

PW. ACM-207  
110166

**TRANSMISSION AND DISPATCH  
CAPITAL ATTRACTION PLAN**

**CONTRACT NO. LAG-I-00-98-00005-00  
TASK ORDER 13**

*Prepared for:*

United States Agency for International Development  
AID/ENI/EUR/DR/EI  
Ronald Reagan Building  
1300 Pennsylvania Ave., N.W. Suite 5-10  
Washington, DC 20523

*Prepared by:*

Hagler Bailly  
1530 Wilson Blvd., Suite 300  
Arlington, VA 22209  
(703) 351-0300

*Contact:*

Dean White  
Masoud Keyan  
Tom Sherwood  
Roman Kramarchuk

March, 2000

A

---

# Contents

<b>Executive Summary</b>	<b>1</b>
<b>Findings</b>	<b>1</b>
<b>Next Steps</b>	<b>2</b>
Recommendation – Short Term	2
Recommendation – Medium Term:	3
<b>Chapter I — A Capital Attraction Plan</b>	<b>4</b>
<b>Introduction</b>	<b>4</b>
<b>Background</b>	<b>5</b>
<b>Restructuring versus Privatization</b>	<b>5</b>
Private Sector Participation Options	6
Service Contracts	6
Management Contracts	7
Concessions	7
<b>Estimates of Need – Defining the Problem</b>	<b>8</b>
Managerial	8
Financial	9
Possible Vehicle for Funding the Introduction of Management Contracts	11
<b>Other issues</b>	<b>11</b>
Need to Strengthen The Regulatory Framework	11
Need to Amend the Energy Law	11
Need for Greater Transparency	12
Need for Further Re-regulation of the Sector	12
Other – Sector Specific	13
Other – Non Sector Specific	13
<b>Chapter II – The Management Contract</b>	<b>14</b>
<b>Introduction</b>	<b>14</b>
<b>Areas of contractor responsibility</b>	<b>14</b>
Authority and Responsibility - Management:	14
Administration	14
Staff Deployment, Training and Development	14
Management Staff	14
Coordination with Donors	15
Contract Administration	15
Authority and Responsibility - Financial	16
Annual Operating Investment Plan	16
Operating Investment Fund	16
Authority and Responsibility - Technical/Operational	17

---

<b>Performance Measurement – Establishing a Baseline</b>	<b>17</b>
Base Year Data Report	17
<b>Performance Levels</b>	<b>18</b>
<b>Payments to Contractors</b>	<b>18</b>
Illustrative Fee Structure	19
Payment of the Base Cost of Management Services and the Management Fee	19
Payment of the Incentive Fee	19
Illustrative Performance Standard Weighting	20
Illustrative Calculation of Incentive Fee	20
 <b>CHAPTER III – RECOMMENDATIONS</b>	 <b>21</b>
<b>Recommendations</b>	<b>21</b>
Recommendations – Short-Term	21
Recommendations – Medium-Term	22
 <b>Conclusion</b>	 <b>23</b>

C

-1-

---

## EXECUTIVE SUMMARY

### FINDINGS

There is a clear need for both management expertise and investment in the Armenian electricity sector. Private sector involvement is necessary if the sector's investment requirements are to be met and managerial expertise is to develop adequately. Although multilateral and bilateral support appears likely to continue, such support cannot meet the sector's investment requirements. Nor can multilateral support impose from outside the commercial discipline necessary. Only private sector enterprises can do that, and a way must be found to insert them into the reform process, otherwise reform will not succeed and the investment to date risks being wasted.

The essence of this plan is to first introduce short-term management contracts (four to five years) and then let the operation of the transmission and dispatch enterprises on a concession basis and proceed with the privatization of the generation sector. Proceeding in this fashion will force the enterprises to adopt normative systems and procedures thereby imposing commercial discipline upon their operations.

During the period in which management contracts are extant, Multilateral Development Banks (MDBs), lenders and donors will be able to become increasingly confident that monies provided by them are being employed in an efficient manner. Also, while management contracts are in place, there will be time to effect those changes necessary in the legal and regulatory environment to decrease the risk to private capital going forward. Additionally management contracts will allow for time to effect (i) a realistic needs assessment, (ii) further tariff reform, (iii) the development of a least cost plan, (iv) tax reform, (v) further re-regulation of the industry and strengthening of the Energy Regulatory Commission, and (vi) actions by the National Assembly that are necessary conditions to privatization.

Tapping the private sector in this manner offers the potential for considerable benefits. These include:

- Improving management skills in the power sector;
- Providing opportunities for sector employees to earn reasonable performance-based salaries, to help prevent many of the financial abuses now seen throughout the sector;
- Increasing the quality of consumer service, an area that clearly requires more attention;
- Attracting investment to ensure that the present "fragility" of the system is supplanted by a reliable power system that can support the growth of the economy.

## NEXT STEPS

### Recommendations – Short Term

Management contracts must be adopted to reverse the “failure spiral” in which the transmission and dispatch entities now find themselves. The recommended next steps include:

- With the assistance of USAID, obtain support from the MDBs, lenders and donors for this strategy.
- Jointly sell the strategy to the Government and obtain its commitment to proceed; this will be the most difficult task because all the ramifications of a management contract should be agreed upon at this stage. It will be noted that one of the fundamental flaws in the ongoing distribution privatization process has been the inability to specify and achieve the necessary Government commitments from the outset.
- Concurrently establish a clear set of protocols and operating procedures for both the dispatch and transmission operations.
- Establish a tender committee to organize and conduct the letting of management contracts for the transmission and dispatch system. This committee should include representatives from the Ministry of Energy, the Cabinet, the Ministry of Finance, the High Voltage Network Electric Enterprise (ArmTrans), Armenergo, the Ministry of Privatization, and the Ministry of Justice. The Energy Regulatory Commission should also have an advisory role in the work of the committee in a capacity that does not compromise its independent status.
- The terms of all key contracts/licenses should be developed in tandem with the selection of an investment advisor and continue through the preparation of an information memorandum to provide potentially interested parties a clear picture of the structure of the transaction. An indicative list of contracts/licenses and documents includes the following: (i) proposed form of management contracts; (ii) license to operate the activity, transmission or dispatch, as applicable; (iii) wheeling agreements; (iv) connection agreements; (v) contracts or other mechanisms for the transfer of liabilities; (vi) tariff agreements; (vii) payment undertakings; (viii) reporting responsibilities; (ix) company by-laws; and (x) the relevant sector regulations/obligations.
- Additionally we recommend that contracts and other documents that will be part of the transactions and for which the Government of Armenia would seek consultation with pre-qualified bidders should be drafted during this phase.
- Similarly, licences and the regulations including at least the following areas: (i) prices and tariffs, (ii) quality of service standards, and (iii) operation of the system and dispatch, should be settled upon at this stage.
- Conduct a tender to retain an internationally recognized financial advisor with relevant experience to organize the bid for a qualified management company.
- Hold a tender to attract qualified management companies for ArmTrans and Armenergo.

### Recommendations – Medium Term

- During the terms of these management contracts, energy sector reform should be vigorously pursued. Impediments to private capital should be identified and removed, both internal and external to the operations of the enterprises (see “Other Issues”). The purpose is to pave the way for the letting of concessions for ArmTrans and Armenergo, and, by extension, for the privatization of the generation and distribution sectors.
- Post transaction support should also be rendered which would seek to expand the scope for competition in the power sector through further assistance to the Energy Regulatory Commission to clarify key policy objectives for this sector, such as efficiency, security of supply and environmental protection.
- The power sector’s future ownership and structure, and the regulatory structure should be defined and articulated clearly.
- The structure of the industry should continue to evolve in an open, fair and non-discriminatory manner.
- The terms of access to the transmission grid (which for the present remains a natural monopoly) should be regulated. Nodal pricing is likely to form part of any efficient transmission pricing scheme.
- The Energy Regulatory Commission will need to exercise particular care with subsidies and cross subsidies, and keep them under review. Direct and open subsidies are preferable to hidden cross subsidies and they should be transparently linked to clear policy objectives.
- The Energy Regulatory Commission will need to monitor the security of supply. It should seek to create a climate for long term investment that adequately responds to the diversity of supply issues in the entire energy market.

## CHAPTER 1

### A CAPITAL ATTRACTION PLAN

#### INTRODUCTION

This report is meant to propose a plan for the "attraction" of capital to meet the needs of the transmission and dispatch operations of the Armenian Electricity System. The precise amount of capital investment required is unknown but has been variously estimated to be on the order of \$150 million; it is worthy of note, however, that *existing managerial practices are only serving to enlarge this capital investment requirement.*

The Armenian Government does not have this money; the companies possess none of the systems necessary to ensure commercial operation; nor is the necessary legislation in place to allow for even their partial privatization. Assets and liabilities have yet to be defined. Budgeting does not exist. The time value of money is not understood, so investments are driven by what is affordable rather than what is economically efficient. A host of enabling legislation has yet to be adopted (or needs to be amended), and re-regulation is far from complete.

Yet it is the generally the conceded position of the Government and the World Bank that the transmission company (ArmTrans) and the dispatch company (Armenergo), while remaining majority state owned, will seek private capital to meet investment needs.

While there is a consensus that private capital is necessary, the issue is how to attract it. This report argues that, before private capital can be attracted to Armenia, the transmission and dispatch enterprises must be made to operate like commercial entities, and not be allowed to continue operating as politicized State Owned Enterprises (SOEs).

There are two challenges faced by the Armenian transmission and dispatch system; one is managerial and the other is investment related. It is important not to mix the two. They require different solutions. What Armenia needs at this stage is someone to assume the authorities of management and introduce commercial discipline under a management contracts funded perhaps partially by donors and/or the multilateral development banks (MDBs). There are numerous cases where this has been done successfully as a precursor to attracting needed capital (particularly in Africa). Under such an arrangement, improvement would be sought in three key areas of enterprise performance: administration, financial management and management of operations. Only then can the organizations attract the capital needed through private sector participation. At that stage, private capital can be sought through the letting of concessions which are appropriate vehicles to use where state ownership of the asset is maintained but private capital is sought.

The reason that concessions are inappropriate now is that the enterprises are not yet ready, nor is the legal and regulatory environment. It would seem reasonable for short term management contracts to be let for a period of four to five years, at which time the ground work for concessions can be laid. It is unrealistic to suppose that the capital requirements of these enterprises can be met through the sale of shares at present because the amount that might be raised would be nowhere near the amount necessary to meet the capital requirements of the companies, nor would the amounts offered be politically acceptable.

## **BACKGROUND**

Armenia is working to improve its electricity infrastructure. One of the greatest hurdles Armenia faces is the huge scope of Armenian infrastructure needs which are far beyond the financial capacity of the Armenian government and will remain so for the foreseeable future. Additionally, the ability to raise financing is further frustrated by the weakness of enterprise management and the lack of management information and control systems.

Multilateral development banks and a number of government donor agencies have acted to create programs that have helped make the Armenian electricity sector more viable. But the problems cannot be solved by these means alone because they demand more money and the imposition of commercial discipline, both of which are outside the capacity of the MDBs, donor governments and international consultancy companies to provide. The management resources of the private sector need to be tapped. The private sector holds the key to the Armenian electrical system's future.

## **RESTRUCTURING VERSUS PRIVATIZATION**

The term privatization is often used in various contexts and has come to be applied to a variety of different courses of action. This lack of specificity is dangerous because the uses of the term carry vastly different meanings and consequences, and such a misuse obscures rather than highlights possible solutions.

There are a great variety of restructuring and privatization models for public utilities ranging from minimum to full withdrawal of the State, and restructuring more often than not precedes privatization, its aim being to make the companies more attractive to potential buyers or operators.

At the minimum end of the spectrum the State retains ownership and operation of the utility and opts for restructuring (not privatization, but a step towards privatization), introducing modifications in the structure, work organization and human resource strategy of the enterprise, models taken from private enterprise. At this "minimum withdrawal end" of the spectrum, methods range from contracting out all or parts of the operations through management contracts (as has been done in many countries, particularly in Africa) where governments retain a say in the running of the company, to

granting concessions to private operators allowing them full responsibility for management and investment.

At the far end of the spectrum there is the partial or full transfer of ownership through the partial or total sale of shares to the national private sector or to international private or public companies. Finance privatization, through BOO (build-own-operate) and BOOT (build-own-operate-transfer) schemes and variations on them, are perhaps the options spreading the most rapidly at present in the utility industry.<sup>1</sup>

An examination of the Armenian situation as it applies to a large scale privatization of a "strategic" asset, shows that there are a myriad of factors, both internal and external to the operation of Armenergo and ArmTrans, which have to be addressed prior to the attraction of capital sufficient to meet either the needs of the system and/or the expectations of the Government. These factors are discussed throughout this report, but the most pertinent consideration is that it is premature to attempt to raise capital by selling shares in either ArmTrans or Armenergo.

### **Private Sector Participation Options**

Private sector participation (PSP) has to be viewed on a time line. The method chosen to promote it at any one time must reflect the state of the enterprise as viewed from the perspective of the private sector and must be competitive with the opportunities, risks, and needs enjoyed, faced and required by that sector in other markets.

As discussed earlier, restructuring and options can be separated into two main groups. In the first group, the public sector still retains ownership while the second group of options involves varying degrees and mixes of private and public ownership. Both the letting of management contracts and then the subsequent letting of concessions fall into the first group. Consequently, private ownership (i.e., privatization) will not be discussed further here but only mentioned as a longer term goal of the process Hagler Bailly's recommends be now set in motion.

Restructuring using private sector participation, where the public sector still retains ownership, broadly falls into three categories: service contracts, management contracts, and concessions.

#### ***Service Contracts***

Service contracts are the simplest form of PSP. The relevant public authority retains ownership and responsibility for operation and maintenance except for specific, relatively limited services which are contracted out to private service providers. Service contracts

---

<sup>1</sup> It should be noted that BOT does not involve the transfer of ownership; nor is it (or for that matter any of the other financing vehicles mentioned above) appropriate for Armenia for a variety of reasons not least of which is that it is designed to finance the construction of a project, not to provide a vehicle for restructuring an industry.

are commonly used for basic services such as maintenance, emergency repairs, billing and collection, and construction. These contracts require little or no investment by the service provider while the public authority bears all commercial risks. One major benefit of service contracts is that payments are directly linked to work performed rather than the fixed wage guaranteed to public utility employees. This type of vehicle is not appropriate for the current situation, because it allows managerial control to rest with current management which has already proven insufficient to address the needs of the enterprises.

### *Management Contracts*

Management contracts are more complicated than service contracts, but they are appropriate for ArmTrans and Armenergo at this time. Management contracts, in effect, transfer public authority to a private company for the operation and maintenance of a particular system or subsystem. The private company has much greater leeway to make day-to-day management decisions without assuming any commercial risks since the public authority is still ultimately responsible for the provision of services. Management contracts (as distinguished from Concessions) do not require the private sector participant to make large scale investments. Similar to service contracts, management contracts are paid for services rendered and commonly linked to various performance objectives and efficiency improvements.

Under a management agreement, a private contractor assumes control over the facilities from a public authority for a designated time period, operates, maintains, and manages the system including the operation and maintenance of offices, vehicles, spare parts, billings, collections and the financing of working capital. Workforce training is often mandated under the contract. The public authority is still responsible for capital expenditures, replacement of major works, debt service, tariffs, and cost recovery policies. Incentives are built into the management contract which are particular to the policy and performance improvement objectives agreed upon between the government and the MDBs, who, in general, act as financial guarantors where government credit is lacking.

Management contracts are discussed at length in Chapter II of this report.

### *Concessions*

Concessions are yet another method of private sector participation in which public authorities retain ownership. A concessionaire accepts overall responsibility for all services including operation, maintenance, management *and* capital investments to expand services. Fixed assets remain the property of the government but are entrusted to the concessionaire during the period of the contract. Such assets must be returned in like condition at the conclusion of the contract. By combining responsibility for investment and operations, operators have an incentive to make efficient investment decisions since they will directly reap the rewards of any improvements. As in the management contract, there are normally penalties attached to specific poor performance criteria.

As neither ArmTrans nor Armenergo are in shape to attract private capital at this time, concessions will not be further discussed in this report.

## ESTIMATES OF NEED – DEFINING THE PROBLEM

### Managerial

The willingness of any investor, lender or donor to provide capital is (or should be) conditioned upon the degree of professionalism with which the company is managed.

In Armenia, in general, and with respect to the electricity sector specifically, we have observed that management systems do not adequately provide for:

- Executive information;
- Customer information;
- Asset management;
- Cost management;
- Engineering resource management;
- Human resource management;
- Business/project modeling;
- Investment planning.

These critical deficiencies stem from the legacies of the centralized planning system. There has to be a transit to a financially driven decision making structure. What is needed in each organization (and what is lacking) is four-fold:

- A clear policy on the profitability objectives of the enterprise;
- A policy from top management supporting the application of financial criteria for decision making;
- Support for an aggressive retraining program directed at all levels of management to develop financial management skills; and,
- An incentive program to institutionalize the continued cooperation necessary to improve the profitability of the enterprise within all departments.

Credibility is judged by a standard of apparent openness. The path forward can only be achieved by exposure to western business culture and norms. It is clear that a culture of secrecy still prevails and works against the successful transition of these enterprises.

Within the transmission and dispatch operations of the Armenian electricity system there is no evidence of an ability to plan for profit in a western commercial sense wherein every resource has a cost, and every asset must be thought of in terms of its contribution to the profitability of the enterprise. This broadly defined concept of profitability is not yet driving decision making. The time value of money is not understood. Consequently all investment decisions are technically driven, with purchases ultimately made on the basis of what is affordable. No attempt is made to evaluate alternative investments based on their Net Present Value. The inference, therefore, is that scarce capital continues to be misallocated. Planning remains production oriented and crisis driven; a financial plan does not control.

Profit planning should encompass the development and execution of a complete financial plan applicable to all phases of the business. It should include the development of budgets for the control of expenses, sales and production forecasting, working capital management, and a systematic review of all factors which impact return on investment, both short and long-term. Moreover, the planning function should evolve to develop systems that manage results against approved profitability objectives.

But formal financial controls do not exist; nor are profitability goals articulated and promoted. Management must develop a system of formal controls, and top management must articulate a clear, specific profit objective. Day to day emphasis has to be put on profit improvement that will necessitate the interest and participation of the entire staff. For the program to succeed, lower levels of management must be convinced that upper management is vitally interested in the comparison of financial results against this plan.

For this reason, in addition to retraining at all levels, a formal program that recognizes and rewards profit improvement achievements should be created. This will serve to institutionalize the profit planning philosophy and bring about the continued cooperation necessary to effect a successful program. Currently, reward systems that promote individual achievement do not exist, nor have performance measures consistent with promoting commercial efficiency and the promotion of self-financing been adopted.

At ArmTrans and Armenergo it is impossible to develop a clear picture of assets and liabilities. Considerable effort will be required in this area of business definition to augment outsider confidence in the commercial viability of these organizations. Any outsider trying to evaluate the business now faces the difficult task of understanding the system's liabilities and what assets it controls. Management and the relevant Government authorities need to fully appreciate the need to define all of the liabilities to which an investor/financier would be exposed and all of the property over which the investor exercises dominion. Subsequent discovery of liabilities in particular undercuts enterprise credibility. Moreover, the greater the apprehension of undisclosed liabilities, the greater is the reluctance to provide capital. In most industries this in turn translates into higher costs of capital and a demand for faster paybacks. In the power industry where capital requirements are large and long-term by definition, such a lack of definition is fatal.

### **Financial**

The last ten years have been characterized by a general lack of investment in the Armenian electricity sector. Not only have new projects not been implemented, but basic maintenance and rehabilitation has not been carried out resulting in an accelerated deterioration of the assets in the sector. The crisis situation in the early 1990s, with its accompanying dramatic swings in system frequency, also caused considerable wear and tear on much of the electrical equipment, shortening the effective economic life of the assets.

In an attempt to define the scope of the problem, the World Bank and the Japanese OECF funded a "Pre-Feasibility Report for Armenergo Transmission Network" in July of 1997. This report was the result of assessments and inspections of a number of transmission

facilities network components and a number of substations, carried out mostly by the Armenian "Energyinvest" group. They observed that "much of it [the equipment] is aged well beyond its economic life." Further, they note that "in the best of circumstances, with very high maintenance cost and low availability, for equipment commissioned after 1980 not more than 10 years of operational life may be expected." The report goes on to conclude:

"The assessment of the existing situation has shown that it will be unreasonable to expect that any of the existing equipment will have minimum reliable operational conditions after year 2010 and that for all of them O&M cost during the period from now to 2010 will be very high with a clear tendency of sharp increases every year."

The system was characterized by heavy air leaks in piping and circuit breakers, advanced corrosion, unsatisfactory short circuit behavior, etc. The report included an inventory of the Armenergo transmission network and estimated the investment requirement for transmission rehabilitation at \$450 million to \$540 million with contingencies. Later in the report, a "capital cost estimate of a new reconstructed and upgraded Network" was also calculated based on 1996 prices. The estimated cost of this "upgraded network" of the 245 kV and 123 kV substations and the overhaul of the 220 kV and 110 kV lines totals \$547 million dollars and \$602 million with contingencies included. These were offered as estimates as there was (and is) no master plan for transmission system development for the country.

The World Bank, in its "Proposed Electricity Transmission and Distribution Project" Project Appraisal Document from January 1999, estimates the least cost rehabilitation of existing transmission and dispatch facilities at \$400 million in constant 1997 US\$ (about US\$150 million for transmission, the balance for distribution) to be implemented over 15 years (1998-2012). Additional investments are needed to strengthen interconnection with neighboring countries, expand the SCADA system, and upgrade distribution (replace 6kv network with a 10-20 kV network). This figure is considerably lower than that offered by the "Energyinvest" engineers.

Finally, Hagler Bailly's recent report on tariff design and tariff calculations puts transmission investment requirements at \$108.6 million for a 10 year period, based on both World Bank and Lahmeyer International inputs. This estimate was used to assist in the development of a transmission tariff.

While the discrepancies in the figures attest to the clear need for a more thorough assessment of the investment requirements of the transmission sector and the development of an appropriate investment plan, it is clear that substantial commitments are required.

While a World Bank loan may be attractive for some system needs, it will not directly address the underlying management issues in the industry. Management reform is a prerequisite to the efficient mobilization of capital. The MDB's and/or bilateral donors should consider financing the preparatory steps and provide the technical assistance

necessary to attract qualified western utility companies first through the retention of a financial advisor to guide the transmission company through the bidding process, including bid evaluation and final negotiations with the winning bidder and then by providing assistance in related issues necessary in supporting the longer term objective of letting concessions, such as: transmission tariff reform, strengthening the Energy Regulatory Commission, and improving the generation and distribution sectors through continued privatization and reform. Additional progress on these issues will further enhance the value of the transmission and dispatch companies when concessions are eventually issued.

### **Possible Vehicle for Funding the Introduction of Management Contracts**

There are currently several projects underway or under discussion which attempt to address some of the investment needs of the transmission and dispatch sector. These should be reviewed, as they may provide a vehicle for funding the management contracts proposed in this report.

In particular, the World Bank has an Electricity Transmission and Distribution Project under consideration, which would directly impact the transmission and dispatch functions. The proposed project is designed to be compatible with the work of other aid agencies including USAID, OECF (Japan) and KFW (Germany) so that the sector development is effectively executed and coordinated.

### **OTHER ISSUES**

As a general rule, private sector investment should not be attempted until adequate institutional structures and regulations are in place to ensure market discipline, particularly as it applies to the creation of a so-called "level playing field" between (remaining) state-owned/controlled companies and new entrants. In the Armenian electricity sector this requires across-the-board attention.

#### **Need to Strengthen the Regulatory Framework**

Accordingly, particular attention needs to be given to the regulatory framework to ensure regulatory mechanisms are in place to avoid cross-subsidization from monopolistic to competitive functions and that sector-specific regulations (e.g., licensing powers, supervisory powers) are fully operative. This in turn means that there be an independent regulator free of political interference. The Energy Regulatory Commission is only quasi independent at present and, at the time of this writing, its existence is under threat from the proposed amendments to the Energy Law being advocated by the Ministry of Energy.

#### **Need to Amend the Energy Law**

Moreover, the current Energy Law needs revision (though not in the manner proposed by the Ministry of Energy). The current Energy Law is deficient in several areas. Specifically, it needs to be revised so that:

- a) The Electricity Regulatory Commission is given the right (authority) to implement the Energy Law; it now rests with the Ministry of Energy.
- b) The Energy Regulatory Commission should be funded through licensing fees instead of through the budget. This will enhance its independence.
- c) The Central Dispatch Operation must be given the specific authority to give dispatch instructions to other power sector entities according to Commission approved operating procedures. It does not have this authority currently.
- d) A market membership union should be created as a legal entity in the power sector.
- e) The Energy Regulatory Commission should be authorized to define and enforce a disconnect policy for the power sector.
- f) The Ministry of Energy should become responsible solely for national energy policy and no longer be the owner of power sector assets. Ownership should be transferred to the Ministry of Privatization.
- g) Every government-owned entity in the power system should be managed by a Board of Directors made up of representatives from at least two and ideally three ministries.

### **Need for Greater Transparency**

Another *sine qua non* for the attraction of private capital is transparency. At the time of this writing there is a substantial risk that the privatization process of the distribution enterprises is being irrevocably altered in such a manner as to call into question the transparency of the process and thus undermine the credibility of the Government of Armenia's reform efforts. In particular, the Tender Committee is attempting to either extend the deadline for pre-qualification, reopen the tender, modify the announced pre-qualification conditions, or otherwise add to or subtract from the four companies which did qualify.

### **Need for Further Re-Regulation of the Sector**

There is a need for further re-regulation of the sector. Armenergo currently performs the role of Central Dispatch, while ArmTrans handles high voltage and metering, and both are under the authority of the Minister of Energy. The Government of Armenia should commit to a structure of service organizations, with separately delineated assets, responsibilities and accounts. This would greatly facilitate the introduction of private capital into the sector as a whole and into the transmission and dispatch companies in particular. Thus, the re-regulated Armenian power market would involve a number of entities/service organizations, working together with the unbundled generating and distribution enterprises. These service organizations and their primary responsibilities would include:

#### Wholesale Contracting

- determine total system needs
- contract for capacity/energy and ancillary services
- contract for transmission.

Central Dispatch - Armenergo

- Maintain the grid code
- Determine ancillary service requirements
- Schedule, commit, and dispatch generation
- Coordinate short-term planning
- Obtain market information for settlements.

Settlements Center

- Calculate services provided and payments due
- Calculate services received and payments to be recovered
- Determine monthly allocation factors for funds received during shortfall situations.

Funds Administration

- Manage the escrow account for receiving and paying funds.

Transmission - ArmTrans

- Own and operate the transmission network
- Develop long term planning scenarios
- Meter all points on the wholesale market and ensure the integrity of the data acquisition process;
- Connect new customers.

**Other – Sector Specific**

Another task which needs to be undertaken is a review of contracts and an evaluation of measures necessary to clarify liability for past environmental damage. Also there is a need for: (i) a realistic needs assessment, (ii) further tariff reform, (iii) the development of a least cost plan, (iv) tax reform, (v) further re-regulation of the industry, and (vi) actions by National Assembly supportive of the privatization process.

**Other – Non Sector Specific**

Finally, general legal issues of concern to private investors which need to be addressed are: legal limits on private participation/foreign participation in projects, laws on private ownership, land acquisition, land rights, restriction on transfer, titling, rights of way for transmission, legal provisions on expropriation, labor and immigration laws, and the law on competition.

## CHAPTER II

### THE MANAGEMENT CONTRACT

#### INTRODUCTION

In this section, the areas of responsibility assigned to a contractor under a management contract are described along with an illustrative description of how contractor performance can be benchmarked and measured as well as how the contractor can be compensated. In Hagler Bailly's opinion, much of the structure being considered for the management contracts for the Georgian power sector are equally valid in Armenia.

#### AREAS OF CONTRACTOR RESPONSIBILITY

Management contracts set about to improve three key areas: the management, financial and technical performance of an enterprise. Specific tasks and objectives for each of these areas are as follows:

##### **Authority and Responsibility - Management:**

###### *Administration*

To improve the accountability of the administration of the enterprise the task is to compile and maintain operations, maintenance and financial records and report periodically as appropriate on facilities and systems operations, regulatory matters, maintenance plans and activities, financial performance, and other relevant information to the government (owners), lenders and donors. This will be accomplished through the application of international accountancy standards and the imposition of a budget.

###### *Staff Deployment, Training and Development*

A staffing plan for the enterprise should be developed covering recommended improvements to the management, organization and supervision of the entire enterprise, as well as recommended training and development programs for management and operational staff. Once approved, the contractor would implement the training and development programs and update and monitor the programs on an ongoing basis, the expectation being that the number of the Contractor's foreign personnel on site will gradually decrease as local nationals are trained in new management systems and practices.

###### *Management Staff*

Contractors will provide qualified key management staff to meet the responsibilities of each position listed below. Contractors will be able to create or modify business organizations for transmission and dispatch; hire new employees; terminate the employment of existing employees; create or eliminate job categories; reassign

employees to different duties; raise or reduce salaries; create and modify personnel policies; and otherwise manage the work forces of Armenergo and ArmTrans in accordance with Armenian law.

Field of Expertise	Examples of Task Coverage
General Management	Overall management of dispatch and transmission of electric energy. Reporting and coordination with Wholesale Market Members.
General Accounting/Finance	Balance sheet, profit and loss statement, financial reporting, accounts receivable, accounts payable
Cost Accounting/Budgeting	Cost centers, variable and fixed costs, budget preparation and reporting, variance analysis, asset management
Legal	Contract administration, compliance, market rules
Planning	Least cost planning, strategic planning, emergency planning tariffs, pricing
Engineering	Technical code, generation, transmission, dispatch, metering, technical losses, system operations, system protection
System operations	System operations, maintenance budgeting and scheduling, storm restoration, right-of-way management, substation operations and maintenance, relay maintenance
Construction Management	Project management, budgeting, project accounting
Safety	Electric safety codes, occupational health and safety, accident prevention, safety rules, training
Procurement	General equipment and services procurement, tenders, inventory control
Computer Systems Administration	Operation and systems administration of all existing computer systems, development and implementation of all needed software applications
Database Management	Operation and systems administration of all existing database systems, development and implementation of all needed software applications
Public Communications	Customer service, public relations, government relations, regulatory relations
Human Resources	Training, benefits, compensation
Office Management	General office management

***Coordination with Donors***

It is particularly important for the contractor to coordinate its actions with the implementation of on-going projects funded by the World Bank, KfW, and other donors already involved in the sector.

***Contract Administration***

Almost immediately after signing the contract, the transmission and dispatch companies should provide the Contractors with copies of all contracts. The Contractors should then determine whether the contracts conflict with the Energy Law and other standards of Best Utility Practice. The Contractors identify for the Energy Regulatory Commission the contracts that, in Contractor’s view, should be terminated or modified, along with the reasons for termination or modification.

**Authority and Responsibility - Financial**

Under a management contract the Contractor will:

- Assume control of cash;
- Assume control of receivables;
- Assume control of payables to employees, providers of goods and services, tax authorities, or other parties to whom payments are due;
- Prepare and implement budgets;
- Bill for dispatch and transmission services;
- Accept credits or loans from banks or donor agencies;
- Contract for and conduct audits;
- Maintain accounting and other records;
- Otherwise control the financial operations of the enterprises; and,
- Develop a prioritized long-term capital improvement and rehabilitation budget.

To improve the efficiency of revenue collections the Contractor will:

- Develop, supervise and direct a program to identify illegal taps and convert these connections to legal service connections;
- Develop, supervise and direct a program to update the database of connections and to classify the actual use in accordance with current tariff definitions;
- Develop, supervise and direct the installation of computerized administrative and accounting systems and train the employees in use;
- Complete conversion of the accounting system to report in accordance with International Accounting Standards by a date specific.

***Annual Operating Investment Plan***

The Contractors should also identify the annual capital investment required to achieve a reduction of losses, reduction of system costs, and improvement in the reliability and quality of the power supply and any other investment that would have a positive impact on the technical or financial performance of the enterprises.

***Operating Investment Fund***

An Operating Investment Fund (Fund) should be set up from revenues received from the transmission and dispatch tariffs. The Contractors would then oversee the use of the Fund with priority given to those projects that will result in the reduction of losses and improved financial performance through more efficient operation, maintenance, administration, and rehabilitation of the system. The Contractors should carry out those repairs, rehabilitation, reinforcements and system expansion and equipment purchases and upgrades which are specified in the Annual Operating Investment Plan to the extent that they can be paid for from the Operating Investment Fund.

**Authority and Responsibility - Technical/Operational**

The Contractors should have the right to use the system's land, structures, fixtures, facilities, equipment, software, and other assets as they deem necessary to operate the system in order to:

- a) Identify the immediate need for, and to make, repairs to all sub-stations, switchgear, transformers, connectors, and auxiliary equipment included in the electrical transmission systems which are necessary to operate an efficient transmission network.
- b) Establish an inventory system for storage and replacement (as a part of a materials management system).
- c) Develop and establish a computerized materials and maintenance management system, oversee the procurement of necessary hardware and software, and train the employees in their use.
- d) Develop, supervise and direct the implementation of a transparent procurement system and eliminate all barter by a date specific.
- e) Develop and establish a preventative maintenance program and train the employees.
- f) Create an Emergency Operations Plan, train the employees and conduct mock drills for the implementation of emergency actions; make recommendations for improvements, with associated cost estimates, to the Energy Regulatory Commission, and the Boards of Directors of the enterprises.
- g) Identify the need for administrative and technical support facilities and equipment for the enterprise (e.g., specialized vehicles, communications systems, repair tools and equipment, and facilities for offices, warehousing and repair) and to support the implementation of the emergency actions.
- h) Oversee the implementation of a Preventive Maintenance Program. The Preventive Maintenance Program will include: a schedule and system to maintain any warranties on key facilities and equipment; a vehicle and equipment repair and maintenance record system; a system to plan, schedule and carry out routine maintenance activities; and, will establish Standard Operating Procedures in accordance with international standards and Good Utility Practices.
- i) The Contractors' authority and obligations to implement capital improvements should be limited to investments approved in the Annual Operating Investment Plan and to the extent that funding is available in the Fund. Moreover, the Contractors' authority and obligation to implement replacement of large system components in the event of extraordinary occurrences, such as natural disasters, would be limited to the funding available through the Investment Fund.
- j) Provide training to the management staff and the operations staff on the approved Standard Operating Procedures and ensure that the Standard Operating Procedures are implemented.

**PERFORMANCE MEASUREMENT – ESTABLISHING A BASELINE*****Base Year Data Report***

At the end of a transition period to be defined, the Contractors should submit to the Supervisory Boards of each enterprise a Base Year Data Report which:

- Inventories and assesses the initial condition of the facilities and equipment owned or used by the enterprises;
- Describes the metering regime;
- Quantifies the system losses in the base year and other measures necessary to determine the baseline for the performance standards;
- Describes and quantifies the length of forced outages in the base year;
- Quantifies billings and collections and other key measures necessary to determine the baseline for the performance standards.
- Quantifies Megawatt hours of throughput in the base year;
- Summarizes the routine operations and maintenance activities completed in the base year; and
- Describes the billing, collection and customer service functions in the base year.

The "Base Year Data Report," once approved, becomes the baseline from which performance will be measured for the purpose of determining an incentive payment to be awarded if these baseline performance levels are exceeded in following years.

### **PERFORMANCE LEVELS**

The Contractors should be required to perform to at least the same level of operations and maintenance as were performed in the base year and to improve their efficiency as measured by meeting the performance benchmarks and standards. Payment of the management fee should be contingent upon meeting the performance benchmarks.

Payment of an incentive fee would be contingent upon meeting the performance standards for increased cash collections, reduced technical and commercial losses, improved reliability, reduced system operating costs, and improved use of cost based dispatch, as measured by the performance standards for each of these five categories. Specific performance standards would likely be negotiated by the parties.

### **PAYMENTS TO CONTRACTORS**

Payments to the Contractors may consist of the following components:

- A base cost for management services;
- A management fee; and,
- An incentive fee.

The base cost of management services and the management fee can be paid as a fixed amount per calendar quarter for each year of the contract.

The management fee and the incentive fee will likely be negotiated with the Contractors. The sum of the management fee and the maximum incentive fee will generally not exceed 20% of the base cost of management services. The management fee as a percent of the base cost of management services should decrease year by year (going to zero in the last year of the contract). Conversely, the maximum incentive fee as a percent of the base cost of management services should increase each year (up to a recommended maximum of 20% during the last year of the contract).

***Illustrative Fee Structure***

An illustrative example of the fee structure is presented below:

Item	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Base Cost of Management Services</b>	To Be Negotiated				
<b>Management Fee</b>	10%	7.5%	5%	2.5%	0%
<b>Maximum Incentive Fee Payable</b>	10%	12.5%	15%	17.5%	20%

***Payment of the Base Cost of Management Services and the Management Fee***

The payment of the base cost of management services and the management fee is made quarterly, contingent upon the Contractors meeting the minimum performance benchmarks. These payments are made in four installments in each contract year, each payment being equal to 25% of the amount due for the contract year.

***Payment of the Incentive Fee***

The incentive fee is paid as a single annual payment for each contract year. The incentive payment is calculated based on the Contractors' actual performance during the contract year, relative to five performance standards and their relative weightings (as listed below).

*Illustrative Performance Standard Weighting*

Performance Standard	Relative Weighting
Improved Financial Performance <sup>2</sup>	40%
Reduced Transmission Losses	15%
Improved Reliability	15%
Cost-Based Dispatch	15%
Reduced Operating Costs	15%

The percentage of the maximum incentive fee for each contract year would be calculated based on the extent to which the performance standards listed above are achieved relative to the goals established (see illustrative example below).

*Illustrative Calculation of Incentive Fee*

The table below provides an illustrative calculation of the incentive fee for a specific contract year.

Performance Standard	Goal for Year	Actual Achieved	Percent of Goal	Weight for Standard	Weighted Percent
Improved Financial Performance	15%	12%	80%	40%	32.0%
Reduced Transmission Losses	5%	3%	60%	15%	9.0%
Improved Reliability	10%	8%	80%	15%	12.0%
Cost-Based Dispatch	5%	2.5%	50%	15%	7.5%
Reduced Operating Costs	6%	3.65%	60%	15%	9.0%
				<b>TOTAL</b>	<b>69.5%</b>

In this example, if the maximum incentive fee for the specific contract year is 15% of the base cost of management services; then based on the performance relative to the goals, the Contractors will be eligible for an incentive fee of 10.425% (15%x69.5%) of the base cost.

<sup>2</sup> Improved financial performance is somewhat duplicative with other of the illustrative performance standards, such as reduced losses and lower operating costs. However, we would anticipate that the financial performance standard would be defined thoroughly and could include areas such as performance relative to budget and investments achieved relative to plan.

## CHAPTER III

### RECOMMENDATIONS

#### RECOMMENDATIONS

Hagler Bailly has a series of recommended next steps and actions that should be taken to promote the management contract approach. They are presented as both short-term (i.e., next six to twelve months) and medium-term (i.e., during the performance period of the management contracts). The short-term recommendations focus on the steps required to implement the management contract approach; the medium-term recommendations are more targeted at the objectives the Government of Armenia and its constituent Ministries (as well as the Energy Regulatory Commission) should strive to achieve.

#### Recommendations – Short Term

Management contracts should be adopted to reverse the “failure spiral” in which the transmission and dispatch entities now find themselves. The recommended next steps include:

- With the assistance of USAID, obtain support from the MDBs, lenders and donors for this strategy.
- Jointly sell the strategy to the Government and obtain its commitment to proceed; this will be the most difficult task because all the ramifications of a management contract should be agreed upon at this stage. It will be noted that one of the fundamental flaws in the ongoing distribution privatization process has been the inability to specify and achieve the necessary Government commitments from the outset.
- Concurrently establish a clear set of protocols and operating procedures for both the dispatch and transmission operations.
- Establish a tender committee to organize and conduct the letting of management contracts for the transmission and dispatch system. This committee should include representatives from the Ministry of Energy, the Cabinet, the Ministry of Finance, the High Voltage Network Electric Enterprise (ArmTrans), Armenergo, the Ministry of Privatization, and the Ministry of Justice. The Energy Regulatory Commission should also have an advisory role in the work of the committee in a capacity that does not compromise its independent status.
- The terms of all key contracts/licenses should be developed in tandem with the selection of an investment advisor and continue through the preparation of an information memorandum to provide potentially interested parties a clear picture of the structure of the transaction. An indicative list of contracts/licenses and documents includes the following: (i) proposed form of management contracts; (ii) license to operate the activity, transmission or dispatch, as applicable; (iii) wheeling agreements; (iv) connection agreements; (v) contracts or other mechanisms for the transfer of liabilities; (vi) tariff agreements; (vii) payment undertakings; (viii) reporting

responsibilities; (ix) company by-laws; and (x) the relevant sector regulations/obligations.

- Additionally we would recommend that contracts and other documents that will be part of the transactions and for which the Government of Armenia would seek consultation with pre-qualified bidders should be drafted during this phase.
- Similarly, licences and the regulations including at least the following areas: (i) prices and tariffs, (ii) quality of service standards, and (iii) operation of the system and dispatch, should be settled upon at this stage.
- Conduct a tender to retain an internationally recognized financial advisor with relevant experience to organize the bid for a qualified management company.
- Hold a tender to attract qualified management companies for ArmTrans and Armenergo.

### **Recommendations – Medium Term**

- During the terms of these management contracts, energy sector reform should be vigorously pursued. Impediments to private capital should be identified and removed, both internal and external to the operations of the enterprises (see “Other Issues”). The purpose is to pave the way for the letting of concessions for ArmTrans and Armenergo, and, by extension, for the privatization of the generation and distribution sectors.
- Post transaction support should also be rendered which would seek to expand the scope for competition in the power sector through further assistance to the Energy Regulatory Commission to clarify key policy objectives for this sector, such as efficiency, security of supply and environmental protection.
- The power sector’s future ownership and structure, and the regulatory structure should be defined and articulated clearly.
- The structure of the industry should continue to evolve in an open, fair and non-discriminatory manner.
- The terms of access to the transmission grid (which for the present remains a natural monopoly) should be regulated. Nodal pricing is likely to form part of any efficient transmission pricing scheme.
- The Energy Regulatory Commission will need to exercise particular care with subsidies and cross subsidies, and keep them under review. Direct and open subsidies are preferable to hidden cross subsidies and they should be transparently linked to clear policy objectives.
- The Energy Regulatory Commission will need to monitor the security of supply. It should seek to create a climate for long term investment that adequately responds to diversity of supply issues in the entire energy market.

## **CONCLUSION**

In Armenia, there is the perception within both the management of the power sector enterprises and the Government of Armenia that the transmission and dispatch functions cannot be privatized due to the “strategic” nature of the assets involved. At the same time,

there is the recognition that the investment needs of the transmission and dispatch system, variously estimated to range from \$110 to \$550 million, cannot be met by the Government, the sector itself in its present condition, nor by the international community. Clearly, the private sector is the only alternative.

Ideally, the commercial environment of the power sector would support attracting investment directly through a share sale. However, the present conditions of the enterprises and their commercial performance does not permit such an option to be viable at this stage. Based on Hagler Bailly's review of both the transmission and dispatch enterprises, it is recommended that management contracts be used as a mechanism for improving the management and financial performance of each enterprise. If implemented, the management contractors should be able to significantly improve enterprise performance, thus helping to lay the groundwork for expanded private sector involvement, through the use of concession agreements, several year's hence. Although a management contract approach has not been universally successful, based on the present status of the power sector, Hagler Bailly concludes that it offers the greatest likelihood for near-term success relative to other options available (e.g., share sale, concession).