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Academy for Educational Development

ARMENIA ENERGY TRAINING PROGRAM

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Armenia Energy Training Program

The US Agency for International Development (USAID) contracted with the Academy for Educational Development (AED) to conduct a number of training courses and executive seminars in support of the reform of Armenia's energy sector. From February to September 1999, AED worked with several consulting firms, including Hagler Bailly Services, CNEX, and Edison O&M Services, to conduct the Armenia Energy Training program.

The work performed under this effort was designed to further USAID's ongoing power sector efforts by providing complementary training in key areas. This final project report describes the objectives and offerings of each course and seminar, and evaluates the success of the overall training program. It also includes suggestions for follow-on training activities based on an evaluation of the program and trainee responses.

1. Program Overview

1.1 Course and Seminar Offerings

It was originally anticipated that ten weeklong training courses would be offered in the areas of electric power, natural gas, and business improvements/support for the privatization process. Eleven courses were actually conducted. Based on the requests received from participants during the first grid code and contracting practices course, a three-day follow-on course was offered to permit additional in-depth discussions and training on the draft grid code. The following courses were held during the training program:

1. Grid Codes and Contracting Practices in the Electric Power Industry
2. Wholesale and Retail Tariff Structure for Electricity
3. Grid Code and Contracting Practices (three day follow-on course)
4. Electric Transmission and Distribution Loss Reduction
5. Natural Gas Transmission and Distribution Pricing
6. Natural Gas Meter Selection and Modern Meter Reading, Billing and Collection Techniques
7. Natural Gas Transmission and Distribution Loss Reduction Strategies
8. Selling a Local Electric Company
9. Managing the Transition to a Privatized Distribution Company
10. Corporate Financing (two day workshop);
11. Soliciting Investment through the Privatization Process: A Comparison of International Experience (three-day short course).

Two executive seminars were offered to high-level managers in the energy sector. The objectives of the first seminar were to provide information on privatization and investment attraction and to develop broader management skills by presenting information on current management concepts (e.g., empowerment, change management).

The second executive seminar focused on improving the understanding of financial reporting, financial management, and human resource management issues. At the participants' request, the second seminar also dealt somewhat with Hagler Bailly's proposal for the restructuring of the power sector.

1.2 Overall Program Goals

A key theme of the courses was to support USAID's technical assistance program with training activities. These courses were timed to coincide with the technical assistance program activities and with the deliberations underway within the Government of Armenia on specific reform topics and issues.

Training was undertaken in three areas. The objectives of the training for each are shown in the table below.

Electricity Sector	Natural Gas Sector	Business Improvements to Support Privatization
Build consensus and awareness of the need for continued reform of the power sector, including the adoption of power market rules and tariff reform.	Build consensus on the need for tariff reform, including the adoption of a coherent economically rational tariff methodology in the natural gas industry.	Support the privatization efforts by improving awareness of ways to manage the privatization and investment promotion process.
Improve understanding of the technical and organizational measures to reduce both technical and commercial losses in the transmission and distribution networks.	Improve the ability of local specialists to adequately evaluate metering technologies to form the basis for future procurement.	Enhance local counterpart organization's capabilities to develop and evaluate international tenders to support the privatization process.
Enhance counterpart understanding of the international trends in the electric power industry, especially relating to market restructuring and competition, and their applicability to Armenia and its privatization program.	Provide participants with techniques to reduce and prevent both technical and commercial losses during the transmission and distribution of natural gas.	Improve understanding and awareness of the methods available to attract and raise capital, as well as improve overall financial planning in the energy sector.
	Create better awareness of the role the natural gas sector needs to play to fully support the overall energy sector reforms.	Introduce new management techniques to the executive-level officials of energy enterprises.

1.3 Program Approach

Participant Interaction

The training was intended to create opportunities for representatives of energy enterprises, ministries, and agencies responsible for economic regulation and technical inspection of energy enterprises to exchange ideas on important issues. In an informal setting, participants discussed the problems within Armenia's energy sector and exchanged ideas about potential solutions.

Hands-on Training

An important feature of the training was the timing of course offerings and seminars. The majority of the courses were scheduled to coincide with critical activities of USAID reform projects to support the privatization process. They were directly introduced to and involved in reform projects such as commercial loss reduction, restructuring of the electricity sector, tariff development, and preparing for the privatization of generation and distribution sector assets. This allowed participants to gain more than a theoretical understanding of the materials presented.

Locally Relevant Materials

Many of the training materials were drawn directly from Hagler Bailly's work products for the reform projects. Several of these materials (market rules, restructuring proposal, natural gas tariff methodology and model, and the draft grid code) served as the main teaching materials for the course. This created a training program with direct relevance and applicability to the local context.

Practitioners as Trainers

Having reform experts participate in course design and provide training for several of the courses further reinforced the "local content" of the materials. Several of these experts were working on similar issues in Armenia's energy sector.

It had been expected that the trainers would be supported through the extensive use of counterpart co-trainers, who would be trained using a train-the-trainer approach and would then provide similar training within their respective organizations. Although some of the courses used co-training effectively, most did not due to the lack of participation of the assigned co-trainers (please see Section 3.2).

2. Program Results

Specialists working within Armenia's energy sector were selected to participate and contribute to the discussions by sharing their knowledge and involvement in the subject at hand. The average number of participants in the courses/seminars was 20. The numbers of participants ranged from nine to 28, depending on such factors as course topic, the number of participants invited, the number of specialists working in a given field, intensity of the seminars, and the way in which invitations were sent (through the Ministry of Energy or delivered directly). AED's post-program evaluation revealed that attendance

did not always reflect interest in a particular course, since most organizations were unable to let all interested staff attend.

2.1 Electricity Sector Courses

Four of the courses focussed on electricity sector issues. In addition, the three courses taught in the area of business improvement to support the privatization process were directly relevant to this sector.

Grid Code and Contracting Practices in the Electric Power Industry, February 8-12, 1999

Hagler Bailly distributed the initial power sector reform proposal to its counterparts in September 1998. The course allowed participants to share their opinions about the proposed reform structure and discuss details pertaining to the operation of the power market. The participants presented the draft grid code and sample power contracts in order for participants to better understand the sector's proposed structure. The course explained the reasons for needing a grid code and contracts among energy entities, provided a review of some sections of the grid code, described the proposed contracts, and demonstrated the need for consistency with market rules between all power sector documents.

At the end of the course, the participants endorsed a series of principles for power sector reform, committed to continuing their cooperation, and agreed to meet regularly in a working group setting to pursue power sector reform. Participants expressed their desire to continue discussions on the proposed reform structure.

Mr. Jake Delphia was the lead trainer for this course, assisted by Mr. Boris Shapiro.

Wholesale and Retail Tariff Structure for Electricity, February 15-19, 1999

This course reflected work with the Energy Regulatory Commission on development of new, more advanced tariff structures at both the wholesale and retail levels. The course presented both the theory and practice of tariff-setting, including the economic rationale for electricity pricing, competitive vs. regulated market issues, tariff components, tariff design, and cost-of-service estimation. The use of performance-based ratemaking, funds administration, and dispatch operations were also reviewed.

Case studies were used to examine some of the tariff impacts that resulted from international solicitations for new capacity and the privatization of existing enterprises. Participants also completed a number of tariff calculation exercises to reinforce the presentation materials.

Mr. Leszek Kasprowicz served as the lead trainer, supported by Mr. Boris Shapiro. Mr. Bruce Hutchinson made a presentation on cost-of-service estimation.

Grid Code and Contracting Practices, June 7-9, 1999

Following the response from the previous grid code and contracting course, a follow-on course was provided. Its objectives included reviewing the technical, economic, financial and legal specifications for the creation of the wholesale power market.

The discussion was divided into four segments, the first of which focused on the proposed power market members' union (PMMU) and its administration of the grid code. The second focused on existing Armenian standards and associated norms; the laws that influence the creation, modification, and enforcement of the standards; and enforcement organizations. Discussions in this segment included the Armenian Law on Standardization and Norms and its requirements for both obligatory and non-obligatory standards. The third segment examined the grid code rules and procedures. The fourth focused on the next steps to be taken to implement the grid code.

Other topics reviewed in this course included: the structure of the permanent committees of the PMMU and their responsibilities; existing and proposed operating procedures; rules for the wholesale power market; connection requirements and network planning; and settlements, funds administration, and metering procedures for the collection and allocation of revenues from the power sector sales.

Mr. Jake Delphia was lead trainer of the course. Additional trainers included Mr. Armen Arzumanyan and Ms. Jamila Amodeo.

Electric Transmission and Distribution Loss Reduction, June 21-25, 1999

The course focused on measures to reduce both technical and commercial losses in electric transmission and distribution networks. Course topics included: a review of the various causes of losses and methods for estimating losses; meter testing procedures; and procedures for improving internal financial controls to reduce commercial losses.

The course included a discussion of USAID's Armenia Power Sector Metering Improvement Program and its anticipated impact on loss reduction, as well as the USAID-sponsored metering, billing and collection system and hand-held meter reading system. Findings from the USAID/Hagler Bailly pilot commercialization projects were presented and discussed. Finally, to reinforce the technical and commercial concepts taught during the course, participants completed a site visit to the Komitas distribution network.

Mr. Doug Whyte taught the course. Mr. Armen Arzumanyan and Mr. David Gharadegyan presented the results of the pilot customer information software system.

2.2 Natural Gas Sector Courses

Natural Gas Transmission and Distribution Pricing, April 5-9, 1999

The training supported the introduction of an improved, economically rational natural gas pricing structure and to train representatives of the gas enterprises. Representatives of the Energy Regulatory Commission and ministries were shown the methods and approaches to develop, and introduced tariffs that cover costs and support sector reinvestment.

During the course, the USAID-sponsored gas transmission and distribution tariff models were presented and reviewed by participants. International trends in natural gas markets and their implications for tariff formulation were examined.

Additional topics presented during the course included: data requirements for pipelines and gas distribution companies to support the tariff development process; a comparison of Soviet-style data classification by type of expenditure (wages, automotive expenses, travel, etc.) with western classifications by function; Federal Energy Regulatory Commission Form No. 2 (*Annual Report of Major Natural Gas Companies*); general corporate information and financial statements; security holders and voting powers; balance sheets, income statements, retained earnings, cash flows and supporting schedules; and gas plant statistical data.

Dr. Helmut Merklein was the course trainer. This course also benefited from having a well-qualified co-trainer provided by Armgasprom, Mr. V. Matevosyan, who gained in-depth familiarity with the tariff and financial model, and is in a position to continue to use the model without a need for outside support.

Gas Meter Selection and Modern Meter Reading, Billing and Collection Techniques, May 17-21, 1999

This course educated Armenian specialists on the options available among the meters used internationally (technical characteristics, prices, manufacturers, etc.), optimum meter maintenance, and the reading techniques. Course topics included the differences and applicability of diaphragm, rotary, turbine and orifice meters; mechanical and electronic compensating devices; design and sizing for optimum accuracy and cost; construction and maintenance of installations; and remote meter reading applications and their associated costs. Revenue protection/enhancement was also considered along with customer service practices and terms and conditions of use. Participants made a site visit to the USAID/Hagler Bailly pilot natural gas commercialization project in Yerevan to demonstrate new metering technologies in operation.

Mr. Charles Setian and Ms. Candace Weeks led the training.

Natural Gas Transmission and Distribution Loss Reduction Strategies, May 24-27, 1999

During this course, various technical and organizational measures to reduce losses were discussed. Technical staff from the gas companies was trained in different technical solutions and techniques, with the goal to improve the commercial operations of energy companies in the sector. Course topics included: a description of the methods and procedures for identifying unaccounted-for natural gas; gas purchases; metered and unbilled sales; delivery pressure vs. base pressure; super compressibility; gas temperatures and temperature correction; meter inaccuracies; line breaks; construction loss; leakage; metered and non-metered theft.

Mr. Charles Setian and Ms. Candace Weeks led the training.

2.3 Courses on Business Improvements To Support the Privatization Process

Selling a Local Electric Company, April 12-16, 1999

The course identified key privatization issues in the Armenian electric sector and was timed to coincide with the beginning of the distribution privatization process. Experiences from electric industry asset sales in the NIS (Georgia, Kazakhstan) and the United States (using the Southern California Edison model) were used to familiarize attendees on the detailed steps to approach an asset sale. The information needed to prepare, market and conduct sales transactions to help improve the likelihood of successful privatization in Armenia was also examined.

The course was divided into three main areas:

- how NIS country energy sectors can attract investment capital, especially during a global recession, and the various options available for financing
- the experience of Southern California Edison in the divestiture of its generation assets, and discussions of due diligence information preparation, auction process preparation, etc.
- specific aspects of the privatization efforts in Georgia, and in particular, privatization of the Tbilisi distribution network by the strategic investor AES

Mr. Russell Harding was the lead trainer. Other trainers included Mr. Dean White and Mr. Armen Arzumanian.

Managing the Transition to a Privatized Distribution Company, May 3-7, 1999

The primary objective of this course was to present and discuss the possible approach towards, and benefits gained from, the efficient management of distribution companies. Special attention was paid to such issues as the necessity of a transparent corporate structure and its components, as well as financial, economic, management and legal structures needed to enable distribution companies to improve the provision of utility services.

Participants were introduced to the changes that may occur when the Armenian distribution companies become privately managed. Course participants completed a number of exercises designed to reinforce the principles being taught.

Ms. Constance Irland and Mr. Joseph Moran were the trainers for this course.

Corporate Financing, June 10-11, 1999

The objective of this two-day workshop was to train participants to support the privatization and investment process underway in the power sector by familiarizing them with the basic principles of corporate and projects finance. The course was scheduled to run longer but due to the evolution of the Armenia privatization process, a second grid codes course was conducted and this course was shortened.

Emphasis was placed on training the participants in fundamental concepts such as the time value of money, the evaluation of capital projects using an internal rate of return, the capital productivity index, the net present value, computing the cost of capital, and estimating various types of risk and reflecting them in the cost of capital.

Because the concept of project financing is new to most Armenian specialists, special attention was given to how project financing differs from traditional recourse financing and the prerequisites to secure project financing. To demonstrate the basics of project financing, examples from energy projects around the world were presented. The projects discussed were: the Conoco/Maraven heavy oil project in Venezuela, Sonatrach Pipeline project from Algeria to Spain through Morocco, a power distribution project in Thailand, and the Trans-Caspian Gas pipeline project. At the end of the training, there was an in-depth discussion on how project financing could be used for the rehabilitation of a hydropower cascade in Armenia.

Dr. Bhamy Shenoy was the workshop's lead trainer.

Soliciting Investment through the Privatization Process: A Comparison of International Experience, June 30 - July 2, 1999

This course was a follow-up to the earlier training course on selling a local electric company. During the first day, issues regarding risk and the investor and public-private partnerships were reviewed, and a "decision tree" discussion with the topic "what is electricity?" was held.

The next day was spent reviewing the privatization of the Tbilisi distribution network. The chairman of the Georgian National Electricity Commission and Hagler Bailly's Georgian staff led the discussion.

The last day was devoted to reviewing several topics including an overview of privatization experiences in Hungary, the U.K., the Czech Republic, Spain, Norway, Sweden, Denmark, Finland (Nordpool), and Australia. Participants identified the most critical factors in ensuring successful privatization and the next steps for Armenia's energy sector. Special attention was given to the importance of the legal and regulatory framework. The instructors discussed the pros and cons of different privatization options, such as strategic investors versus other types of privatization, and focused on those recommended for Armenia.

Mr. Russell Harding led the training. Messrs. Masoud Keyan, the Honorable Elizbar Eristavi, Chairman of the Georgian National Electricity Commission, and Mr. Bidzina Chkonia assisted in sharing other countries' experiences.

2.4 Executive Training Seminars

The Executive Seminars were designed with senior officials in mind. The seminars targeted senior management, with the goal of introducing the key skills needed to operate in a market-based, competitive system.

Executive Seminar # 1, May 11-12, 1999

This seminar was aimed at the top-level energy sector managers. Participants had a chance to learn steps that should be taken prior to privatization, including defining and marketing an asset, structuring the sales contract, auctioning, and closing a deal. The concept of strategic planning was introduced to enterprise managers. Each participant developed a vision statement, a set of goals, and objectives for realizing those goals.

The trainers led the participants through several exercises on team building and effective management evaluation. A management training video about paradigms was presented to encourage creative approaches in problem solving.

Trainers for this seminar included Ms. Constance Irland, Mr. Masoud Keyan, Ms. Carol Mulholland, and Mr. Steve Tashjian.

Executive Seminar # 2, June 25-26, 1999

The following topics were presented and discussed during the seminar:

- *Financial management.* The three major financial statements (income statement, balance sheet and cash flow statement) were reviewed in general and for specific U.S. companies.
- *Overview of stock markets.* Dow Jones industrial reports were presented to participants and the reasons for stock price changes were discussed.

During the seminar the participants watched and discussed the second video in the series entitled *Principles of Paradigms*. The purpose of presenting this material was to encourage creative thinking about power sector reform and management.

The overall restructuring efforts in the Armenian and U.S. energy sectors were reviewed, including the formation of separate generating, transmission and distribution companies, and plans for privatizing those companies. At the end of the seminar, the proposed structure of the Armenian power market and member union activities were discussed in detail.

Mr. Steve Tashjian, Mr. Masoud Keyan, and Ms. Constance Irland led the seminar.

2.5 Co-training Activity

Each course, except for the first two, had a co-trainer identified and assigned by the Ministry of Energy (a resolution signed by the First Deputy Minister assigned co-trainers for each course). However, only a few of the co-trainers were able to participate during the course delivery. The causes of this could be: 1) the relatively high level of the co-trainers and the difficulty they had in being engaged for a week-long assignment; 2) their current line functions, which made it difficult for them to participate fully; and 3) the lack of compensation for what was perceived as additional work and effort required.

3. Evaluation Results

AED conducted a two-phase evaluation of the Armenia Energy Training Program. At the immediate conclusion of each course, participants were asked to fill out questionnaires evaluating the course overall. In early September 1999, nearly three months after the conclusion of the final course, AED conducted in-person interviews as a follow up to the written evaluation reports collected at the conclusion of each seminar. The evaluators were provided with a list of all the participants in the energy training. A questionnaire was developed to determine whether the participants felt the courses were useful and how they planned to use what they had learned. Out of 165 total participants, 122 people (74%) were interviewed. The questionnaire used is attached under Appendix A.

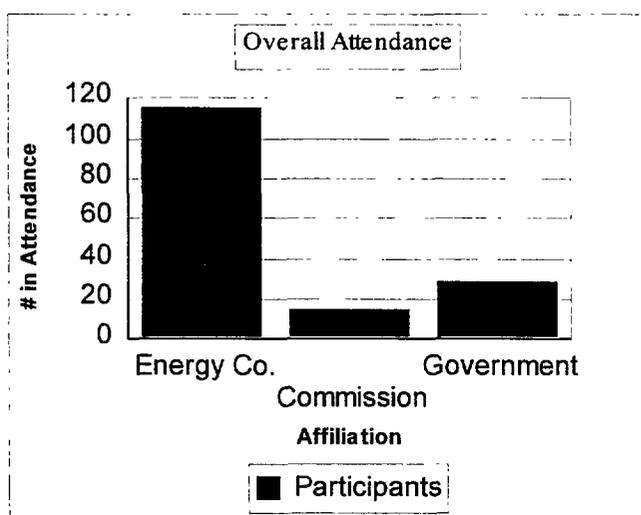
The following sections present key findings both from the initial course evaluations, and from the overall training program evaluation.

3.1 Course Evaluations

3.1.1 Participant Statistics

Attendance was recorded for each seminar, which allowed AED to track which organizations attended. Figure 1 shows the number of attendees from each of three key groups: regulatory bodies, energy sector companies (generation, transmission, and distribution), and other Government of Armenia entities.

Energy Co.	116
Government	29
Regulator	15



3.1.2 Participant Feedback

At the conclusion of each course and seminar, participants evaluated the training they received. Overall, participant responses were very positive, and most of the participants indicated that they found the courses to be very useful and directly related to their work.

A small number of participants did not see how they could apply the knowledge gained during the seminars to their day-to-day work. Two possible reasons for this reaction are: (1) many of the concepts introduced at the training are relatively new to Armenia and have not been implemented during the reform process; (2) the person selected for training was someone who did not understand the issues to be discussed.

The majority of participants felt that the translators' skills were sufficient with a few exceptions when it came to technical terms. For this purpose, specialists with knowledge of the specifics of the terminology and who spoke either Armenian or Russian provided support to the trainers at some of the seminars.

Varying responses were received regarding the length of the courses. Some participants would have preferred to have longer and more detailed seminars, while others recommended shorter and more concentrated courses. This indicates that some of the participants were already familiar with the concepts introduced, while others needed more time to learn the subject. Some high-level officials preferred to focus only on the major points.

Many participants expressed the need for follow-up sessions to reinforce the topics learned and to be aware of the USAID reform projects being carried out.

3.2 Training Program Evaluation

3.2.1 Key Findings

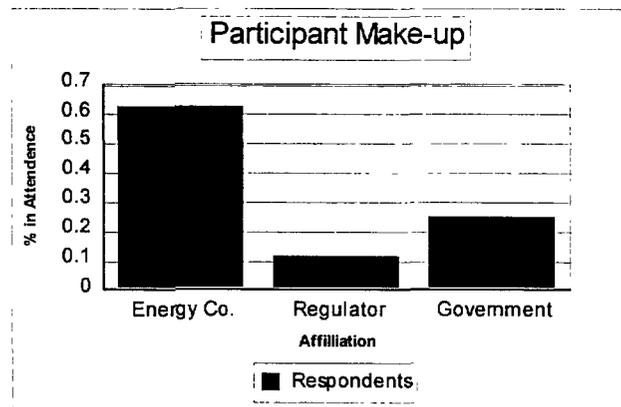
The majority of the participants interviewed 84 of 122 (or 69%) are not yet applying the skills they have learned, but more than half (56%) stated that they are sharing the training with co-workers. Lack of appropriate equipment and conflicting policies were noted as obstacles to applying their training. Almost half of the participants said that they had not applied their lessons because there was not yet any need for the skills they had learned, and the skills could not be applied to Armenia. Others stated that Armenia's incomplete privatization prevented their application of lessons learned. Such a response demonstrates the need to better explain the applicability of this training to the participants, and stresses the importance of continuing to link training and technical assistance.

3.2.2 Participant Survey Results

a. Respondent Characteristics

Demographics

The gender makeup of the respondents was 75% male and 25% female. Most of the participants came from energy companies (63%/N=76) and there were 31 representatives from government agencies (25%). Regulators made up 12% of the respondents with 15 people.



A key point that emerged during the interviews was that, in a number of cases, participants were interested in attending more than one course, but could not do so. Staff from one department in Armenergo explained that they sent five different people to one course each so that the department would glean as much information as possible.

b. Program Value

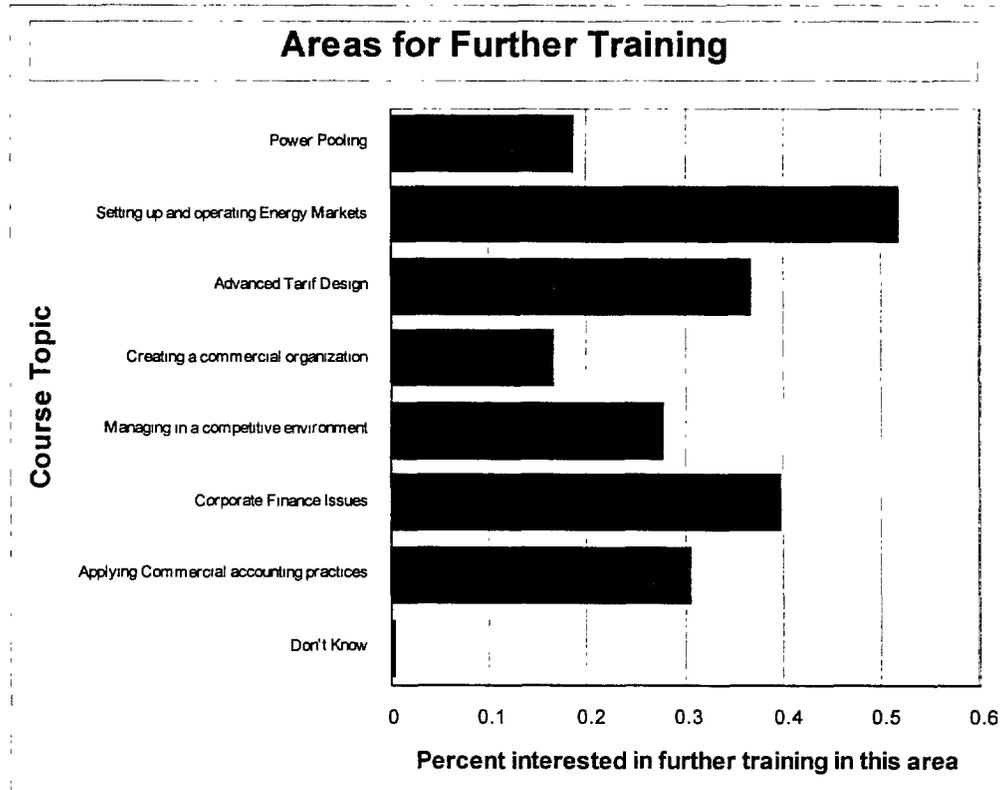
The respondents were asked to identify which courses they attended and whether they found them relevant to their jobs. The following table shows the responses to this question.

Courses	Not at all Useful	Not Useful	Somewhat Useful	Very Useful
Grid Codes and Contracting Practices	0	0	12 (57%)	9 (43%)
Wholesale & Retail Tariff Structures for Electricity	0	0	19 (58%)	14 (42%)
Grid Code and Contracting Practices #2	0	0	1(20%)	3(60%)
Electric Transmission & Distribution Loss Reduction Strategies	0	0	3 (23%)	10 (77%)
Selling a Local Electric Company	0	0	6(26%)	17(74%)
Managing the Transition to a Privatized Electric Utility	0	0	15(62%)	9(38%)
Natural Gas Transmission & Distribution Pricing	0	0	12(57%)	9 (43%)
Gas Meter Selection & Modern Meter Reading, Billing & Collections Techniques	0	0	6(32%)	13(68%)
Natural Gas Transmission & Distribution Loss Reduction Strategies	0	0	6(32%)	13(68%)
Corporate Financing	0	0	4(44%)	5(56%)
Specification, Solicitation, and Evaluation of International Invitations to Bid	0	0	3(50%)	3(50%)
Executive Training Seminar #1	0	0	3(33%)	6(67%)
Executive Training Seminar #2	0	0	1(33%)	2(67%)

The participants were interested in learning about the United States' experience with energy efficiency and new approaches to loss reduction. Although some did not find a direct connection to their work, they considered information about the experience of developed countries important for the future.

c. *Participant Suggestions*

Given the opportunity to reflect on the training, the participants were asked in which areas they thought additional training would be valuable. One key area in which a number of participants expressed interest is a seminar focussed on problems between distributors and consumers. The participants also showed interest in having more training about setting up and operating energy markets, and further training in matters relating to finance and accounting.



23 (19%)=	Power Pooling
63 (52%)=	Setting up and operating energy markets
45 (37%)=	Advanced tariff design
21 (17%)=	Creating a commercial organization
34 (28%)=	Managing in a competitive environment
49 (40%)=	Corporate financing issues
38 (31%)=	Applying commercial accounting practices in the energy sector
1 (0.8%)=	Don't know/not sure

4. Conclusions and Recommendations

4.1 Program Accomplishments

The general conclusion of the interviews is that the Armenia Energy Program was successful in meeting its goals. The training provided participants with basic concepts related to energy management. Participants were pleased with the quality of the course materials and the tutors and considered all the courses to have been beneficial. There is evidence of interest in further training.

Participants gained knowledge in a variety of issues related to the management and the energy industry. Some of the key lessons learned were:

- ◆ What conditions should exist to attract private investment to the Armenia energy sector;
- ◆ An appreciation for the need to have higher returns for projects with higher risk factors;
- ◆ Interest rates rise in direct proportion to the drop in credit rating;
- ◆ How to better organize metering, billing and collection processes in order to identify where losses are occurring on the electric system and to improve power sector financial performance;
- ◆ The value of an asset is closely related to the market environment in which that asset is offered for sale;
- ◆ Investors will insist on a return on their investment, requiring changes in financial management;

The participants also benefited from learning about the privatization efforts in Georgia and the basic terms of the transaction for the sale of distribution to AES.

4.2 Recommended Future Training and Approach

4.2.1 Course Topics

Privatization: Future privatization training should provide more information on recent transactions for the privatization of electricity sector assets, particularly those that have occurred in countries whose conditions are similar to those in Armenia. These detailed reviews should include a discussion of the political and legal issues, how the contracts were structured, how the economics of the transaction were relevant to both buyer and seller, and what lessons/conclusions can be drawn from them. They should also include more detailed discussions of how investors consider projects and how the structure of privatization contracts can result in furthering the goals of both the buyer and seller.

Restructuring: Participants recommended that future training include more discussion of the structural changes needed prior to infrastructure industries' privatization, and that such training include case studies from other NIS countries.

Once the government adopts the strategic plan for restructuring, a number of separate training courses will be needed to educate the energy enterprises on the contractual system, power brokerage, and the rules and procedures to be followed by market members.

International Accounting Standards: Enterprises are preparing to implement Armenian accounting standards in compliance with international accounting standards. The energy sector enterprises need a series of courses on developing a system of accounting standards that will permit their enterprises to be inspected in a manner compatible with international practices. This will greatly assist the Energy Regulatory Commission in regulating these enterprises and receiving a clearly classified collection of data.

Metering: A series of courses on how to work with software programming, the control of metering equipment, reporting methods, and management's efficient use of collected data for the purposes of forecasting and developing business strategies may be beneficial for distribution company employees. Such courses would tie in well with USAID's Power Sector Metering Improvement Program.

Emergency Procedures and Safety Issues: With the exception of the nuclear station, emergency procedures are not in place for the energy enterprises. For generation facilities that can affect the economy and lives of people and the environment, training in setting up such procedures is especially important.

Training to assist each energy enterprise in developing its own safety procedures is recommended. This training would include the importance of safety compliance and liability issues.

Regulation: The Energy Regulatory Commission has requested a series of "role play"-type training sessions for the regional regulatory agencies. These sessions would discuss how to consider extraordinary cases, such as how to treat the long-term PPA of a private investor and how to ensure regulatory independence.

Additionally, training on the specifics of natural monopolies and on regulatory agencies abroad would be timely and relevant, since the National Assembly is considering natural monopolies legislation. This training would be targeted to specialists of the Ministry of Energy, the Energy Regulatory Commission, and deputies of the National Assembly, and would discuss the functions and authorities of each entity.

Management: Management improvement/skill building courses at energy sector enterprises themselves should be considered once departments are identified and their functions are clearly stated. Several of the techniques tested for the executive seminars were well received, such as the change management principles and the "paradigm" videos. Due to a lack of sufficient management training among high-level officials in the power sector, similar executive-style seminars on management principles and techniques are recommended.

Standards and Norms: A special training series has been requested by counterparts on the standards adopted at different levels in the United States: national, sector-specific, specific enterprises, etc., as well as on such areas as the environment, health, and personnel safety.

Interaction of Energy Enterprises with Regulatory and Other State Agencies: Currently, the energy enterprises do not have professionally trained staff to deal with the Energy Regulatory Commission on regulatory matters. Legal and regulatory training to assist in preparing the companies to operate in a competitive environment in the future should be held.

English Language: It is essential that mid-to higher-level management personnel be able to participate in international training and seminars, and be able to work with foreign investors that will eventually take over the management of some of the energy sector enterprises. In this regard, English language training is vital for key regulatory staff and Commissioners. Such training has been provided, with USAID support, to the Armenian Energy Commission, and should be expanded to include the Ministry of Energy, Armenergo, and other key energy sector entities.

Customer Relations and Public Awareness: The relationship between distributors and consumers represents a characteristic problem faced by energy companies in countries where consumers either did not pay or paid predetermined amounts. It has become the duty of the energy companies to educate customers on purpose of meters and payment relative to the amount of gas or electricity consumed. In order to alleviate tension, not only do the energy companies need training in consumer relations, but a public relations campaign also needs to be waged to educate consumers about the changes taking place in the sector, why they need to pay their bills and where the money goes, etc.

4.2.2 Organizational Matters

Length of the Training: Courses should be scheduled with sufficient time between each course, primarily because it is difficult for the enterprises and organizations to allow their leading specialists to be away for an entire week. Emphasis should be placed on courses and workshops of shorter duration. This should help to increase high-level participation.

Regional Considerations: The participants want to be able to learn from the experiences, both positive and negative, of other NIS nations, such as Georgia, Kazakhstan, Moldova and Ukraine. Development trends in the Eastern European countries are of great interest as well. Many participants requested that training be sponsored in which they can ask questions directly to the people who were involved in relevant issues in those countries.

Use of Co-Training: Although the use of co-trainers is desirable, more efficient ways to incorporate them into the training program need to be considered. The present use of existing staff of the organizations and enterprises as co-trainers, although ideal in theory, fails in practice due to some of the earlier mentioned constraints. Should co-training be considered further (and we recommend that it should be a component of future training programs), it may be useful to consider subcontracting a portion of the training program budget to local entities that are not considered to be counterparts, such as relevant departments within local universities, do not raise concerns about counterpart funding restrictions.

On-the-Job Training: At the close of the seminars, participants stated that they had a better understanding of the situation in the Armenian power sector and were prepared for the changes that would occur as Armenia's energy sector privatized. It is important to note that in later interviews, the respondents stated they were unable to apply what they had learned to their daily work, demonstrating that further promotion of the applicability of the courses is needed. One solution is on-the-job training that allows trainers to relate the material directly to the participants' work.

4.3 Conclusions

The Armenia Energy Training Program can be considered a success. It represents the first time in Armenia that a comprehensive training program was directly aligned with the technical assistance reform activities. Although this is less critical for basic skills training (e.g., corporate finance), it is vital when the objectives of the training are targeted at building consensus and awareness on reform related topics. Equally importantly, this program demonstrated areas for further training needs and also indicated possible changes in the organization and delivery of the training that should help to improve its effectiveness if such a similar program is considered in the future.

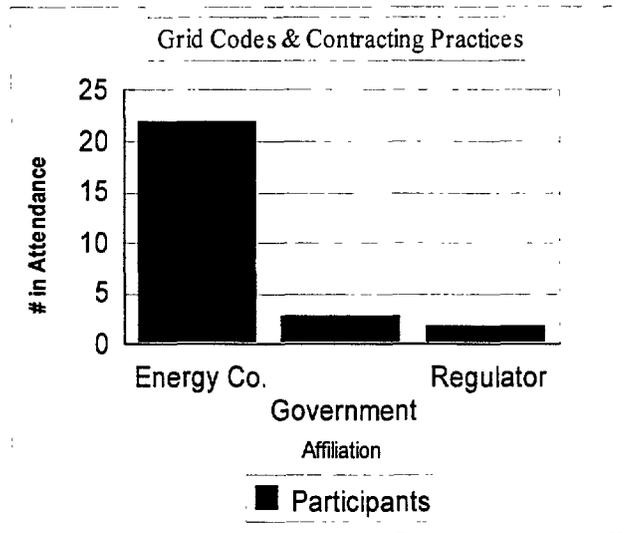
Appendix A

Course and Seminar Participant Profiles

Electricity Sector Courses

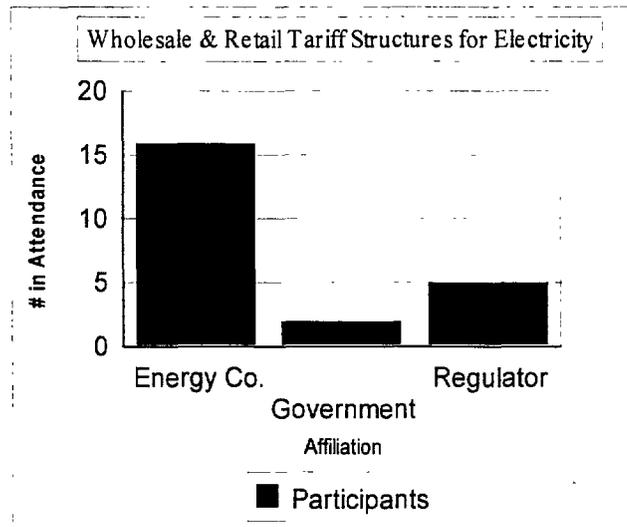
Grid Codes and Contracting Practices in the Electric Power Industry: 27 participants

Energy Co.	22
State	3
Regulator	2



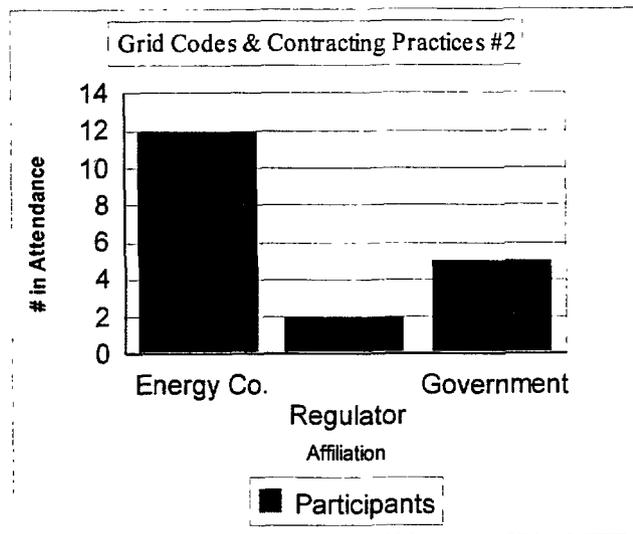
Wholesale and Retail Tariff Structure for Electricity: 22 Participants

Energy Co.	16
State	2
Regulator	5



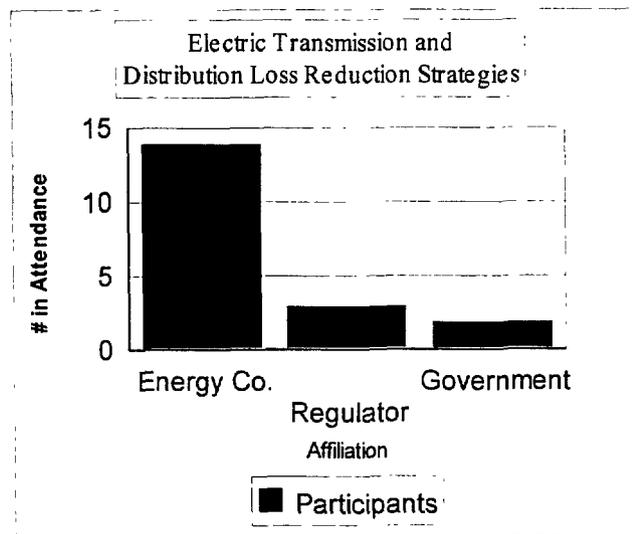
Grid Code and Contracting Practices (three-day follow-on course): 19 Participants

Energy Co.	12
State	5
Regulator	2



Electric Transmission and Distribution Loss Reduction: 19 Participants

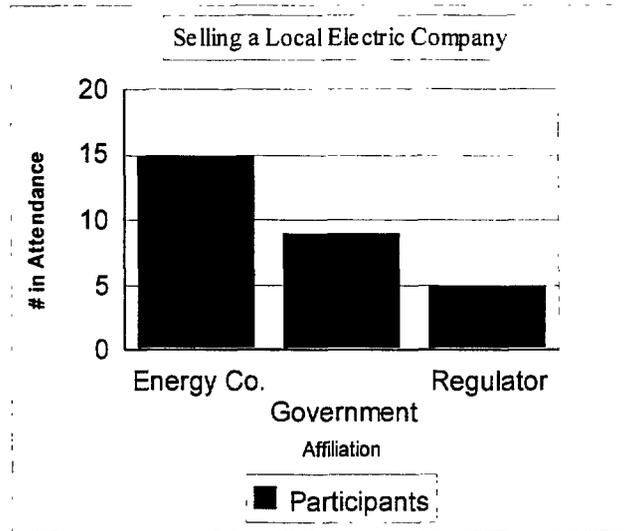
Energy Co.	14
State	2
Regulator	3



Courses on Business Improvements to Support the Privatization Process

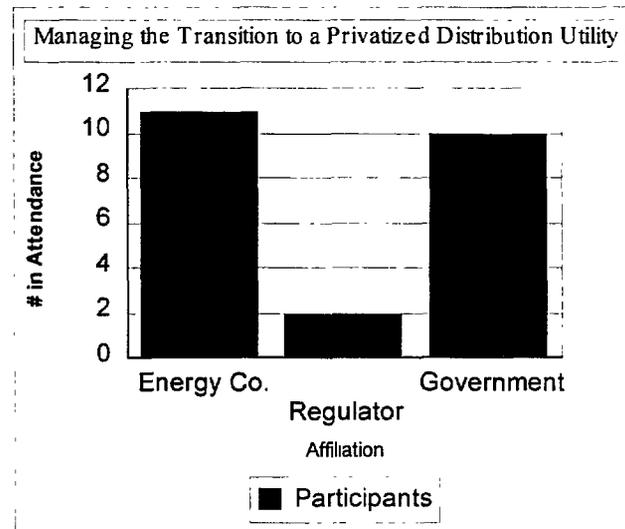
Selling a Local Electric Company: 18 Participants

Energy Co.	15
State	9
Regulator	5



Managing the Transition to a Privatized Distribution Company: 23 Participants

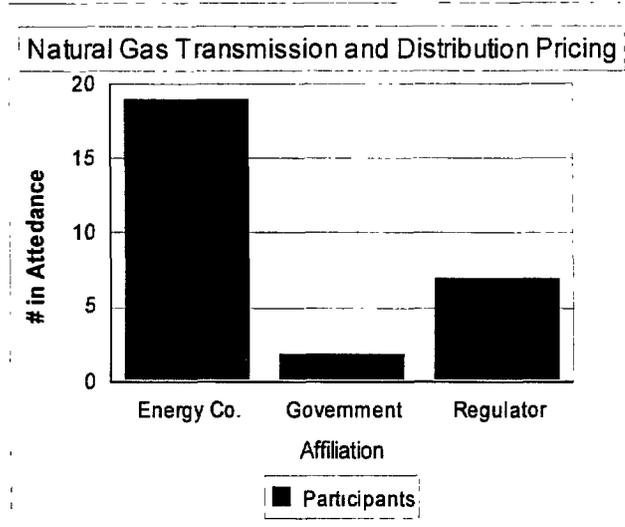
Energy Co.	11
State	10
Regulator	2



Natural Gas Sector Courses

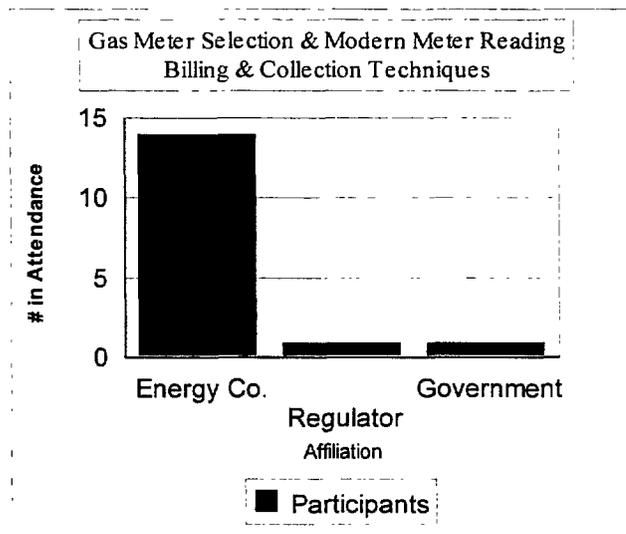
Natural Gas Transmission and Distribution Loss Reduction: 28 Participants

Energy Co.	19
State	2
Regulator	7



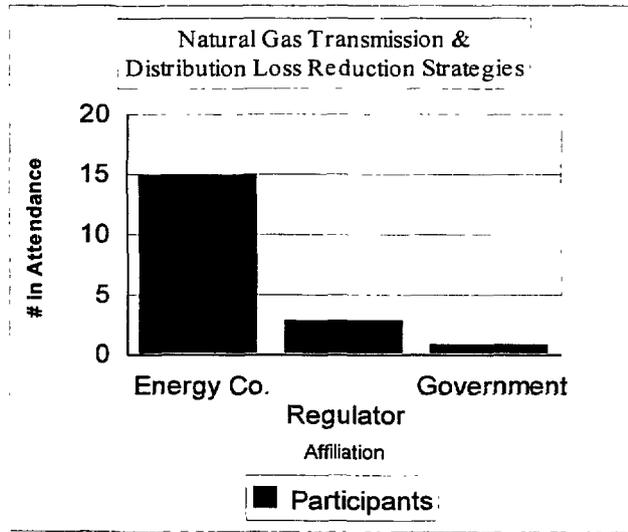
Natural Gas Meter Selection & Modern Meter Reading, Billing & Collection Techniques: 16 Participants

Energy Co.	14
State	1
Regulator	1



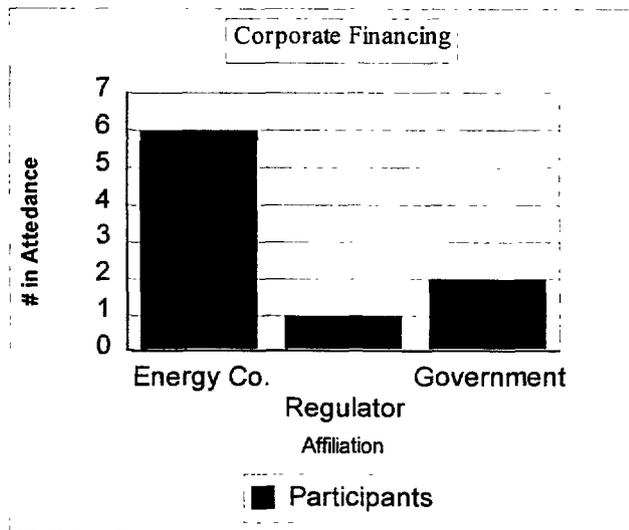
Natural Gas Transmission and Distribution Loss Reduction Strategies: 19 Participants

Energy Co.	15
State	1
Regulator	3



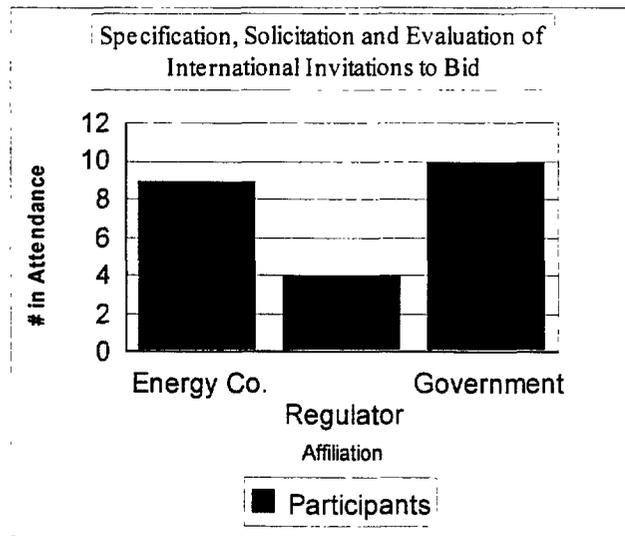
Corporate Financing: 9 Participants

Energy Co.	6
State	2
Regulator	1



Soliciting Investment through the Privatization Process: A Comparison on International Experience

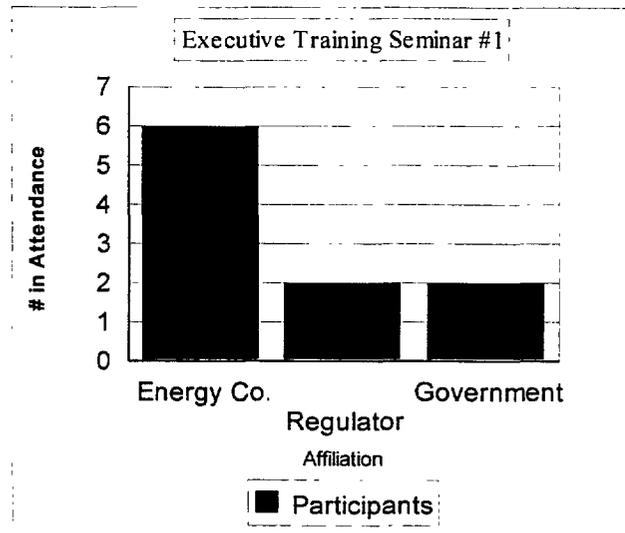
Energy Co.	9
State	10
Regulator	4



Executive Seminars

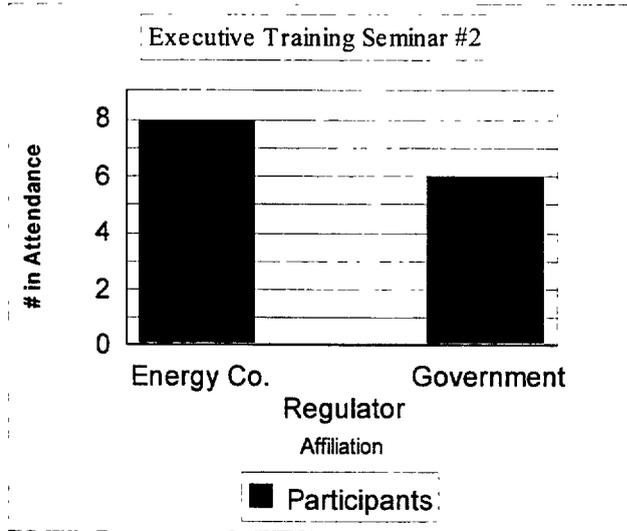
First Executive Training Seminar

Energy Co.	6
State	2
Regulator	2



Second Executive Training Seminar

Energy Co.	8
State	6
Regulator	0



Appendix B

Participant Questionnaire

**Armenia Energy Training Program
Final Evaluation Questionnaire**

Participant's Name: _____

Last Name; First Name

Gender: M _____ F _____

Company Name: _____

Circle One: Government Agency Regulator Energy Company

Position: _____ Date: _____

Interviewer: _____ Time Started: _____

Contact Record

Response Codes

Date	Time	Response
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

- 1. Busy signal
- 2. Call back
- 3. Refused
- 4. Interview
- 5. Left message

Hello. My name is [interviewer's name], and I'm with AED. Since January of this year, you've attended at least one course offered as part of a USAID-sponsored training program. At the conclusion of the course, you filled out a questionnaire that evaluated the course. We'd like to ask you several follow-up questions to see how your perceptions of the course may have changed as you've begun to apply the information you learned. The total survey will take about 15 minutes of your time, and all of your comments will remain confidential. The information you provide will help AED and USAID develop better programs to meet your needs.

A. General/Introduction

1. I'm going to read through the list of courses offered under the Energy Training Program this spring. Please indicate which of these courses you attended.

Course	Dates	Attended? (Y/N)
Grid Codes and Contracting Practices	February 8-12, 1999	
Wholesale and Retail Tariff Structures for Electricity	February 15-19, 1999	
Natural Gas Transmission and Distribution Pricing	April 5-9, 1999	
Selling a Local Electric Company	April 12-16, 1999	
Managing the Transition to a Privatized Distribution Utility	May 3-7, 1999	
Executive Training Seminar #1	May 11-12, 1999	
Gas Meter Selection and Modern Meter Reading, Billing and Collection Techniques	May 17-21, 1999	
Natural Gas Transmission and Distribution Loss Reduction Strategies	May 24-28, 1999	
Grid Code and Contracting Practices, Part 2	June 7-9, 1999	
Corporate Financing	June 10-11, 1999	
Executive Training Seminar #2	June 25-26, 1999	
Electric Transmission and Distribution Loss Reduction Strategies	June 21-24, 1999	
Specification, Solicitation and Evaluation of International Invitations to Bid	June 30 - July 2, 1999	

2. On a scale of 1 to 4, where 1 is not at all useful and 5 is very useful, please rank the courses you attended. *(Interviewer to read through the list and circle the appropriate ranking)*

	Not at all Useful	Not Useful	Somewhat Useful	Very Useful	Didn't Attend
1. Grid Codes and Contracting Practices	1	2	3	4	5
2. Wholesale & Retail Tariff Structures for Electricity	1	2	3	4	5
3. Natural Gas Transmission & Distribution Pricing	1	2	3	4	5
4. Selling a Local Electric Company	1	2	3	4	5
5. Managing the Transition to a Privatized Electric Utility	1	2	3	4	5
6. Executive Training Seminar #1	1	2	3	4	5
7. Gas Meter Sel. & Modern Meter Reading, Billing & Collections Techniques	1	2	3	4	5
8. Natural Gas Transmission & Distribution Loss Reduction Strategies	1	2	3	4	5
9. Grid Code and Contracting Practices #2	1	2	3	4	5
10. Corporate Financing	1	2	3	4	5
11. Executive Training Seminar #2	1	2	3	4	5
12. Electric Transmission & Distribution Loss Reduction Strategies	1	2	3	4	5
13. Specification, Solicitation, and Evaluation of International Invitations to Bid	1	2	3	4	5

3. You selected _____ courses as being very useful. Which of these was the most useful?
(Number)

- 3a. Why was this course the most useful?
-

4. How have you been able to apply the skills learned in the courses you attended?
(Interviewer: be sure these applications are specific and read as results or accomplishments of training: for instance: developed a new energy markets code, designed new electric or gas tariffs, or implemented a new meter-reading program)
-

5. What problems have you encountered in applying your training to your work? (Examples: lack of support from supervisor or management, lack of appropriate equipment, conflicting policies?)

6. Have your job responsibilities changed at all since you took the course?

_____ = Yes (go to Q6a)

_____ = No (go to Q7)

_____ = Don't know/not sure (go to Q7)

- 6a. If yes, how?

- 6b. Have you been promoted?

1 = Yes (go to Q6c)

2 = No (go to Q7)

- 6c. If so, what is your new position?

7. Now that you have had a chance to apply the skills taught in the training program(s) you attended, in what area would additional training be most helpful to you?

8. Have you trained other people or shared your training with co-workers (workshops, seminars, presentations, or any other way you have used your training)

_____ = Yes (go to Q8a)

_____ = No (go to Q9)

_____ = Don't know/not sure (go to Q9)

8a. What kind of training have you provided?

9. What do you consider to be the most important areas in which USAID should concentrate future training efforts?

- _____ = Power pooling
- _____ = Setting up and operating energy markets
- _____ = Advanced tariff design
- _____ = Creating a commercial organization
- _____ = Managing in a competitive environment
- _____ = Corporate financing issues
- _____ = Applying commercial accounting practices in the energy sector
- _____ = Other (specify: _____)
- _____ = Don't know/not sure

Thank you for you input.