter out of the system. Moving straight to a cash-only system would not be feasible because customers need to plan their cash needs in advance.

Since the Commercialization program began cash collection has increased from under 10% to 20% of total revenues. We have strongly recommended increasing the number of disconnections as a way of forcing collections in both the residential and industrial sectors. At Permenergo, these decisions were being made by a committee, with

participation of the local government. This made it very easy to avoid making hard decisions and injected too much politics. Hagler Bailly recommended a more aggressive, formal, and fair policy for disconnection be put into place that treats all customers the same.

Hagler Bailly has made recommendations to UES and the government to develop an impartial and fair system of pricing and disconnections. It is necessary that all parties involved, including the federal and regional governments, come to an agreement on all main principles of operation of the energy industry. Power companies are restricted from disconnecting many customers by government decree #74 of 28 January 1998. This decree needs to be revoked and a clear energy law enacted.

Resellers of heat and electric services pose another serious problem. For example, at Permenergo there are two additional parties engaged in heat distribution, sales, and revenue collection. In the city of Perm the distribution of heat and maintenance of pipes is the responsibility of Permgorkommunteplo, a municipal entity. The collection of residential revenues is the responsibility of municipal housing maintenance agencies. These agencies are also responsible for collecting revenues for all other utilities except for electricity. Although this municipal entity collects all payments from the population in cash, for the first half of 1997 Permenergo received only 2.5% of the total payment of 65.5% in cash. Based on our recommendations, both energos have moved to have energy payments made directly to the power company.

Another focus of Hagler Bailly's collections efforts at Novosibirskenergo and Permenergo involved recommended changes to the structure and operations of the Sales division – Energosbyt. There were many functions within the energo that were duplicated both in Energosbyt and within the management of the energo. Many services related to barter and veksel transactions were established exclusively apart from Energosbyt. For example, at Permenergo there were two legal divisions handling contracts and non-payment issues and each subsidiary had the authority to settle accounts receivables through barter. Hagler Bailly recommended consolidating the legal department and all barter operations. A new Legal Service Group at Permenergo was established to monitor and approve barter transactions, and a separate Commercial Division was established to make all barter settlements.

At Novosibirskenergo Energosbyt the system was better structured around a main office, but there was little control or communication between the subdivisions and the headquarters. The existing computer systems at the headquarters and in the subdivisions are not integrated, so comprehensive reports on sales, collections and arrears are difficult to produce. This results in headquarters not knowing total customer information for their system and prohibits factual analysis of problems. Hagler Bailly advised that the collections system be integrated throughout the entire company. This work has nearly been completed.

Status of Deliverable

Hagler Bailly has been successful in raising collections and revenues at both Novosibirskenergo and Permenergo by introducing a cash minimum, new procedures and better controls. The new metering systems under development at Novosibirskenergo will

have a strong impact on the bottom line of the company. But some of the impact will not be fully visible until the Russian government takes the steps necessary to eliminate the barter economy. This can only be accomplished by concurrently reducing government debt to the power sector and by allowing (or forcing) the energos to disconnect customers that do not pay in cash. Energos must keep cash collections down to maintain an offsetting non-payment balance with the federal and local governments. Political meddling in collections also reduces cash receipts.

Future work on increasing cash collections should concentrate introducing better metering and billing systems at the energos, better collections policies and a willingness to disconnect non-paying customers. But this will only be successful if done in conjunction with stricter government policy on budget control and a law on energy that clearly specifies both supplier and customer obligations and rights.

Task 2B, Deliverable 1 – International Accounting Standards in use by September 1998

Despite the general similarity of Russian and international accounting standards their application is based on different basic principles, theories and goals. The difference in the two systems leads to significant differences in financial statements made in Russian Federation and in Western countries. Thus, in order to harmonize accounts with international business community, many Russian enterprises are introducing IAS (International Accounting Standards) for preparation of their financial statements.

There are several reasons for Russian companies to prepare their financial statements in accordance with IAS. One of the most important reasons is the ability to attract outside investments and to strengthen company's image in international business world. When a company applies for foreign financing or goes to the international markets, it will inevitably be required to supply the potential creditor, investor or business partner with a large volume of financial information in IAS format. This requirement can be easily met when the company has western type system of financial recording.

Second, and more importantly, is that IAS more closely reflects the economic activity of a company operating in a market system and will assist management in allocating resources and strengthen financial discipline within the entire company. A more transparent picture of the activities of an energo would help facilitate any future restructuring. Management at Novosibirskenergo and Permenergo expressed a high level of interest in using IAS, and to start IAS implementation in near future.

Work Accomplished

In view of the pilot status of this project and the vast importance of the practical introduction of IAS and having in mind the likelihood at that time that other donor agencies will step in to support the effort, the original scope of the task was extended. The work-plan was developed to become the first stage of a two-year program effort to move to IAS and implement Management Information Systems (MIS) and Decision Support Systems (DSS) based on the new system for financial accounting and reporting. Moreover the move to IAS was designed to proceed along two parallel routes, one using the backward oriented approach and the second using the forward oriented approach.

Financial management and decision making in general was enhanced by the practical introduction of a full-scope integrated computer financial model that generates pro-forma financial statements both according to Russian and International accounting standards. The model also calculates key financial ratios and helps develop scenarios needed in process of optimization of utility management.

There are two main approaches to producing IAS financial statements – backward and forward. In a well-designed transition to IAS it is recommended to use both for a number of reasons. The backward oriented approach is generally used by external accounting professionals and is usually referred to as “transformation”. Information is produced using Russian statutory accounting practice. First it is reclassified into IAS format. Further adjustments are made to Russian statutory Balance Sheet and Profit and Loss Statement by going back to source documentation and then IAS balance sheet, income statement and cash-flow statement are produced. Next, these are restated into foreign currency with the necessary adjustments. The backward oriented approach is a one-time exercise that is easier to organize and control. It can be implemented in a shorter period of time. It does not actually introduce IAS and cannot be used as a tool to improve utility management and operation. The information generated using the backward approach is generally meant for external users.

Under the forward oriented approach the utility records each transaction in a financial data/information system with sufficient details and in a format suitable for reporting both according to Russian statutory and IAS requirements. This approach is referred to as dual accounting. A dual accounting system was developed at Novosibirskenergo and Permenergo by introducing a new chart of accounts with a set of rules for recording transactions. From the dual accounting system chart of accounts information is posted into both the Russian statutory chart and an IAS standard chart from which two sets of financial statements are produced at the same time. The advantage of organizing a dual accounting system in this way is that transaction information is entered only one time and in one place. The best way to implement a forward oriented approach is to introduce a sophisticated computerized accounting system. Implementing a forward oriented approach involves changes in many departments and requires a large number of staff and consultants with considerable staff training, both accounting and computer. The forward oriented approach is both time-consuming and expensive. That is why it is usually broken into manageable stages, each stage with a progressive goal.

Despite all difficulties in implementation, this is the approach that is recommended when a company wants to introduce IAS in order to improve its management and operation. It generates enough information for all internal users to support decision making on all levels. It also provides the basis for adequate ratemaking and efficient regulatory procedures.

Status of Deliverable

Hagler Bailly designed and implemented at the energos two systems – one making use of the backward and one – of the forward approach. In addition a simple dual accounting software package ComTech+ was purchased, customized and introduced at all enterprises of the Energos. It used the new chart of accounts and generated both RSAP and IAS financial statements.

With the creation, installation and implementation of a dual accounting system the deliverable has been fully met. Both Novosibirskenergo and Permenergo will be able to

report 4th quarter 1998 financial results in both IAS and RAS. An initial consolidated IAS financial report (the first for a Russian power company) was completed at Permenergo (Attachment 2.13).

Task 2B, Deliverable 2 – Financial information used by energo management

Most management decisions at each energo were made based on managers' personal experience and intuition, rather than on economic calculations. One of the main reasons was a lack of reliable and timely financial information that the company's managers needed. Extracting such information from accounting documents takes too much time, or sometimes is even impossible. A huge amount of information appeared merely on paper, computer processing of information was unsystematic and inaccurate and the same figure may vary from one subsidiary to another. Some subsidiaries (Sales, Supply and others) have vast databases, yet even for specialists of separate units these data are difficult to use in day-to-day work, not to mention the whole company. Affiliates operate in information 'islands' with very little information being distributed making financial control difficult at best, and non-existent in places.

Work Accomplished

Long range financial planning (i.e., beyond one year) was not formally and routinely done at the company. Despite its difficult financial situation, the company needed to have as reliable an estimate as is possible of its financial future. A financial model provides the ability to perform iterations using different assumptions, helping management to select the most optimum array of alternatives to pursue. Investors and lenders also want to see what the future may hold for them.

To supplement the move to IAS and further enhance utility management, Hagler Bailly developed and implemented a full-scope integrated computer financial model. The practical implementation of the model was not only the culmination point in the process of introducing improvements to budgeting and financial planning at both Energos. The model was designed as a key tool for top-level management in the process of both day-to-day running and strategic management of the company. Thus it was the natural extension beyond the original scope of work that supported the practical commercialization of the Energos.

Status of Deliverable

The computerized financial model integrated all short-term and long-term operational forecasts and financial projections and generated pro-forma financial statements and management reports under different scenarios. It also provided the necessary link between planning and reporting according to Russian and international accounting standards. The master plan, information flow-chart and operational algorithm of the model were based on the structure and organization of the different departments at the head office and subsidiary enterprises. It took into account all existing practices and procedures for doing business (including barter and promissory note operations), the legal and regulatory framework in the country and the recommendations for improvements to maintenance and operation made by Hagler Bailly. As the model had to accumulate and process a large amount of information, a lot of local utility experts and management were actively

involved in the development process. The knowledge that these company experts acquired during the development process allowed them to actively contribute in the process of practical implementation of the recommendation to improve budgeting planning and financial management.

All the above systems and tools were designed and implemented to reinforce and provide the IT system basis for the changes in structure and organization that were implemented at both Energos. The positions of Director Finance, Deputy Chief Accountant for IAS, Financial Analyst and new departments within the Corporate Finance Division were established as a result of Hagler Bailly efforts to reengineer the Finance and Accounting Functions at both utilities.

Task 2D, Deliverable 1 – Training contractor will assist in constructing a training management program

Training throughout the power system in Russia has only been developed on the technical side. While the power companies have developed significant classroom training for technical skills such as welding instrumentation, electrical & mechanical maintenance and plant operations, there has been no emphasis placed on developing management skills training. In the past managing people and their skills was not seen as important. Overstaffing and minimal efforts was easily hidden under the command economy. Now, when the energos are suffering financially and Russia is needing to move into the competitive arena it has become critical to have a management team that can develop a workforce to its full potential in order to achieve optimum levels of performance. In order to have a highly developed and competent workforce the energos must have managers who are well trained and skilled at developing and leading people.

Work Accomplished

A Management Development Program manual was developed as a tool to educate managers in leadership skills. The program is designed for classroom training but can also be used by an individual manager as a study guide. The manual is divided into four main Sections:

- 1 Managing Interpersonal Skills
- 2 Managing Individual Performance
- 3 Managing Team Performance
- 4 Managing Change

Within each Section, there are individual modules or lessons that provide guideline to develop and practice specific management skills. Ten topic areas are presented within the 4 sections. Although the modules are designed to complement and build on one another, each module is designed to function as a stand-alone unit. This allows for flexibility in the training or workshop schedule. A workshop may be designed to teach one module at a time, a selected group of modules, or all modules. The skills sets include interpersonal relations, basic management principles, performance expectations, and more.

Each training module includes the following elements:

- Introduction - Provides basic information and background about this module and skills to be learned
- Purpose and Objectives - Identifies the concepts that will be introduced and the skills that will be taught in this module
- When To Use The Techniques - Introduces situations where it would be appropriate to use the techniques learned in this module
- Steps To Developing The New Skill - Examines action steps to be taken to develop the new skill introduced in this module
- Practical Application - This area provides an opportunity to practice the action steps associated with the new skill and identifies why each step is necessary, and how to implement each step
- Preparation Questions - Most modules provide a list of questions to answer as preparation for conduction meetings with employees or developing a plan of action

Status of Deliverable

Because of frequent management changes in RAO, there is no counterpart designated to be responsible for training and training could not be conducted. Therefore, the Management Development Program manual (Attachment 2 14) was submitted to the First Deputy Chairman of RAO UES for future use. To implement the training RAO UES needs to first develop a department responsible for conducting management training. The manual was also shared with Permenergo and Novosibirskenergo who had participated in the Commercialization Project.

LESSONS LEARNED

Progress in market reform is a reflection of not only the resources committed but also political will, the involvement of change agents and technical factors characteristic of each individual country. Political, social and cultural obstacles can block even the best recommendations. The following list identifies the major factors that should be taken into consideration and addressed early on in the process of formulating reform strategies.

Cultivate Host Country Leadership

Consensus, agreement, and existence of political will for reform at the highest levels of the host government or institution are essential requirements for success. In cases where multitude of power centers with overlapping decision making authority exists, earlier clarification of responsibility, authority, and accountability of reform teams has proved to be of utmost importance. The first step in the reform process is the early on identification of potential political obstacles and concerted effort in resolving them. The major problem areas are

- lack of consensus on objectives
- absence of political will for reform
- multitude of power centers and vested interests
- overlapping and conflicting functions of regulators and government ministries
- federal control versus regional interests
- ineffective decrees and laws

For further reforms to be accomplished in Russia a political consensus must be reached between politicians and customers. This consensus should then be enshrined in law.

Identify a Champion for Change

In many cases, objectives have been achieved by having an influential host country counterpart acting as the champion for the cause and enforcer of cooperation. Most managers strive to maintain the status quo and old ways of doing things, due to absence of any tangible incentives to change, and lack of personal stake in the reform process. To succeed in working with the host country power sector leaders, particular attention should be paid to understanding of the personalities and their mind-sets, attitudes, worries, and fears. The same applies to an organization, since the leader of an organization, in most cases, has a symbiotic relationship with his or her organization. Prevalent attitudes hampering reform in the Russian energy sector are exemplified by the following commonly heard pronouncements:

- Electricity is a social good for all and not a market commodity
- A vertically integrated power sector is a national security requirement
- An unbundled power sector results in loss of reliability and economic chaos
- The integrated system has worked well for many years and it is not clear why western countries want to change a system, which still keeps the lights on
- Change brings anxiety, chaos, uncertainty, with no tangible benefits in sight, whereas failures bring immediate reprimand and punishment from the above

To overcome old attitudes consultants must identify 'agents for change' who have a positive attitude toward reforms and will take a personal interest in championing them

Coordinate of Activities between International Donors

An important element of success in Ukraine and Kyrgyzstan for example, has been the development of a unified front and approach by the donor nations and the international funding institutions, coupled with the requisite political and economic influence in the host country. In Russia, donor agencies and other assistance providers must coordinate their efforts through the proper division of labor and elimination of overlapping or conflicting agendas

Set Realistic Expectations and Proper Incentives

Progress can be defined by measurable or identifiable piecemeal improvements in the multitude activities comprising the collective reform process. Piecemeal improvements have been achieved by following a simple formula for success

- Start with a correct impression of the current status and capabilities of the host country
- Set realistic expectations and achievable goals
- Identify the incentives and convey to the host country counterparts the benefits inherent in reform
- Take practical steps in the direction most amenable to change

Develop Core Competencies and Working Relationships

Continuity and consistency in Hagler Bailly assistance programs have been achieved through division of labor and creation of core competencies in specialized task groups working with specific groups of host country counterparts. The nature of the relationship between Hagler Bailly consultants or task groups and their host country counterparts has not been that of a provider and a client. There is no simple leader versus follower categorization of the relationships. To a great extent, the continued relationships are voluntary and mostly based on the perceived added value that the contractor participation brings to the work. The main ingredients to a good working relationship, in addition to professionalism and expertise, include patience and persistence, mutual respect, and most importantly, responsiveness to particular needs of the host country counterparts in solving their immediate problems. For a successful project it is essential to promote common understanding and values with counterparts

Take Technical Capabilities into Account

Experience has shown that to a great extent, any recommendation that ignores the current technologies and capabilities of the host country has little chance of acceptance by the local experts and policy makers. In Russia, process of unit commitment, generation scheduling, and dispatch and control, are still based, with minor adjustments, on old methodologies and technologies dating from the former Soviet Union. It would be a folly to assume that any recommendations will be implemented fully to the letter, unless it is

backed up with commensurate commitment of investments for upgrades in hardware and software and the necessary training and support. The same applies to the types of commercialization activities being recommended. Without proper accounting for staffing and equipment, any recommendation would be scaled back to match the capabilities unless resources were committed to overcome the inadequacies. Therefore, projects should take into account counterpart technology and capabilities to avoid trying to force recommendations that cannot be realized.

Plan for Organizational Constraints

The paradigms of organizational development and change observed in the advanced market economies should not be applied to the transition economies of NIS. In the NIS countries, reform in various sectors of the society and economy must move, more or less, in tandem. In the case of NIS, in contrast with other emerging economies of the world, these constraints are exacerbated by the lack of a historical market tradition, underdeveloped banking and financial institutions, outdated communication systems, nonexistent contract and trade laws, nonexistent shareholder rights and lack of efficient mechanisms for dispute resolutions.

An example is the development of regulatory agencies in NIS. A short list of constraints that has hindered or slowed down the development of a full-fledged and responsive regulatory tradition in NIS includes

- lack of political and legal mandate and overlapping of decision making authority with other government agencies,
- budgetary limits and shortage of funds for proper staffing and equipment
- bureaucratic and organizational traditions inherited from the past centralized state control of the economy,
- lack of legislative, judicial, and regulatory traditions for resolution of disputes,
- lack of trained personnel in the art and science of regulation,
- lack of available equipment, hardware and software, and
- lack of accounting standards, cost evaluation methodologies, price and tariff setting histories

Absence of managerial, financial, and business expertise requires the establishment of concerted training programs tailored to the future needs of a market oriented and competitive power sector.

RECOMMENDATIONS/NEXT STEPS

These recommendations are for the consideration of USAID, or any other donor agency, before further assistance is given for the development of competition and privatization of the Russian power system

WHOLESALE MARKET

For all the NIS countries the initial changes have been brought about through presidential or governmental decrees, orders, or edicts, which have set the subsequent tone and shape of transformations in their power industry. The effectiveness of these injunctions from above is debatable, because political and organizational, and sometimes technological, considerations diminish their effectiveness. For instance the political opposition by regional interests has prevented full implementation of a presidential decree in Russia requiring transfer of all thermal and hydropower plants greater than a certain size to RAO UES, the principal integrated transmission and generation company in Russia.

Moving away from centralized decision making and edicts requires judicious, legally based, decision making. Hence, the next step in the process of reform in Russia is through legislation, in order to define the main parameters of reform and to set the general framework within which the transformation is to take place. The fact that Russia has been unable to enact a Law on Energy reflects the difficult process of developing meaningful legislation and the lack of consensus among many interest groups represented by various parties and factions.

The main feature of the Hagler Bailly recommendations for NIS countries is creation of electricity wholesale markets based on a market members agreement. The wholesale market would feature competition of generation within the framework of central dispatch and control, but also allowing for direct bilateral contracts. The sequence of implementation, phasing of cost-based and bid-based competition formation of a contract market, and other features will be customized to the needs and requirements of the individual countries. Main features of the recommended Electricity Wholesale Market consist of

- In the long run, the vertically integrated power systems are to be separated into transmission, generation, and distribution sectors, with central dispatch administration responsible for reliable and least cost operation of the electricity network and scheduling of the wholesale generation. The Electricity Wholesale Market will be based on the participation of Market Members comprising the wholesale market producers, i.e., generation companies, and the wholesale market customers, i.e., distribution companies, large customers, and non-tariff retail suppliers.
- The Regulatory Agencies in each of these countries will be responsible for regulation of the natural monopoly sector (transmission, distribution, market supporting organizations), oversight of market operations and competitive generation sector, and protection of retail consumer interests. Governance and supervision of the electricity wholesale market will be based on a Market Agreement of Members, with supervision and auditing powers vested in a Market Board or Supervisory Council elected by the

Market Members Changes to Market Rules and Procedures will be voted by the general membership and approved by the regulatory agency

- The Electricity Wholesale Market Supporting Organization will be based on a Market Operator that contracts for services with Dispatch, Settlements, Funds, and Reliability Planning Administrations These organizations will be required to operate according to the Market Agreement and Market Rules and will be subject to supervision by the Market Board or Supervisory Council, and overall oversight by the Federal Regulatory Agency
- The generation commitment, scheduling, and dispatch will be based on optimal system operations subject to system reliability constraints and least-cost operation of generation Initially, dispatch will be cost-based, and in appropriate times, bid-based dispatch will be introduced As conditions permit, bilateral contracts will be introduced Capacity pricing should reflect long-term requirements for the sector growth
- Retail prices will be unbundled reflecting generation, transmission, and distribution cost components, and as the conditions permit, retail competition will be introduced Regional Regulatory Agencies will be responsible for regulation of local natural monopolies, cost allocation between generation and distribution functions of franchised suppliers, setting of distribution charges, and protection of rights and interests of retail customers

COMMERCIALIZATION

The goal of the Commercialization program has been to prepare Russian power companies for privatization and competition Privatization is one of the thorniest issues in Russia Notwithstanding economic efficiency and business accountability arguments in favor of privatization, the Russian government has not been able to overcome resistance to loss of state assets With all the national security implications, privatization of the power sector is viewed as dangerous to the state The public is equally suspicious of privatization of state assets due to past and present abuses Initial attempts to interest investors in buying shares in local distribution companies have been unsuccessful mostly because of opacity of accounts and low or nonexistent profitability of distribution and generation companies Another major problem has been the undesirable prospects of little or no management control by the prospective investors as potential minority shareholders

Much has been done in the course of DO8 to introduce commercial management procedures and technologies, but there is a limit to how much can be done In the current framework of state control there is insufficient motivation and financial reward to fully convert to commercial management Until there is an opportunity to make profits there will be no financial reward for investing in new accounting, financial management, and customer service systems Therefore, future commercialization assistance should be tied directly to a commitment to privatize

ATTACHMENTS

The following lists the

- Contract Deliverables – listed in the “Deliverable” section of the Delivery Order
- Contract Reports – required in or prepared under the work statement, but not listed as a ‘Deliverable’
- Other reports – other relevant reports

1 WHOLESALE MARKET (contained in the “Wholesale Market Attachements” binder)

Phase III Task No	Deliverable	Attachment	Title
1	1	1 01	Electricity Wholesale Market Pricing Recommendations
1	1	1 02	Assessment of System Hardware and Software Requirements
1	1	1 03	Additional Services in the Wholesales Market for Electric Energy and Capacity
1	1	1 04	Grid Code of the Russian Federation
1	1	1 05	Operating Procedures for Grid Code
1	1	1 06	Proposals for Changing the Cash Payments System in the Federal Wholesale Market
1	1	1 07	Rules for Determination of Centralized Rate Discounts Used in Cash Settlements
1	1	1 08	Russian Wholesale Market Pricing Principles
1	1 and 3	1 09	Proposed FOREM Pricing Changes
1	1	1 10	Action Program to Improve Efficiency and Further Reforms in the Power Sector of the Russian Federation
1	2	1 11	Settlement Procedures
1	3	1 12	GOR Resolution On Fundamental Provision of Tariff Setting Regulation and Application of Tariffs for Power and Heat
1	3	1 13	Pricing Methodology for the National Energy Market
1	3	1 14	Overview of Pricing in the FOREM and National Energy Market
1	3	1 15	Issues Relating to Transmission Service Rates for RAO EES Russia
1	3	1 16	Economic Development Rates
1	4	1 17	Licensing Regulations
1	5	1 18	Charter of the National Energy Market
1	5	1 19	Methodology of Rate Calculation for Power Wheeling from FOREM
1	6	1 20	Agreement on Sale of Electric Energy and Power by Generator to the IFO
2C	1	1 21	Model Agreement on Joint Activities of Participants in the Interzonal Wholesale Market
2C	1	1 22	Model Agreement on Joint Activities of Participants in the Zonal Wholesale Market
	*	1 23	Terms of Reference to Develop a System for Mutually Coordinated Planning on the Basis of PRES Complex of Long-term Energy Modes of the UES and the level of CDA and UDU

ATTACHMENTS

2 COMMERCIALIZATION

Phase II Task No	Deliverable	Attachment	Title
2A	2	2 01	Work Plan to Implement IAS
2B	1	2 02	Introduction to International Accounting Standards
2B	1	2 03	Western Accounting Practices I
2B	1	2 04	Introduction to Financial Analysis
2B	1	2 05	Introduction to Financial Accounting Reporting and Analysis Compatible with IAS
Phase III	-		
	*	2 06	Diagnostics of Candidate Energos for the Commercialization Program
	*	2 07	Recommendations and Proposed Work Plan for Novosibirskenergo/Permenergo
2A	1	2 08	Financial Model
2A	2	2 09	Proposed Organizational Structure
2A	2	2 10	Human Resources Manual
2A	3	2 11	Customer Service Review
	**	2 12	Instructions on Cash Collections
2B	1	2 13	Consolidated Financial Accounting Report of Permenergo as of December 31 1997
2D	1	2 14	Management Development Program

* Contract Report
** Other Report

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