



**ECONOMIC GOVERNANCE I&II**  
**SUMMARY OF ELECTRICITY PROJECT**  
**DELIVERABLES**

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## **1.0 EXECUTIVE SUMMARY**

In late 2003, BearingPoint was directed by US Agency for International Development (USAID) under the Economic Governance I (EGI) contract to develop Iraqi capabilities in a number of ministries to rebuild vital infrastructure and a foundation for economic stability. Under EGI, BearingPoint executed various projects at the Ministry of Electricity (ME) in an effort to reform the sector to become more economically viable and less reliant on subsidies.

Once the ME became independent and separated from the Ministry of Trade in 2003, the ME found itself lacking in proper regulations, management and operational structures. While the Ministry had an over abundance of engineers, it lacked financial and business experts. The short-staffed Planning Department, although weak both in influence and in skill, has been given the responsibility for the development and implementation of Ministry objectives and strategies. The Planning Department therefore became the focus of BearingPoint capacity building work and was used as the conduit to effect sector reform as it exercised oversight of planning and approving capital projects, setting tariff rates, establishing sector regulations and reforming metering, billing and collection functions.

BearingPoint began its work with a thorough assessment of the electricity infrastructure and its core operations, then created a Master Plan that identified significant infrastructural and operational problems in the electricity sector, with detailed recommendations. The Master Plan became the foundation for future capital projects and the direction for ME strategy.

However, without the proper skills, the ME would be unable to successfully execute the Master Plan. Capacity development projects were consequently carried out in areas such as reorganization of the Ministry, financial management and budgeting, metering, billing and collection, cost of service studies and design of new tariffs, and general management training. An Electricity Regulatory Commission Order was also drafted, as well as a preliminary Reform Bill and regulations covering transmission quality standards.

Under the Economic Governance II (EGII) contract, BearingPoint continued the electricity projects but under far more challenging security and funding circumstances. EGII Electricity projects were designed to make full use of assessments performed in EGI. BearingPoint worked closely with the Ministry Capacity Development Steering Committee and subcommittees in Finance, Privatization, Metering, Billing and Collections, Tariffs and regulation to create individual work plans and timelines for their implementation.

Although BearingPoint has made considerable progress in capacity development at the ME, the Ministry has significant work ahead before it becomes self-sufficient enough to implement sector reform to create a transparent regulatory environment for competitive business formation and economic growth. The discontinuation of the above mentioned Electricity projects would regress progress, as it will cease momentum. The ME has strongly requested that BearingPoint continue its projects in order to advance sector and Ministry reform. The recommended capacity projects are based on discussions with the Ministry, USG and Donors and are designed to build on BearingPoint assessments and recommendations.

## **2.0 ELECTRICITY SECTOR OVERVIEW**

Following a decade of sanctions, warfare, and post-war looting, Iraq's electricity infrastructure is only a shadow of what is needed to support essential services and economic growth. The Electricity sector has suffered severe infrastructure deterioration over the past twenty years due to wars, sanctions, and mismanagement. Presently, Iraq is without the necessary financial capacity to invest in its electricity sector and is therefore in critical need of foreign investment. In order to attract the private sector, the country must establish a legal framework to regulate foreign investment in infrastructure and operations. However, protecting Iraq's infrastructure remains the primary challenge to the development of the energy sector, while the key secondary challenge includes a lack of ministerial coordination to form a cohesive energy policy and regulations. The current security situation combined with an absence of investor friendly regulations prevent the Electricity sector from generating sufficient revenue from its infrastructure in order to stabilize, support and upgrade its economic development prospects.

The Iraqi government must accelerate a plan to protect its infrastructure, create an energy policy, and develop free, fair, and open markets through proper regulations and the capacity to undertake these efforts. In order to create a sector that would attract private investment, the Ministry must first develop the capacity to implement reform and strengthen the Electricity sector. A regulated and stronger sector would enable the ME to undertake other important initiatives within the sector, such as a radically accelerated energy development plan which focuses on generating oil for export, rationalizing fuel supply and delivering efficient electricity to keep pace with the expenditure needs and consumer demand of a newly freed nation seeking its place in the global market place. The Iraqi government needs to facilitate the implementation of the following:

- Develop effective, open and transparent regulation and policies
- Implement best practices for managing the Electricity Ministry
- Strengthen the Ministry's financial self-sufficiency by making the metering, billing and collections functions more efficient and tariffs based on cost of service
- Attract private investment in infrastructure and operations
- Adopt a financial system that integrates all financial and budgeting activities
- Strengthen strategic planning of infrastructure

The successful achievement of these objectives is the goal of Electricity projects of Economic Governance I&II. BearingPoint has focused on reform in the finance and accounting functions, billing and collections, cost of service and tariffs, legal and regulatory frameworks, human resources and organizational needs and the implementation of the Master Plan.

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**ECONOMIC GOVERNANCE I  
CAPACITY DEVELOPMENT PROJECTS  
FOR  
THE MINISTRY OF ELECTRICITY**

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### **3.0 ECONOMIC GOVERNANCE I**

Under Economic Governance I, BearingPoint set out first to study all aspects of the Iraqi Electricity Sector in order to assess the structure of the Ministry with respect to its business processes in order to determine its immediate and long-term needs. Based on extensive interviews with officials in key areas of the Ministry, BearingPoint developed assessment reports and formulated relevant short and long-term capacity projects. These projects thoroughly examined the issues and were exhaustively researched – serving to provide a comprehensive plan for returning the Ministry of Electricity to a state of economic viability and ensuring stable governance.

Areas of the Ministry examined include the following:

- Accounting reform.
- Billing and collections.
- Financial systems and reporting
- Cost of service and tariffs
- Legal and regulatory frameworks,
- Human resources and organizational needs
- Report assessing the call for a Master Plan for physical infrastructure construction and modernization.

Based on its findings, BearingPoint developed capacity building projects with a strategy to implement them jointly with the Ministry. So as to best foster a culture open to reform and management change within the Ministry, an Executive Working Group was developed as a conduit through which these capacity projects would be implemented. The Working Group drew on key decision makers and stakeholders from various parts of the Ministry who would then work with project advisors to advance reform.

Subcommittees were established to act as technical working groups to focus on specialized areas that report to the steering committee and drive management change. The areas of focus for the subcommittees are tariffs, regulation, metering, billing and collection, restructuring and finance. The ultimate objective of the subcommittees is to modernize and drive improvements in management performance, including the establishment of an electricity sector with an independent regulator. The new structure is expected to become open to private investment in conjunction with privatization. BearingPoint will also help the ME to redesign tariffs to cover operating costs in order to strengthen the Ministry's financial stability. Operational improvements will also focus on metering, billing, finance and asset management.

## **3.1 ECONOMIC GOVERNANCE I DELIVERABLES**

### **3.1.1 MASTER PLAN**

By 1990, Iraq had recovered significantly from the devastation of the Iraq-Iran war (1980-88) and possessed a fairly robust electricity infrastructure consisting of 33 plants and 153 generating units with an installed capacity of 9,295 MW. Nonetheless, Iraq has never reached capacity production as the generation units were poorly maintained and operated with improper fuels. During the first Gulf War in 1991, US bombing severely damaged the Iraqi electricity system, which Iraq spent the following twelve years to repair. However, by February 2003, just before the commencement of the second Gulf War, the Iraqi electrical system was struggling to generate 42% of its embedded capacity. A key factor contributing to the erosion of production capacity was forced cannibalization (scavenging parts from one system/machine to service another) of its infrastructure leading to a steady decline of electricity generation, by over 60%. Also, from 1991, the Iraqi government had very little capital to invest in the electricity infrastructure's operations and maintenance, and it was unable to buy spare parts, replace parts at the end of their lifecycle or conduct routine maintenance. Iraq also lost access to natural gas, its most cost efficient and productive fuel, and resorted to more costly and maintenance intensive fuels such as crude and crude residual.

Lack of funds and spare parts also eradicated the normal habits and practices of running a power facility (daily training, apprenticeships, management development, and recordkeeping). Prior to 2003, much of the daily management and operations were performed by non-Iraqi contractors, leading to a deficit of experience among Iraqi ME employees. By March 2003, having lost its Operations & Maintenance (O&M) culture due to lack of funding for spare parts and an over-reliance on foreign contractors, the ME had a poorly trained and under-motivated workforce. Iraq's electricity infrastructure is central to the economic foundation, which the Iraqi government needs be able to maintain stability and provide basic quality of life.

Under Economic Governance I, BearingPoint prepared a comprehensive Master Plan to guide the future development of the electricity network. In order for the benefits to be fully realized, systems must be in place at the ME (including the operating entities) to implement the Plan. There are two main objectives of the Master Plan. The first is to identify the investment planning systems and procedures within the ME and the operating utilities. This should cover both internally funded, or Government-funded, projects as well as those financed by donors and international financial institutions. The second is to design and implement systems (including any legislative or regulatory requirements) to ensure that the principles set out in the Master Plan are embedded in investment planning for the sector. These should be robust and flexible enough to allow for the future restructuring of the ME.

#### ***Master Plan Deliverable:***

##### **3.1.1.1 *Electricity Sector Master Plan for Iraq- July 20/2004***

In 2004, a team of seven BearingPoint specialists in generation, transmission, planning, fuels, and distribution dedicated a significant amount of time and effort to studying Iraq's electricity infrastructure, the result of which was the creation of a comprehensive 10-year plan. The Master Plan consisted of a thorough analysis of the entire electricity system to determine the strengths and weaknesses in the system as well to identify where future

capital investment should be made. Particularly, the plan provides a guide for future investment decisions for the development of generation and transmission systems. The foundation of the master plan is based on study of electricity supply and demand, which was conducted by a thorough examination of the existing generation; transmission and fuel supply systems, combined with a demand forecast. Based on that study, the team established options and plans for the expansion of generation plants and automation of the transmission system in an effort to reach optimal efficiency and reliability while increasing production to sufficiently meet demand. In parallel, the stability of the distribution system was studied and recommendations were made to improve its reliability and maintenance. The plan also contains a section that stresses the need for training in operations and maintenance as well as a section that strongly advocates load planning for software and hardware.

*Electronic File: Electricity Sector Master Plan for Iraq- July 20/2004*

### **3.1.2 METERING, BILLING AND COLLECTIONS**

Estimates produced in 2001 indicated that about 2.6 million out of a total of 3 million properties in Iraq had electricity supply. Of these, domestic customers represented about 80% of the number of customers – consuming approximately 48% of the total load. Industry represented less than 1% of the number of customers, consuming approximately 29% of total load. Government (13%), commercial (6%) and agricultural customers (4%) accounted for the balance of electricity consumption. Each of these customers should be properly billed based on their unique level and habit of electricity consumption. However, a previous survey of Metering in 2001 indicated that as much as 30% of metering systems were faulty, damaged or missing, and therefore accurate consumption levels are unclear. No more recent information is available, but the consensus is that this situation has not improved and may have worsened. Although Electricity billing has recommenced, a large proportion has to be estimated due to these Metering problems.

The Ministry's ability to collect revenue is therefore hindered by the poor metering operation. The Ministry is unable to bill consumers correctly without a proper metering system. Moreover, even with the institution of a proper metering system, the Ministry needs to improve the reliability of its billing and collections operation.

#### ***Metering, Billing and Collections Deliverable:***

##### ***3.1.2.1. MOE- MOE - "Billing and Collecting Process Mapping – Information Gathering As of: 10/ 30, 2003***

This document contains general data obtained through research conducted on the Billing and Collection processes at the ME. Raw data on the meters, meter reading process, and payment method is reviewed and combined with statistics on five classes of customers broken down by domestic, commercial, agriculture, government and industrial. Additionally, timelines for billing and collection activity are illustrated for ordinary and industrial customers showing the billing lifecycle, which begins with meter reading and ends with a bill payment. The information gathered in this document supports the studies and offers recommendations.

*Electronic File: BC process mapping info collection\_Util\_Electr\_1.22.04*

##### ***3.1.2.2. Domestic Billing Frequency in 2000-January 20/2004***

A report was developed consisting of data with two corresponding tables for Domestic Bill Frequency for 2000 and a bell curve of billing frequency. The assessment of the ME billing process indicates gross inefficiency in metering and collection.

*Electronic File: Bill Freq Dist-Baghdad Dom*

##### ***3.1.2.3. Electricity Metering- Final Report - 10/ 12/2004***

A final report of the ME metering process was produced that combines all of the assessments and analysis conducted of the ME metering process and provides recommendations with a strategy going forward. The report begins by specifying the requirement to carry out a metering population survey, explaining the methodology to be used to collect and evaluate metering data. Baghdad Distribution Directorates in Russafa

and Karkh were chosen as pilot areas to study existing metering system conditions. Equipment procurement and warehousing, asset management system, equipment and installation issues, and maintenance of assets were assessed in their entirety and found to be disorganized and grossly deficient. Based on these findings, BearingPoint offered recommendations to create a more efficient and flexible system that would accommodate the future strategy of the Metering Department.

Based on these recommendations, the ME needs to dedicate a management team to structure and operate the metering process and create a formal metering operation. This dedicated metering management team would be charged with modernizing the existing metering technology across the country. Recommendations for the meter acquisition and storage process include a formal procurement and contracting process as well as an international standard tender with relevant specification, an example of which is included. Also, an asset management system was recommended in order to tighten control and accountability over metering assets. An example of a proper Meter Asset Management System is provided in the report. Finally, BearingPoint recommended a number of short and long term metering strategies for immediate impact and long-term improvements.

Electronic File: *Electricity Metering (USAID Iraq Economic Recovery)*

#### **3.1.2.4. Instructions for Billing and Collection- January 22/2004**

In an effort to regenerate the billing and collection process at the Ministry, the CPA developed general consumer guidelines on behalf of the Ministry. The purpose of these guidelines is to relieve consumers of the financial burden of arrears. The Instructions include debt forgiveness for the period between the commencement of the war and the first meter reading after the war for all consumers with the exception of industrial, agricultural and large commercial consumers, which are denied debt forgiveness. These Instructions also define the terms and conditions based on which bills produced by the ME and payment made by consumers. Additionally, this document suggests methods to facilitate meter readings in areas of the country with meter shortages. For such areas the document recommends pooling of spare meters, repair and replacement of damaged meters. A reporting metric is also suggested for the ME to utilize to facilitate tracking of billing and collection.

Electronic File: *Instructions for billing and collection\_Util\_Electr\_1.22.04*

#### **3.1.2.5. Discussion Paper on 2003 ME Billing of Large Consumers- 10/ 24, 2003**

This paper is based on discussions with the ME on its willingness and inclination to begin billing of non-domestic customers such as agricultural, industrial and large commercial customers. A notable obstacle to resumption of the billing process to those consumers is the reluctance of the Ministry to take a decision on whether to collect or forgive pre-war arrears. Also impeding progress on billing and collection are a number of constraints such as lack of equipment, absence of security for meter readers, perpetual vandalism, and shortage of both spare parts and service vehicles. BearingPoint recommends that the ME write off arrears, immediately produce bills and meter readings where possible, take inventory of all spare meters, impose realistic and firm terms and conditions for metering and billing, as well as apply effective management strategies as discussed in the report.

Electronic File: *Position paper on Large Consumer Billing\_Util\_Electr\_1.22.04*

**3.1.2.6. *Purchasing Requirements for Billing Re-Starts- January 22/2004***

A survey was taken in November 2003 of ME Distribution Companies and the Information Operations and Research Department, which is responsible for the production of bills and meter readings. BearingPoint developed a table based on this survey, listing basic requirements for furniture and equipment to enable the ME to restart and maintain the billing schedule. This was part of the effort to prepare the area of the Ministry in charge of billing to expedite the consumer billing process.

*Electronic File: Purchasing Requirements for Billing Re\_Util\_Electr\_1.22.04*

**3.1.2.7. *Metering Equipment Outline Purchase Specifications- 10/12/2004***

BearingPoint recommended a sample tender document for single and three-phase credit and pre-payment electronic metering using single and multi-rate meters. This sample tender provides a scope of work and common equipment and service requirements as well as relevant equipment specification. The Ministry could readily use this document for tendering for metering technology.

*Electronic File: Tender Document\_Electronic Metering*

**3.1.2.8. *Metering Equipment Outline Purchase Specifications- 10/12/2004***

BearingPoint presented the Ministry with examples of tenders for procurement of generic meters that utilize varying combinations of phases and rates. The equipment specifications include single-phase meters combined with single rate, two rate, and Smart Card Pre-payment meters. As well, poly-phase meters using whole current, single, two rate and VT operated programmable meters are also introduced. This document provides a scope of work and common equipment and service requirements as well as equipment specification. Any of these tenders could be used by the Ministry to procure the meters.

*Electronic File: Tender Document\_Generic Metering*

**3.1.2.9. *Issues and Recommendation Regarding Moe's Resumption of Consumer Billing- - 10/ 23, 2003***

BearingPoint produced an opinion paper on the critical need for the ME to immediately resume the billing of all electricity consumers. The paper discusses a number of obstacles such the lack of security for meter readers, vandalized and damaged meters, unavailability of spare metering equipment, shortage of service vehicles, arrears in collection, accurate reading of electricity consumption and finally, the seeming reluctance of the ME to take decisions to resolve these issues and resume metering activities. BearingPoint recommends that the ME confront these challenges by taking specific actions to expedite the procurement of infrastructure needs. The ME needs to take inventory of spare equipment, as there are numerous meters that are damaged and inaccurate. Meanwhile, consumers need to be forgiven of prewar arrears. A formal billing and collections unit must be formed within the ME to which responsibilities are assigned to ensure that billing and collection activities are resumed in an effective and timely manner. It is recommended that billing of the different consumer categories be tracked through an automated system. As well, BearingPoint recommends the execution of a publicity campaign designed to prepare consumers for the resumption of billing and collection.

*Electronic File: Position paper on Resumption of Consumer Billing\_Util\_Elect*

**3.1.2.10. Electricity Distribution Survey Pilot-Test: Sample Design, Household Survey of Electricity Availability And Technical Analysis of Eleven Electricity Substations**

The overall purpose of the sample design is to construct a reliable household survey of electricity availability. The survey intends to measure, by hours per day, the availability of publicly supplied electricity to households throughout Iraq. BearingPoint reports on the pilot-test conducted in Baghdad through this survey. The pilot involves three 10 percent samples of the approximately 104 electricity substations in Baghdad. The data in the survey is designed to examine electricity availability to end-users as well as to corroborate amperage readings with household reporting.

Electronic File: *Electricity Survey*

**3.1.2.11. Initial Data Gathering**

As part of the capacity building at the ME, BearingPoint created a due diligence checklist for information needed to study the metering, billing and collections processes. Areas of focus will be mapping of the current processes, staff competencies, training facilities and programs, risk assessment, transparency of operations, reporting requirements, and transactions with external agencies.

Electronic File: *Initial data gathering\_Util\_Electr\_1.22.04*

**3.1.2.12. Billing and Collection Systems and Processes Improvement**

A comprehensive study was made of the ME billing and collections process. Data on the billing and collection system was assembled through extensive interviews with top management, field managers, and head office functional staff. The study included an examination of customer segmentation, the consumer billing system, operating procedure manuals, equipment, hardware and software, collection of accounts receivable, and delinquent payment penalties. In particular, the report focused on flaws and inefficiencies in the system that contributed to commercial losses. For each of these areas, BearingPoint proposed immediate and long-term remedies. Recommendations included some cost-effective options for improving the overall Billing and Collection staff, as well as an approach for migration to a new and comprehensive customer information, service and billing technology solution.

Electronic File: *Billing and Collections Final Report- 10/ 12/2004*

**3.1.2.13. Order to Restart Billing Process**

As a result of discussion regarding terms and conditions for the billing practice, on December 23, 2003 the Minister issued an order to restart the billing process. Highlights of the order include a stipulation that any debts from before March 20, 2003, owed by all consumers, except for large commercial and agricultural ones, would be forgiven. All distribution companies are to immediately commence meter reading. Following meter readings, any unpaid bills will be accrued rather than written off.

Electronic File: *Order*

#### **3.1.2.14. Order to Restart Billing Process**

As a result of discussion regarding terms and conditions for the billing practice, on December 23, 2003 the Minister approved and executed an order to restart the billing process. Highlights of the order include a stipulation that any outstanding debts prior to March 20, 2003, owed by all consumers, except for large commercial and agricultural consumers, would be forgiven. All distribution companies are to immediately commence meter reading. Following meter readings, any unpaid bills will be accrued rather than written off.

Electronic File: Order

#### **3.1.2.15. Billing and Collection Systems and Processes Improvement**

A comprehensive study was made of the ME billing and collections process. Data on the billing and collection system was collected through extensive interviews with top management, field managers, and head office functional staff. The study included an examination of customer segmentation, consumer billing system, operating procedure manuals, equipment, hardware and software, collection of accounts receivable, and delinquent payment penalties. In particular, the report focused on flaws and inefficiencies in the system that contributed to commercial losses. For each of the areas, BearingPoint proposed immediate and long-term measures to remedy such events. Recommendations included some cost-effective options for improving the overall Billing and Collection staff to adopt, as well as an appropriate migration approach towards a new and comprehensive customer information, service and billing technology solution.

Electronic File: Billing and Collections Final Report- 10/ 12/2004

### **3.1.3. REGULATION AND SECTOR REFORM**

Extensive interviews with the Ministry of Electricity were conducted to gain an understanding of the regulatory framework that existed in the Electricity sector. The research indicates that the ME has oversight of both operation and the regulation of the sector, which created a non-transparent sector that was closed to private investors and provided no protection. In response, USAID through BearingPoint, the CPA and the Ministry jointly set out to develop a strategy to create a sector that would attract investors through the institution of an independent electricity regulator.

A Committee was consequently formed to review presentations and training on regulatory principles. BearingPoint drafted an Order that establishes an independent electricity regulator, to be implemented by the CPA. Unfortunately the order was not promulgated by the CPA in time and was delayed until a new Government was elected. And once BearingPoint left the country, the Committee ceased to meet and its Chairman retired.

The ME was provided with a number of documents to help develop an understanding of regulation and to establish an independent regulator. BearingPoint delivered to the Ministry a draft law and an implementation plan to create an Electricity Regulatory Commission, and procedural rules covering its management and operation. A budget was created to “stand-up” the Electricity Regulatory Commission whenever a piece of legislation with the force of law is put in place to create it. Additionally, an explanatory memorandum of the draft law was prepared for the Governing Council in anticipation of future adoption.

Other regulatory work performed included the completion of draft regulations covering transmission quality standards and performance obligations. The regulations propose a self-regulatory structure that sets broad performance obligations for those involved in core transmission grid activities and real time operation (i.e. the system operator, and generation and distribution asset owners and operators). The system operator would be required to meet performance obligations in accordance with policies agreed with the Commission – contained in a policy statement, which would be regularly revised in a consultative process.

#### ***Regulation and Sector Reform Deliverables:***

##### ***3.1.3.1 Iraq Transmission Quality Standards Performance Obligations- 6/6/2004***

This draft proposes a self-regulatory structure designed to set broad performance obligations for those involved in core transmission grid activities and real time operation (i.e. the system operator, and generation and distribution asset owners and operators). The system operator would be required to meet performance obligations in accordance with policies agreed with the Commission – contained in a policy statement, which would be regularly revised in a consultative process. BearingPoint recommends the formulation of a draft policy statement in consultation with the Iraqi Ministry of Electricity regulatory working group. The draft covers quality standards in respect of the operation of the high voltage grid; performance obligations and technical standards to be met by asset operators; ancillary services; transport; and transition.

*Electronic File: Iraq Transmission Quality Standards Performance Obligations- 6/6/2004*

**3.1.3.2. Electricity Regulatory Commission of Iraq - 6 5/2004**

BearingPoint strongly encouraged the ME to establish a Regulatory Commission for Electricity to ensure that that Iraqi electricity system operates in a reliable and sustainable manner and that consumers are charged fair and reasonable rates for electricity service. The commission would serve to establish an open and transparent regulatory system that reflects international best practices and promotes public confidence. The function of the commission would also extend to protect the interest of the consumer in respect of prices charged and terms of supply.

Electronic File: *Electricity Regulatory Commission of Iraq - 6 5/2004*

**3.1.3.3. Categories for Electricity Commission Budget**

Chart of Accounts are suggested for the Electricity Regulatory Commission to use in order to create a budget in support of its development.

Electronic File: *ERC budget – working paper- 6 5/2004*

**3.1.3.4. Electricity Regulation Commission of Iraq Organizational Chart- 6 5/2004**

Organizational Charts are proposed for the establishment of the Electricity Regulatory Commission. The organizational charts include those for Commission and Executive Management, Liaison and Legal Dept, Operations Dept, Tariff Dept, Market Structure and Policy Dept., Consumer Affairs Dept., Administration Dept.

Electronic File: *Electricity Regulation Commission of Iraq Organizational Chart- 6 5/2004*

**3.1.3.5. Electricity Power Sector Regulatory Reform Bill- 6 5/2004**

The purpose of the Electricity Sector Regulatory Reform Bill is to support the formation of a Regulatory Commission. The Reform Bill defines the objectives and functions of the Commission as well the terms and conditions of the span of control the office would adopt. The bill would stipulate the process by which the appointments of Commissioners, Chairperson/Chief Executive Officer are made. Procedures covered in the Reform Bill would include those for appointment and suspension or dismissal procedures of the Commission Officers as well as the meetings, procedures, decisions, orders, recommendations and hearings of the Commission. Also specified would be the administrative duties of the Commission Officers with respect to remuneration, expenses, and disclosure of potential conflict of interest, among others.

Electronic File: *Electricity Power Sector Regulatory Reform Bill- 6 5/2004*

**3.1.3.6. White Paper on Proto- Regulation**

This document advocates regulatory reform of the utility sector by strengthening local governance. The argument is that political discord as a result of unfavorable energy allocation could be mitigated by allowing local governments to manage day to day operations while an independent body would handle high level regulatory issues. Local governments would therefore manage customer service complaints, repairs, planning of new service area feeders, detection of illegal connections, and line safety policies. An independent regulatory commission would be responsible for the design of reasonable tariffs and for ensuring equitable distribution of electricity independent of political and

commercial special interests. This paper recommends that the Minister of Electricity initiate a proto-regulatory commission by appointing senior executives from the ministry or from other agencies to trial terms as regulatory commissioners.

Electronic File: *White Paper on Proto- Regulation*

### **3.1.3.7. Consultative Package – 6/6/2004**

#### *1- Creation of an Energy Policy Implementing Agency*

BearingPoint proposed an approach to ultimately create a national energy policy commission. The Iraqi Government requires the creation of an Advisory Energy Council consisting of specific Ministries that could economically impact the long-term energy policy. The Electricity Regulatory Commission will also function as an advisor to the Iraqi Government in the areas of tariffs, rate design, revenue requirements, market structure, and customer service and policy implementation.

The recommendations made by the Advisory Energy Council will help the Electricity Regulatory Commission achieve a fair, just and reasonable allocation of cost among customers. In order to control costs and offer affordable and stable electricity to all customers, the ME needs to ensure that its plants efficiently utilize fuel, the largest cost component, and strive to improve and maintain reliable quality of service. The Advisory Energy Council will be subject to oversight from relevant existing organizations to ensure compliance with Iraq's anti-corruption programs and the enforcement of transparent decision-making processes. This activity is necessary to build public trust in the Iraqi Government. The oversight organizations are: The Office of Public Integrity; Office of the Inspector General (Investigations); and Supreme Auditing.

#### *2- Response to UK Comments on the Proposed CPA Order to Establish the Electricity Regulatory Commission*

This document reviews and analyzes United Kingdom comments on the Proposed CPA Order to establish the Electricity Regulatory Commission of Iraq. A number of points are debated and discussed in the report such as (1) staying a decision made by the Hearing Panel or the Director General, (2) potential conflicts of CPA rules of procedure with current Iraqi Law, (3) the sanctions of suspending or closing operations that may be issued by the Hearing Panel, Director General or Board of Commissioners, (4) monetary penalty attached to a dismissal for violation of conflict of interest, and (5) the assignment of "more serious offense" to an alleged breach of regulation.

#### *3- Self-Regulation by the Ministry of Electricity*

This brief document compares the effects of self-regulation by the Ministry of Electricity with that of an independent regulator. An independent Electricity regulatory body would be the most practical for the long term as it separates policy from commercial operation. However, the Government would have to undergo a lengthy process to pass legislation to establish a US-style independent regulatory commission. Self-regulation would be a method of immediately expediting regulatory activities in support of sector reform.

#### *4- Regulation of the Iraqi Electricity Supply Industry: Immediate and Short-term*

This document recommends that the ME concentrate on a number of immediate and short-term objectives toward creating an electricity market that is governed by both financial and economic principles. The discussion focuses on the effort to develop affordable electricity rates that support the deferral of partial subsidies required from the Ministry of Finance. These subsidies have been instrumental in keeping tariffs low. Affordability in this paper is defined as the rate that is socially and culturally acceptable, if possible, one that enables the Ministry of Electricity to recover more than its variable cost of producing electricity. In order to establish such rates, social regulation has to precede effective economic regulation in order to stimulate private investment and create a market-driven electricity industry. Such reform may in the future assist Iraq in expanding and upgrading its transmission and distribution facilities without requiring its electricity customer to pay for these improvements.

#### *5- Initial Objectives and Goals for the Electricity Regulation Commission Created by Order of the Coalition Provisional Authority*

The document is a draft order presented to the Coalition Provisional Authority (CPA) to effect the creation of the Electricity Regulatory Commission (ERC). An independent regulatory body should be able to facilitate *fair and reasonable* tariff levels for electricity usage based on ME operating costs. An independent regulatory commission provides for transparency, with transactions conducted at public hearings, where electricity users will be able to participate in the collection of evidence that *must* support the regulatory commission's decisions. Top priority for the Iraqi electricity industry would be for the ERC to shift the existing tariff strategy toward a cost-based electricity tariff while protecting the interests of customers. The objective is to create an opportunity for the electricity sector to become economically viable and operated with expertise.

#### *6- Iraqi Electricity Industry: Context and Potential*

This document provides an overview of the factors that impact investor risk in the Iraqi Electricity sector. The Iraqi risk factors are most sensitive in the areas of social relations, political factions, administrative procedures and contracting processes. The absence of "transparency" in transactions, the volatile security situation and political unrest are dominant and real risk factors. Successful operation of the electricity infrastructure is particularly dependent on control over infrastructure security. Put forward for comparison are power alternatives that may be less vulnerable to the current security situation for Iraq to consider as capital projects. The paper concludes that transparent legal and regulatory frameworks are critical for the establishment of an economic environment that stimulates trade and private investment in the Iraqi electricity sector.

#### *7- Consumer Behavior as a Result of Substantial Increases in Electricity Rates*

Consumer reaction to the increase of electricity rates is examined in the design of a socially and economically acceptable Electricity rate. The Iraqi people need to grow accustomed to paying higher electricity bills as routinely metered and billed. However, until the electricity supply can improve to a level that is perceived by the consumer to have added value, such an increase in price would only generate mass opposition and demonstrations, leading to political unrest and escalation of illegal connections. Nonetheless, economically speaking, the average Iraqi electricity user can weather a rate increase of three to seven times the existing rate.

*8- Electricity Regulatory Commission and the Transitional Administrative Law*

This document examines the influence of the Transitional Administrative Law (TAL) on the establishment of an Electricity Regulatory Commission. The TAL only contains the “rules of procedure” for the *eventual* acceptance of a Permanent Constitution and the formation of a duly elected government. The National Assembly or a combination of the National Assembly and Presidency Council can amend or rescind a CPA law, regulation, order or directive such as one to establish an Electricity Regulatory Commission. Consequently, this report argues that a CPA Order to establish the Electricity Regulatory Commission may be rescinded, even if the Electricity Regulatory Commission is confirmed as a National Commission.

*9- Time Line For The Adoption of the Iraqi Permanent Constitution  
And the Election Of The Iraqi Permanent Government*

A timeline was produced for the adoption of the Iraqi permanent Constitution and the election of a permanent Government.

Electronic File: *Consultative Package – 6/6/2004 (zip file)*

**3.1.3.8. Coalition Provisional Authority Order**

This is a draft of an order authorized by the CPA to create an Electricity Commission to operate the generation, transmission and distribution of electricity for Iraq. The order contains terms and conditions for the existence of the commission as well as for the structure, which it should take. The order sets conditions for tariffs, supply and production of electricity as well as for the Commission organization, regulation of prices, and safety for the public and employees,

Electronic File: *ERC Order 2nd Draft*

### **3.1.4. ENTERPRISE MANAGEMENT INFORMATION SYSTEM (EMIS)**

The Ministry of Electricity has been employing the same operational processes without change for decades. Files and records of ME operating companies and headquarters have always been recorded and maintained manually and kept veiled from the headquarters and other ME companies. Internal controls have never existed and are nonexistent even today. Without forcing automation on the current manual system that would permanently change the processes, the system would remain unchanged.

A considerable disadvantage to manual processes is a lack of internal controls, inaccuracy of records, inefficiency of operations and the absence of a fraud deterrent system. BearingPoint therefore initiated a full assessment of Ministry operations and its processes to develop a customized automation system that would utilize best practices in areas such as financial management, accounting, asset management, procurement, and day-to-day business operations. The system would engage the Departments of IT, Finance, Economics, Planning and counterparts in the technical core operations (Generation, Transmission, Distribution) in order to integrate financial operations. The purpose of the assessment is to create customized specification for the implementation of an enterprise-wide application, in order to acquire data integrity and transparency, as well as operational and financial efficiency. The projects listed in the section below constitute BearingPoint's effort to produce specifications to be used toward a tender for an Enterprise Management Information System.

#### ***EMIS Deliverables:***

##### ***3.1.4.1. Approach to Specifications within Pending Bid Document for EMIS for Iraqi ME Operating Companies- 10/ 12/2004***

This document is a list of general specifications for consideration in the tender for an Enterprise Management Information System (EMIS) for the ME. The list contains specifications for the application software, hardware, architecture and functions as well as services the vendor should provide in the bid. The specifications contained in this document are designed to meet the needs of the Ministry as assessed through interviews with ME staff and review of the operational processes.

*Electronic File: Agreed Approach to the EMIS*

##### ***3.1.4.2. How to Respond to This RFP***

This document consists of the Request for Proposal for a proposed Enterprise Management Information System (EMIS) for the ME. The objective of this document is to ensure that the future EMIS possess the appropriate features to allow the ME to manage and track correspondence, establish efficient workflow processes and maintain records of all aspects of the operation. Currently, the ME keeps manual records of day-to-day transactions without an automated and integrated system. Each operating unit maintains its own unique record system independent of any other business unit within the ME. An EMIS would ensure that best practice workflow process is implemented throughout the organization in order to reduce errors, bottlenecks and inefficiency and most importantly, to deal with the lack of transparency within the operation.

*Electronic File: EMIS\_Applications Specs for Iraq-ME RFP\_06\_20\_04*

**3.1.4.3. EMIS Request For Proposal- Technical Functionality**

The document consists of comprehensive instructions to bidders who wish to respond to the Request For Proposal for an EMIS. Functional areas that the EMIS should address include General Ledger, Budget, Treasury, Accounts Payable, Accounts Receivable, Fixed Assets, Cash Receipt, Financial Reporting, Fleet Management, Payroll, Purchasing, Inventory, Customer Billing, Premise Management Database, and Service Work Order. Potential bidders are asked to satisfy a detailed list of requirements for each of these areas.

Electronic File: *EMIS\_RFP\_Technical Functionality\_06\_20\_04*

### **3.1.5. FINANCE**

A team of BearingPoint advisors assessed the financial functions of the Ministry and deemed them to be disjointed, disorganized, and lacking structure and transparency. ME lacks set processes as each business unit operates independently and separately from one another and from the Ministry headquarters. Additionally, the accounting system adopted by the ME was out of order with international accounting standards that are required by lenders and donors. The ME was considered in critical need of financial reform.

Under the EGI project, BearingPoint focused on providing extensive training in finance for the ME. BearingPoint formed an Executive Working Group with Minister sponsorship to strategize and facilitate the implementation of finance reform. Sub-committees were formed, trained and became fully functional in developing budgets, and implementing accounting reforms. Following extensive training and practical work in improving these areas, three Ministry-wide Leadership performance review assemblies were held with the purpose of updating all Ministry of Electricity leadership on the progress and accomplishment of reengineering, training, tariffs, financial management and other activities that Bearing Point conducted with the Ministry's support. Approximately 290 people attended these meetings including Director Generals, and heads of financial, economic, planning and technical departments from South, North and Middle regions, and Ministry Headquarters.

On the job training and classroom training have been instrumental in the effort to ensure that the recommended finance processes are fully adopted and accepted. Training programs were provided for 178 financial professionals representing a wide section of accounting, billing, budget and IT departments from Baghdad, Middle HQs, and Generation, Distribution and Transmission companies have been trained.

To further advance the financial capacity at the Ministry, a new Chart of Accounts was implemented on which the ME finance and accounting professionals were trained. The new application allows for seamless flow of the accounting data between the old Chart of Accounts and the new International Accounting Standard (IAS), a compliant one that has been developed and currently resides at the Ministry of Electricity. The new Chart of Accounts facilitates reporting of financial statements of the Ministry of Electricity and commercial entities in the IAS compliant format. All available financial statements for the Ministry of Electricity and commercial entities for fiscal year 2003 have been restated to be compliant with the IAS format and reporting requirements. Additionally, the budget for FY 2004 was completed by ME staff. Budget planning processes are established and formalized, and staff is trained on budget planning procedures and methodology.

#### ***Finance Deliverables:***

##### ***3.1.5.1. Executive Committee Report (English and Arabic)***

Report on the Executive Working Group (EWG), which was formed on December 3, 2003 to be dedicated to managing reengineering projects intended to improve operational efficiency.

*Electronic File: Executive Committee Report*

**3.1.5.2. FERC Chart of Accounts- 10/ 12/2004**

A Chart of Accounts specific for Power Plants was produced to train the ME Subcommittee for Finance on the line items that need to be considered in the preparation of budgets for the plants.

Electronic File: *FERC Accounts*

**3.1.5.3. Inspector General Primer- 10/ 12/2004**

This document introduces and describes the functions of an Inspector General. A brief on the adoption of an independent Inspector General was introduced to the ME in an effort to establish a framework that would eliminate fraud, waste and corruption through the use of independent audits, investigations and inspections facilitated by unlimited access to all Ministry documents and records. The Inspector General would be appointed by the Iraqi Government as an independent body without political affiliation, who would keep the Prime Minister and Governing Council informed of irregular activities within the Ministries.

Electronic File: *Inspector General Primer*

**3.1.5.4. ME Budget 2004- 10/ 12/2004**

The budget for 2004 was obtained from the ME to be reviewed in assessment of its efficacy. The ME budget, which is excessively vague and general, fails to capture essential line items. The ME claimed that it takes ten months to consolidate a budget for the entire Ministry as the information flow between organizations and the ME companies is slow, inadequate and difficult to obtain.

Electronic File: *ME Budget 2004*

**3.1.5.5. Addressing the Ministry of Electricity Management Agenda through Financial Management- 10/ 12/2004**

The document discusses strategic management of human capital, competitive sourcing, improvement in financial performance, expansion of electronic government and budget and performance integration.

Electronic File: *Ministry Of Electricity Approach Document*

**3.1.5.6. Fraud Indicators Handbook- 10/ 12/2004**

A handbook was produced for the Ministry of Electricity based on which operational procedures could be established in order to detect and prevent fraud. The handbook discussed various fraud indicators, and explained ways to detect fraud in government contracts, projects and procurements, as well as fraud schemes.

Electronic File: *Fraud Indicators Handbook*

**3.1.5.7. Internal Control- 10/ 12/2004**

This report discusses the importance of internal controls – prevention, deterrence, and detection – to deal with fraud and mismanagement and the role internal auditors should play. The paper describes the procurement process currently employed by the ME:

auditors sit on the committee responsible for the selection of a vendor that creates a conflict of interest with the independent review function involving contract evaluation criteria, the disbursements process and project implementation, and describes inconsistencies identified in discussions with the Chief of Internal Audit for the ME. The role described for internal auditors includes writing Written policies and procedures current non-existent, and implementing communication channels, which are deficient and unreliable.

The paper describes the present Internal Audit team structure for each power plant and recommends the institution of a separate independent office of Inspector General on the level of the ME with direct lines of reporting by the head of the internal audit team. The flaw in that model is an absence of objectivity in investigation of fraud and corruption at the Ministry. An Inspector General Office must be established with absolute independence from the Ministries but possessing full access to Ministry records and documents. The Inspector general should furthermore be made accountable to the Prime Minister rather than to the Ministries. In the report, BearingPoint further advocates ethics procurement as well as anti corruption policies for the organization.

There is a further discussion of leadership example, training and discipline, and a description of present payroll procedure. The external audit function is not in place and needs to be set up. The Summary and Recommendations section will be useful, including the suggested immediate changes to improve internal control. The names of persons interviewed are also listed.

*Electronic File: Internal controls Approach*

#### **3.1.5.8. Internal Controls – AR**

This training material, a version of which is also translated into Arabic, is developed for the ME Steering Committee to explain the need for internal control systems designed to eliminate fraud. The intent of the document is to assist the ME in assuming ultimate responsibility for implementing effective internal controls which senior officials are dedicated to maintain. For long-term advantages of such controls, the Iraqi Government must put in place an Inspector General (IG) to execute of such initiatives across all ministries. Weak or ineffective internal controls, such as inadequate record keeping, external audit, or cash management, have caused operational losses in a number of ministries including the ME. The ME suffers severely from insider fraud, which could be prevented or exposed by utilizing effective control mechanisms before allowing fraud to result in loss of revenues. Effective internal controls form the foundation for risk management and safeguard assets. They also help guard against fraud and financial mismanagement and ensure compliance with laws, regulations, and the company's own policies. This document is structured as a due diligence checklist to ensure that all areas of the operation are considered when designing internal controls.

*Electronic File: Internal Controls – AR*

#### **3.1.5.9. Purchasing Internal Controls Assessment Primer**

This paper describes the office and role of the Iraqi Government's mission to control independent and objective audits, investigations and inspections. This document is also a guide to prevent and detect waste, fraud and abuse. The document suggests reviewing

pending legislation and keeping the Minister and Governing Council informed. Included is a Code of Conduct: Framework for Ethical Decision Making.

Electronic File: *Purchasing Internal Controls Assessment Primer*

**3.1.5.10. *Integrated Financial Planning, Financial/Cost Accounting, Financial/Cost Reporting, Information Resources, Internal Control, Cost of Service***

BearingPoint recommended a comprehensive review of the financial management system, information resources, internal controls and the cost of service model that the ME utilized at the time of reporting. BearingPoint identified a number of gaps in both the financial management and accounting systems and thoroughly demonstrated their negative impact on the operational efficiency of the ME. Additionally, this document was produced to serve as a reference and training tool as it contains examples of best practice business processes, practical forms and documents in English and Arabic for the ME to use. A number of business processes have been assessed and analyzed in the report including the accounting system, budgeting, procurement, internal controls and communications, transparency and efficiency of operations. The report ends with recommendations based on the assessments and analysis. Recommendations include examples, procedures and best practice options.

Electronic File: *report\_v4.0\_Appendices*

**3.1.5.11. *Request for Evaluation of Electricity Assets***

This memo is a request for the CPA to perform a valuation of ME assets to assess the severity of the damage on the fixed assets of the war. The ME documents fail to reflect such degradation of value or the funding of capital projects by the Government or donors. Additionally, inflation has destroyed the recorded value of assets denominated in dinars. BearingPoint recommends a valuation carried out through a team visiting each plant to record the details and condition of its assets. A valuation is deemed to be important as a prerequisite to divestiture and/or privatization, to capture the value of stranded assets in sector restructuring and to support the development of rationalized electricity tariffs.

Electronic File: *Request for Evaluation of Elec. Assets*

**3.1.5.12. *Integrated Financial Planning***

The purpose of this report is to propose recommendations to develop an overall Integrated Financial Planning Process (IFPP), enhance the budget processes and improve monitoring and control. The IFPP is intended to provide a goal, with roadmap, for institutional improvements over a reasonable time. The report offers a number of recommendations that encompass organization changes and staffing adjustments, direction to enable each Company to focus on tactical action plans (budgets); monitoring of performance in achievement of approved budgets of individual companies; capital and operating budget preparation; process improvements; specific revenue and expenditure targets; and more rigorous monthly monitoring and control, including both capital and operating budgets.

Implementation of both immediate and longer-term IFPP strategies will require policy commitment and procedural changes that need to be sponsored and coordinated by a steering committee at the ME. BearingPoint recommends that ME establish a committee

charged with the responsibility to develop specific implementation steps and associated proposals for Ministerial approval as required. That committee should function under the auspices of the Deputy Minister and the DGs from the three Operating Business Units' HQ. The ME must develop a plan that clearly links the key associated sub-processes integrating the financial transactions of each operating unit. For the Ministry of Electricity, the recommended Integrated Financial Planning Process provides a top down elaboration of the strategic framework within which individual Companies prepare tactical action plans.

*Electronic File: Integrated Financial Planning*

### **3.1.6. COST OF SERVICE AND TARIFFS**

Early in the Economic Governance I project, BearingPoint conducted a full cost of service study. Upon completion of this study, it was determined that the existing tariffs failed to fully reflect cost of service. While expenses and resources such as fuel and labor were rising, and the number of industrial customers (highest consumers of electricity) multiplying, tariffs remained unchanged and at very low rates. Meanwhile, electricity service was heavily subsidized through the Ministry of Finance.

In conducting the cost of service study, BearingPoint discovered that the ME allocated very few resources to tariff design. Although the Ministry's Department of Planning is responsible for tariff design, its staff failed to remain current on the use of new tariff models and rate design. BearingPoint therefore jointly worked with the Ministry, creating a Steering Committee dedicated to Tariff work. The Committee received extensive training on the methodology and principles of developing tariffs and customizing rates per customer class. BearingPoint helped build tariff models with a rate design based on cost recovery, reflecting proper pricing signals.

Achievements in the area of Cost of Service and Tariffs through the deliverables are summarized as follows:

- Through a joint effort with the Ministry Steering Committee dedicated to tariff reform, a Cost of Service study for both Actual 2002 and Budget 2004 were completed. The study calculated impact of financing capital costs in Tariffs and of full fuel liberalization on Tariffs for Budget 2004.
- The Cost of Tariffs for various recovery options was presented to the Executive Committee Group. A strategy for cost analysis and rate base has been developed and a cost of service model and the principles of a tariff model were established and agreed upon by the CPA and Ministry. To implement the strategy, an Executive Working Group and a Tariff sub-committee has been formed, members were appointed, and regular working group sessions were scheduled to meet in order to progress the strategies.
- Three Ministry and countrywide Leadership "report card" sessions also were conducted. The purpose of these two hour session was to update all Ministry of Electricity leadership on the progress of reengineering, training, tariff, financial management and other activities that Bearing Point is conducting with the Ministry's support and to report on accomplishments to date. All Director Generals and heads of all financial, economic, planning and technical departments attended the sessions.
- Training is complete in the Tariff group on calculations of cost of service, rate analysis, cost allocation per rate class, and on methodology and principles of developing tariffs using various models. The joint Cost of Service/Tariff Committee is using the agreed upon model and format to produce the results. The Committee is taking an interactive role in providing Cost of Service inputs. The Committee has been fully involved in the assessment of and recommendations for a financially and socially viable tariff structure. Assumptions used to develop allocation factors, and political issues associated with timing the tariff increase are being reviewed by members of the Tariff Committee

***Cost of Service and Tariffs Deliverables:***

***3.2.6.1. Average Unit Cost for Baghdad Distribution Company 2002- 10/12/2004***

This table serves as a source document for the design of tariffs based on cost of service. The table is part of training the ME on tariff design.

*Electronic File: AveCost2002-Baghdad*

***3.2.6.2. Demand Allocation Example - 10/ 12/2004***

This spreadsheet model was produced for the Ministry to forecast seasonal cost of service based on expected demand at different rate classes. The purpose of this spreadsheet is to serve as a training tool to design seasonal based rates.

*Electronic File: Demand Alloc Example*

***3.2.6.3. Energy Allocation Example- 10/ 12/2004***

A spreadsheet model was produced for the Ministry to forecast seasonal cost of service based on expected load used by different rate classes. As in the Demand Allocation spreadsheet, this spreadsheet is intended to serve as a training tool to help the ME design seasonal rates.

*Electronic File: Energy Alloc Example*

***3.2.6.4. Total Ministry Cost of Service***

The spreadsheet is developed to capture the cost of generating and supplying electricity to the average consumer and is used as a training tool for the ME. The model categorizes consumers into five classes -- domestic, small commercial, industrial, government and agricultural. Rate blocks are suggested for each consumer class in order to discriminate in such a way as to apply reasonable and fair rate variances to the blocks. The spreadsheet further factors in seasonal consumption variances in case the ME decides to design tariffs to reflect seasonal variances. The model represented in the spreadsheet is that which is currently utilized by the ME.

*Electronic File: Total Ministry COS\_06\_20\_04*

***3.2.6.5. Bill Frequency Distribution-Baghdad Domestic Customers- 10/ 12/2004***

This spreadsheet maps the distribution of domestic consumption of kW to determine average usage and areas in which rate blocks should be placed. Each rate block represents a class of customer with varying demand for electricity. A rate block would ensure that each block of consumers pay fair and reasonable rates and that no one class of consumer is over charged or subsidizes the consumption of another.

*Electronic File: Bill Freq Dist-Baghdad Dom*

### **3.2.6.7. Cost of Service Studies**

The Cost of Service studies are intended to develop reasonable and affordable rates. This brief summary stresses the importance of adopting a tariff system that factors the ME's total cost of providing electricity so that in the long-term the Ministry would phase out its reliance on government subsidies. The document stresses the need to classify customers by blocks toward which varied rates are applied to ensure that tariffs are reasonable for all types of customers. The ME needs to adopt an independent method of cost recovery for each customer class based on its consumption level and habits. The Cost of Service studies will facilitate the customization of rates to fit each customer class based on the characteristics of its consumption.

Electronic File: *Cost of Service Studies*

### **3.2.6.8. Rate Design Process Map**

Through extensive interviews with the Planning Department regarding tariff design, the BearingPoint consultant developed a rate design process map as a training tool for the Tariff Subcommittee at the ME to initiate and facilitate the tariff plan.

Electronic File: *Rate Design Process Map*

### **3.2.6.9. Summary of Cost of Service and Tariff Assessment**

The summary is an overview of the cost of service design intended for the Ministry of Electricity to use in developing a suitable tariff rate design. The proposed rate is designed to allow the ME to gradually cover operating expenses. Although public subsidies are not uncommon in countries of similar economic conditions, they ultimately obscure the actual cost of service. The summary provides necessary steps the ME should consider in creation of a reasonable rate that reflects cost of service. BearingPoint recommends that the ME conduct a thorough Cost of Service study to reflect market costs of resources. With benefit of that study, the ME needs to develop realistic rate blocks that are generous to the poor and encourage conservation among over consumers.

Electronic File: *Summary of Cost of Service and Tariff Assessment*

### **3.2.6.10 Social and Political Consequences of Increasing Prices**

Concerns about wide protests of price liberalization in Iraq are germane in light of the current political situation. The paper analyzes the consequences resulting from an increase in tariffs by studying tariff increases in various countries and the most effective methods to implement rate changes without conflict. Additionally, the document contains references to opinions and case studies conducted by various organizations about the consequences of tariff increases in third world countries. The purpose of the document is to support realistic tariff increases that are socially acceptable. Various approaches to best manage mass objection to rate increases are discussed.

Electronic File: *Social and Political Consequences of Increasing Prices*

### **3.2.6.11. Strategy for Cost of Service, Tariffs, Billing & Collection**

An outline for the implementation of Cost of Service tariffs and bill collection was developed as a project management tool for the Ministry as part of its training. The strategy lists all of the requirements that the ME needs to satisfy in order to execute a

successful tariff strategy. The strategy addresses ways to mitigate political risk as rates increase. An educational publicity campaign to prepare consumers for a rate increase would be necessary, as well as timing the increase to avoid peak demand periods in which much needed supply is critically short of demand.

*Electronic File: Strategy for COS-Tariff-Bill-Collection*

#### **3.2.6.12. Strategy Timeline**

The strategy timeline was developed as a project management tool to help the Ministry organize and schedule its metering, billing and collections initiative. The timeline captures all of the necessary steps required to affect metering, billing and collections.

*Electronic File: Strategy Timeline*

### **3.1.7. RESTRUCTURING**

Restructuring is a necessary first step towards an efficient and effective electricity sector. Restructuring under Economic Governance I began with the preparation of a restructuring plan for the sector. Following completion of its assessment, BearingPoint presented a study, the Organizational Structure and Staffing Assessment for the Ministry of Electricity of Iraq (OSSA I), which examined “macrostructure” issues in the directorate structure of the Ministry. The restructuring initiated in October of 2003 unbundled the Ministry’s operating groups but reduced the excessively broad areas of responsibility of individual directors-general and maintained the same level of severe overstaffing. BearingPoint suggested that short-term overstaffing be alleviated with the reassignment of as much as half the workforce to productive work projects.

The ME has already implemented limited restructuring, setting up a number of generation, transmission and distribution companies on a regional basis. However, these companies are considered and treated as part of the Ministry rather than independent companies. Full restructuring of the sector has yet to be implemented, as the activity requires a dedicated advisory team to work with the ME over a long period. Nonetheless, the framework has already been shaped to facilitate future restructuring effort.

#### ***Restructuring Deliverables:***

##### ***3.1.7.1. Organizational Structure Staffing- 10 12/2004***

This presentation, which was presented to the Ministry, proposes a strategy to eliminate the overstaffing of engineers and shortage of financial managers, lack of organizational control, inadequate or lack of sufficient training, and Ministry wide underperformance. The presentation highlights the re-organizational strategy that was developed based on the lengthy assessment of the ME organization. The suggested reorganization strategy involves freezing hiring activity while reassigning workers from over-staffed areas to those of need without layoffs. The strategy proposes improvement in productivity of about three times and production capacity from 40% to 80%. To gain such efficiencies, however, the ME must invest in the modernization of its operation.

*Electronic File: Minister Presentation*

##### ***3.1.7.2. Organizational Structure and Staffing Assessment***

This study examines the organizational structure and staffing of the Iraq Ministry of Electricity (M.E.) and its staffing following a restructuring in October 2003. The new structure of 32 directorates consists of eight Headquarters Directorates, four Common Directorates, seven Generation Companies, six Transmission Companies, and seven Distribution Companies. This new structure is intended to position the ME to support reforms which will be selected and legislated in the future, and which may include a power market, industry restructuring, regulation, privatization, and entry of private power. At present, the 20 operating companies are functionally separate, but do not have separate corporate and financial systems. This study addresses concerns about excessive overstaffing and its effects on the span of control of the Ministry, which lacks communications and an integrated financial management information system. Regarding organizational structure, the conclusion of this study is that the recent restructuring was a step in the right direction. However, further recommendations are made to solve the

overstaffing problem, particularly with the excessive surplus of engineers and shortage of finance and business professionals. The Ministry is suggested adopting a proposed reorganization plan that would correct the staffing imbalance over the next 7 years. Major initiatives are required to prepare the Ministry workforce to provide a large share of the contract labor for major reconstruction contracts, operate and maintain the electricity system properly, initiate reforms in regulation and energy efficiency, convert technical managers into financial managers, and capture the training and productive work experience of coming transitions. This study explores a set of suggestions to reassign personnel (without layoffs) to improve productivity and actually decrease total employment while the amount of installed capacity doubles or triples during the same period. This action plan will require significant assistance in the form of training and technical assistance, but will bring the ME up to international standards of performance.  
*Electronic File: Organizational Structure and Staffing Assessment*

### **3.1.7.3. Organizational Structure and Staffing Assessment for the Ministry of Electricity Micro-structure Issues (OSSA II)**

The Minister requested advisor assistance and instructed the Director-General of Training & Development to nominate an Executive Reengineering Workgroup (ERG) to study a proposed Organizational Structure and Staffing Assessment Report conducted by BearingPoint and recommend measures to optimize the structure of the Ministry. BearingPoint subsequently produced OSSA II, which in its more in-depth assessment of the Ministry, studied current problems, identified efficiencies and other benefits attainable by structural re-engineering, assessed the transitional structure of the Ministry and its facilities, and suggested schedules and procedures for implementation. OSSA II found that the October restructuring has been implemented only partially – many of the newly formed directorates are still sharing offices, procedures, personnel, and administrative systems. OSSA II recommendations include:

- A reduction from 32 to 5 workgroups heading the Headquarters, Generation, Transmission, Distribution, and Common groups of directorates.
- Reorganization of the Generation, Transmission, and Distribution workgroups to reduce the director-generals' span of control from 16 to 3 or 4 functional workgroups.
- Separation of the Billing and Collections operations within the Distribution companies
- Providing for customer service, regulatory affairs, and fuel purchasing functions.
- Empower Training & Development directorate with responsibility for both, Personnel and Organizational Development.
- Rehabilitation of 15,000MW in new capacity, modernization projects (SCADA, IT) and training and technical assistance programs;
- Holding employment level for 7 years, improving productivity 3:1, improving capacity factor from 40% to 80%.

*Electronic File: OSSA II*

#### **3.1.7.4. Restructuring of Transmission and Distribution Companies**

A power point presentation, which provides a detailed overview of all Generation, Transmission and Distribution companies before and after restructuring that took place in October 2003. Following the restructuring, the ME more than doubled the number of Generation, Transmission and Distribution companies by fractioning the companies while increasing the number of DGs to operate these companies. The result was a reduction in the span of control as illustrated in the presentation. Also included is a brief overview of the ME structure before and after 2003 as well as a detailed summary of each of the companies and its general statistics such as capacity, employee level, location, and basic rehabilitation requirements. Briefly – ME established a new structure with 32 DGs initiated; an Executive Restructuring Workgroup (ERG) was established. Structure charts are included depicting structures before and after restructuring in which Distribution Companies are split from 4 into 7. Transmission Companies were unbundled from production companies, split from 3 into 6, and Generation Companies were unbundled from production companies, and split from 3 into 7.

Electronic File: Trans and Dist Companies3

#### **3.1.7.5. Utility Process Map**

A high-level process map was developed illustrating the connection of various processes that comprise an electric utility. The process map is used as a source or a model used to create an integrated information management system (such as an EMIS). The document depicts the inter-connections within all segments of the electricity utility.

Electronic File: Util\_Arch\_model2\_Util\_Eletr\_1.22.04

#### **3.1.7.6. CPA Summer 2004 Plan**

This document is a schedule to track expected generation projects that were to come on line before Summer 2004 to meet peak summer demand. The timeline also captures the effect of the projects as defined by added mega watts.

Electronic File: CPA Summer 2004 Plan

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**ECONOMIC GOVERNANCE II  
CAPACITY DEVELOPMENT PROJECTS  
FOR  
THE MINISTRY OF ELECTRICITY**

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## **4.0 ECONOMIC GOVERNANCE II**

The objective of the strategy for Economic Governance II was to implement the assessments performed in EGI. The team therefore worked jointly with the Ministry Capacity Development Steering Committee and subcommittees in Finance, Private Sector Participation, Metering, Billing and Collections, and Tariffs and Regulation to create individual work plans and timelines to implement the projects specifically designed for each section. EGII began with the following achievements from EG I:

- First draft of a new Electricity Law prepared.
- Restructuring and market structure strategy proposed.
- Tariff targets calculated.
- A new Corporate Finance Group (CFG) established with agreement reached on the financial management tools to use.
- The meter survey completed in Baghdad and 90 ME staff trained in procurement and/or private sector participation.

Implementation of the Economic Governance II capacity development projects include the following successes:

- Implementation of International accounting reforms.
- The reestablishment of billing and collections after the end of major conflict – and a massive advance in the collection rate, from 25% to 80%.
- A meter accuracy survey and meter assessment program.
- A cost-of-service/tariff restructuring and increase proposal -- carried as far as the Prime Minister before being put on hold.
- Electricity law and regulatory framework proposals -- to establish an Iraqi Electricity Commission. That was almost passed before the transition to the Interim Government.
- The development of a computerized planning model and a resulting 5-year Master Plan for expanding generation, transmission, and distribution.
- A fuel plan for converting power plant fuels to natural gas.
- The adoption from Egypt of three computerized financial planning models in Arabic to use in the establishment of a Corporate Finance Group.

As part of the capacity development effort, BearingPoint provided extensive and varied training to the ME members of the subcommittees. Training included both in and out-of- country courses focusing on the following areas:

- Cost-of-Service/Tariffs.
- International Accounting Standards.
- Anti-Corruption and Accounting Transparency.
- Procurement, Budgeting and Financial Analysis.
- Study tours arranged for targeted visits to a utility in Egypt and utility industry and donor conferences in Amman.

## **4.1. Economic Governance II Deliverables**

### **4.1.1. FINANCE**

Following up on the Economic Governance I work that focused on the improvement of the financial management and reporting within the ME the Economic Governance II project obtained three financial and statistical modeling tools (Financial Planning, Cash Management and Loan Tracking) for the foundation of the financial operation. BearingPoint obtained agreement to form a Corporate Finance Group (CFG) within the Ministry to implement these models for financial analysis and reporting. The objective of these models is to improve the quality and timeliness of the Ministry's financial analysis, budgeting, financial management and statistical reporting.

The implementation of the models began with a full assessment of the progress made by the ME on previous BearingPoint projects. BearingPoint reviewed the financial management and reporting systems, focusing in particular on cost accounting, information management and billing. Recommendations were formulated to improve the economy, efficiency and effectiveness of operations. These recommendations include the purchase or development of new systems, training, and reorganization of the finance function. The new systems should provide sufficient information for regulatory reporting purposes as well as for internal use.

Also examined were ME accounting systems. BearingPoint provided additional support to improve financial performance and prepare the balance sheet. Efforts were focused on the following:

- Cost of cost centers.
- Preparation for accounting separation as part of unbundling and for regulatory purposes.
- Identification of cost of service for inter-company transfers and for tariff purposes.
- Billing and collection.
- Other as may be identified.

The work has involved the review of existing situation/systems, recommendations for improvements that are in line with industry best practice and to meet likely corporate and regulatory requirements, drafting an implementation plan and providing the necessary training.

#### ***Finance Deliverables:***

##### ***4.1.1.1. Memorandum of Understanding to establish a Corporate Finance Group***

A memorandum of Understanding between BearingPoint/USAID and ME to establish a Corporate Finance Group (CFG) was drafted to provide assistance to the ME in its analysis and development of the Ministry's policies and programs. The CFG would implement the financial management models introduced by BE, to periodically review and forecast operating and financial performance, prepare financial data, and establish financial management in Generation, Transmission and Distribution by producing meaningful statistical data. The MoU also obligates BE to provide ME training in Egypt for which USAID will fund travel expenses.

*Electronic File: CFG MoU 21 Sep.2005 New*

#### **4.1.1.2. Corporate Finance Group Workshop (English and Arabic)**

BearingPoint created training material for the formation of the Corporate Finance Group Workshop to enable the ME to produce sound financial and statistical information, advance the CFG financial knowledge, and help establish efficient systems to integrate budgets. The work plans begins with an organization structure for the CFG with assigned responsibilities for working groups in Private Investment Coordination Unit, Cash Management & Financial Forecast, financial Analysis & Studies, and Financial Planning. The workshop involves the development of internal capacity through training. By the end of the workshop, the CFG is expected to have established its role and responsibilities and possess the necessary skills to carry out regular financial analysis and reporting, develop budgets and become the conduit for the ME to attract investment in the electricity sector.

Electronic File: *Corporate Finance Group Workshop Dec 2005 1*

#### **4.1.1.3. EG II Electricity Project Overview**

An overview of the Electricity Sector capacity development projects is presented to the ME, discussing the strategies of each subcommittee for Finance, Procurement, Metering, Tariffs, and HR.

Electronic File: *EG II Project - Electricity 1 Oct 05*

#### **4.1.1.4. CFG Training Outline**

BE selected three people from the ME to be trained as trainers for staff of the CFG. The three trainees were selected to go to Egypt for a three-week comprehensive training program in financial planning, cash management, and loan tracking modules and a further 6-week course on training techniques. The trainees are expected to become trainers to subsequently transfer this knowledge to CFG staff during a three-week program. The program included a field visit to three Generation, Transmission and Distribution units; work with the Corporate Finance Group in the Egypt Electricity Holding Company; and instructions in training techniques.

Electronic File: *CFG Training outline for train the trainer 21 Sep Final*

#### **4.1.1.5. Review of ME Budgeting Process**

This document compares the budget with actual expenditures for 2004 as well as presenting a 2005 budget based on the comparison. The comparison indicates that the ME ensured that its expenditures remained closely within the budget with the exception of expenses for power purchased from neighboring countries, which exceeded the budget allocation. Expenses for 2005 were expected to soar as new projects were initiated to satisfy growth in demand, particularly during the summer and winter peak periods.

Electronic File: *Review of ME Budgeting Process 31 aug*

#### **4.1.1.6. Sources for Collection of Input Data**

This document is a training tool used to mentor ME staff in basic budgeting and financial management. The paper guides the ME on the type of information that is necessary as part of due diligence to ensure that the ME maintains an accurate and updated budget.  
Electronic File: CFG Data collection form

#### **4.1.1.7. Organization of the Corporate Finance Group**

This report supplements the report “Organization of the Corporate Financial Group-Issues and Options” (CFG&IO) by providing additional options for training for the Corporate Financial Group (CFG). Options reviewed include training in Egypt for 150 people; train the trainer for 15 trainees, and training in Iraq for 150 trainees. These numbers however were subsequently changed, and 60 staff of the CFG, as well as three trainers, were trained in Egypt. Based on the examination of the CFGI&O report, the Finance Subcommittee (SCF) decided to establish its organization to fall under the oversight of the Economics Directorate. At the same time, the CFG will maintain headquarters functions supported by decentralized units in the 21 operating directorates. The organizational structure of the CFG headquarters should be aligned to the three financial models being installed in the CFG, designed for financial planning, cash management and loan tracking.

Electronic File: CFG organization Supplementary 29 Aug 05

#### **4.1.1.8. Organization of the Corporate Finance Group**

The CFG will be established to develop the Ministry’s financial policies and programs, track and review financial performance and report on the ME financial status. This report sets the objective, responsibility, organizational structure and detailed function of the Corporate Finance Group (CFG). Summarized are the organizational structure of the CFG and its Corporate Finance Units (CFU) at each operating business, categorized by Generation, Transmission, Distribution, Kurdistan and Projects. The scopes of work for the CFG and CFUs, the key drivers of its organization structure, are defined in detail for the CFG to implement. BearingPoint compares two options of CFUs (business segment vs. directorate), evaluating their benefits and risks. After weighing the options, the ME and BearingPoint chose Business Segment CFUs on the basis of cost and sustainability. Training in Egypt for CF staff was chosen to build relevant and necessary skills required in financial planning and management.

Electronic File: CFG organization 27 Jul 05

#### **4.1.1.9. Outline Training Course for Iraqi Corporate Finance Group**

Course material was developed for the Corporate Finance Group, to include review of financial statements, financial planning, cash management and loan tracking. Financial management capabilities at the ME were assessed to be below those of international standards as the ME uses an Egyptian accounting system and fails to recognize accruals and consolidated financial statements. The report provides a course outline designed to meet capacity development needs in finance for ME staff.

Electronic File: CFG Training outline 8 Aug 05

**4.1.1.10. Financial Management Workshop (English and Arabic)**

Arabic course material for financial statements, financial planning, cash management, and loan tracking.

Electronic File: *Financial Management Workshop 19-21 July 2005*

**4.1.1.11. Comparison of Finance Training Options**

As part of the capacity building support to the Ministry of Electricity, BearingPoint recommended that the Ministry adopt a Financial Planning Model developed in Egypt which consists of three modules: Financial Planning, Loan Tracking, and Cash Management. Three methods of training were considered. The first was a full service package for 150 staff members to be trained by the Egyptian Electricity Holding Company in Egypt for four weeks. The second consisted of dedicating four to five consultants to the Ministry to train 150 people for four weeks. The third was to take 15 ME staff to Egypt for four months to train as trainers in corporate finance and training techniques in order to return to Iraq to train the remaining 135 staff members in Iraq. The advantages and disadvantages were compared.

Electronic File: *Comparison of Finance Training Options 2 June 2005 complete*

**4.1.1.12. Corporate Finance Group 2005**

BearingPoint, in an effort to establish the Corporate Finance Group (CFG) and its role and responsibilities within the Ministry, presented the effort to Deputy Ministers and the Minister to gain sponsorship. In this presentation, the CFG is defined as the management of the official financial information source of the overall Integrated Management Information System (IFMIS). The objective of the CFG is to integrate and reconcile the financial activities of all operating units and manage and coordinate budgetary, investment, and reporting and economic activities. The CFG is also a conduit for future privatization activities should the ME decide to unbundle its core functions. The three financial models to be applied by the ME will focus primarily on Financial Planning, Cash Management and Loan Tracking all of which are discussed in the presentation.

Electronic File: *Corporate Finance Group 2005 may 29 final*

**4.1.1.13. ME Workshop Financial Management**

Capacity Building Workshop in Financial and Management Information System  
A four-day workshop took place in Amman from 27 February to 2 March 2005 for the ME Subcommittee for Finance. The topics covered included financial planning, cash management, long-term debt management, budgeting, inventory management, cost accounting, and fixed assets accounting. The Finance Subcommittee studied the Egyptian Electricity Authority (EEA) model and case study based on which the subject matter was taught. In the workshop the ME engaged in a process that assessed the current financial management processes of the ME in order to identify and address opportunities for improvement. One of the deliverables for the participants of the workshop was a strategy to implement learned financial concepts facilitated by a financial planning model, cash management model and a loan tracking system.

Electronic File: *ME Workshop Financial Management*

#### **4.1.2. METERING, BILLING, AND COLLECTION**

The metering, billing and collections operation at the Ministry of Electricity has remained unchanged for years. Because the ME still employs manual systems to compile meter readings and to prepare and issue bills, the system has been fraught with errors, collection arrears, and various types of inefficiencies. Additionally, due to the security situation, the physical metering, and collection of bills has become dangerous to ME workers. The Ministry needs to adopt modern technology that would allow for remote reading in order to mitigate the security risk. As for billing and collection, the ME plans to replace its inefficient and ineffective system by contracting out billing and collections in certain areas, with the expectation that the private sector would be able to improve performance.

In an effort to continue the work conducted under Economic Governance I, BearingPoint provided a Billing Adviser and a Metering Adviser. The objective of the Ministry is to continue its work in metering, billing and collection and to review the tender introduced in EGI. The focus for the advisors in EG II would be on the following, which are represented by the deliverables discussed in the next section:

- Continue the work started under the previous program to improve billing efficiency and enhance collections. The work should be able to allow for the possibility of splitting the supply business into different regional entities.
- Advance progress of the Metering Population Survey, which was recommended under EG I. Support the ME to the extent necessary to ensure completion of the survey and analysis of the results.
- Work with the ME to prepare and implement the metering pilot project.
- Design a Program for metering system enhancement.
- Identify potential new metering systems; assist the ME in evaluating and selecting the most appropriate.
- Design and implement improved metering processes covering procurement, asset control, installation and maintenance.
- Assess the ongoing ME tenders for contracting out billing and collections with a view to:  
i) ensuring that the process adopted meets international standards for tendering and procurement; ii) determining whether they will achieve the objective of improving billing and collections in the target areas; and iii) calculating whether they represent value for money for the ME -- whether benefits in terms of improved collections exceed costs (tender costs, payment to private contractors).

#### ***Metering, Billing and Collections Deliverables:***

##### ***4.1.2.1. Metering Population Survey Reports***

Two initial sets of metering population survey data were received - one on 28 February and the other on 15 March. These surveys were administered with 17 custom built PDAs to cover the Russafa area in Baghdad. 50 PDAs have been issued to ensure speedy data collection in Russafa and a further 100 are available to extend the survey area to Karkh and outside Baghdad. The PDAs were utilized to collect the data and transfer it into a custom built SQL program, which was used to analyze the data to provide surveyor statistics necessary for producing initial and ongoing metering defect reports to the

Billing Manager for audit purposes. The purpose of these reports is to assist the ME to implement a meter replacement plan based on data compiled by metering defect reports. Essentially, these metering defect reports will serve to:

- Identify potential interference with the meter or supply connections for investigation.
- Identify missing, damaged and faulty meters for priority replacement.
- Facilitate improvement in site safety, reducing potential fraud and increasing revenue collection.

The survey covers a number of issues such as interference with the wire and case, illegal additional installation of single meters, unaccounted consumption, damaged meters, and missing terminal covers and cover seals. This survey is critical in the development of specifications for a Metering, Billing and Collections tender.

*Electronic File: Metering Population Survey Reports 15MAR06 and 28 Feb. 06*

#### **4.1.2.2. PDA Training Final**

BE initiated a metering survey in Baghdad conducted by the ME to inspect and record the condition of existing meters. Customized Personal Digital Assistants (PDAs) were distributed to the 50 surveyors to collect and store metering data in a database consisting of existing billing files in order to facilitate and expedite up the collection process. This document was developed as training material to train the surveyors in how to use the PDA and the survey application.

*Electronic File: PDA Training Final 05OCT05*

#### **4.1.2.3. Metering Population Survey Implementation Plan**

This document is a plan for a metering survey to be carried out on the entire metering population in Iraq to ascertain the condition of the existing metering systems. A pilot survey of the Russafa Directorate would be conducted using hand-held devices with a purpose built database to store the survey data that will then be analyzed. The methodology would involve 150 meter readers in Russafa to visit residential property once every two months and industrial customers once a month. The surveyors will collect readings in the PDA, which will eventually load the data into a main host SLQ database to avoid manual inputs. The Host database, PDA application and PC application will be developed by BearingPoint in Washington. Timetable and data forms are provided in the report.

*Electronic File: Metering Population Survey Implementation Plan*

#### **4.1.2.4. Metering Population Survey Implementation Plan Final**

The purpose of this report is to detail the implementation of a solution for the Electricity Metering Survey. This document is a comprehensive report on the Metering Survey that is to be carried out on the entire metering population in Iraq to ascertain the condition of the existing metering systems and provide information required to facilitate both the installation of replacement meters where necessary and assistance in correcting anomalies within the existing billing file data. BearingPoint assisted the ME in planning a pilot

survey initially to prove the methodology, manpower resource and training and the application stability and suitability. Personal Digital Assistants (PDAs) were assigned to 50 ME surveyors to collect data and store it in a purpose built SQL database as the survey data repository. Prior to carrying out the pilot survey, the SQL database was populated with data extracted from the Baghdad billing files. The specific metering information gathered during the survey will serve to affect the following:

- Identify missing, damaged and faulty meters for priority replacement
- Facilitate improvement in site safety, reducing potential fraud and increasing revenue collection
- Provide the ME with a comprehensive baseline database of meters, including age and condition, to:
  - Enable the preparation of a long-term meter replacement plan
  - Provide data for a future Metering Asset Management System (MAMS)
- Provide an independent check on metering details and meter readings for billing file integrity purposes

The underlying purpose of the survey is to acquire full and accurate information about the operational state of the current metering installations to enable repairs and replacements to be carried out in a structured manner. Additionally, the ME would be able to compare current billing information with the actual customer premise information to enable updating and correction of any billing file inaccuracies.

*Electronic File: Metering Population Survey Implementation Plan Final 07SEP05*

#### **4.1.2.5. Electricity Metering Technology (English and Arabic)**

This report has been prepared after examining the current technology utilized for Electricity Metering in Iraq with the intention of recommending future metering strategies. The existing Electricity Metering population is in poor condition with over 30% faulty, damaged or missing meters. Accurate information of defective and inaccurate metering is a prerequisite to completing a strategy. Therefore, gathering this information forms an integral part of the recommendations. The report also discusses various types of metering technology available in the market as an alternative to Iraq's existing technology. Iraq currently uses Electromagnetical metering technology, which is unable to measure new tariff bands that may be introduced. The report provides options for advanced and more accommodating future needs for flexible tariffs and eventual migration towards automatic/ remote meter reading techniques. Various metering options are discussed and their features compared against each other and the needs of the ME. However, an emphasis was made on Solid State electronic and credit meters to meet the immediate needs of the ME.

*Electronic File: Metering Technology Availability Final*

#### **4.1.2.6. Electricity Meter Accuracy Test Results**

Most of the electricity meters in Iraq utilize electromechanical technology with parts that have been damaged. Some meters are over 20 years old and have not been replaced. BE has initiated a sample survey of meter accuracy in the Russafa area. The collected data will be analyzed in order to determine the need to include inaccurate meters in the future

meter replacement program. Additionally, the survey will provide evidence to the Planning Directors General if meter accuracy has an adverse effect on their non-technical system losses. The tests were applied to 349 single phase and 130 three-phase meters of varying manufacture and age. The results of the test conclude that the single-phase meter results were excellent and with errors falling within the acceptable threshold between – 1.1% to +.9%. The three phase meters produced a simplified average error of +.44%, which is considered acceptable. There is therefore no immediate need to replace meters outside any future proposed metering replacement program.

Electronic File: Meter Accuracy Test Results FINAL May 2005

#### **4.1.2.7. Metering Overview**

This is the first presentation by BE to the Ministry of Electricity on the metering capacity development work that will be carried out. BearingPoint presented its scope of work in metering that will be conducted with the Steering Committee for Capacity Building and the Subcommittee for Metering. The report addressed gaps in the current metering processes at the Ministry, for which short and long term recommendations are proposed. An organizational structure for metering was also encouraged in order to provide greater control over the process.

Electronic File: Initial Presentation to ME V3 18 Dec

#### **4.1.2.8. Capacity Building Workshop for the Ministry of Electricity- Metering, Billing & Collection**

A workshop was developed for the ME Subcommittee for Metering, Billing and Collections in Amman, Jordan in March 2005. The Metering Subcommittee through the workshop examined existing metering processes in Iraq as represented by the results of the metering accuracy sample survey. The survey data revealed that the ME uses outdated metering technology, which bases its readings largely on old and damaged meters that are unfit for future multi-rate tariffs. BearingPoint recommended that the ME carry out a survey on metering population and meter accuracy to ascertain the full picture of the damaged or missing meters as well as their reading accuracy. BearingPoint offered expertise in survey design and data analysis. Additionally, an assessment was made of the Billing and Collection process itself, which was also deemed, outdated, failing to support modern cash analytical tools including basic aging of accounts receivable. Recommendations are made to develop a new systematic revenue collection process and solutions for revising the entire metering billing and collections operation and metering technology.

Electronic File: ME Workshop Metering

#### **4.1.2.9. Billing and Collections Progress Report 11-05**

This report is a continuation of the Billing and Collections strategic plan developed by BE as part of Economic Governance I (GEI) Electricity projects. The document follows up on progress made since EGI and briefly discusses the progress on tariffs, billing and collection.

Electronic File: Billing and Collections Progress Report 11-05

**4.1.2.10. Billing & collections Management Contract- Salahaddin and Basra**

This document is a timeline that schedules each step of the tender process for a billing and collections management contract.

Electronic File: *Draft Timetable 26 Nov 2005*

**4.1.2.11. Outline for Billing and Collections Request for Qualification**

The document is an outline for Billing and Collections Request for Qualification (RFQ) to invite bidders to bid for a one-year Billing and Collections management contract. The RFQ provides the background on the sector, the ME objectives, issue to address, the term and scope of work, remuneration and qualification criteria and process.

Electronic File: *Outline for Billing and Collections RFQ 24 May*

**4.1.2.12. Billing Master File Analysis**

This document is supplementary to the survey that BearingPoint has conducted on Billing and Collection using PDAs and a customized database. The document consists of an Excel spreadsheet with Billing Master File fields that needs to be populated through the survey. The content of the billing file extracts will be formatted so that collected data could be properly assessed before being loaded into the metering population survey database application in the PDAs for data collection by surveyors.

Electronic File: *Billing Master File Analysis*

**4.1.2.13. Billing and Collections Management Contracts- Issues and Options (English, Arabic)**

BearingPoint created training material on contracts to prepare the ME to carry out a tender for a Billing and Collections management contract. Because of the ME's inability to generate sufficient revenue to cover its rising expenses, the Ministry of Finance is forced to cover 90% of these expenses. Subsequently, the subcommittee for Billing and Collections decided to tender for a Billing and Collections Management Contract to improve revenue collection.

The objective of this report is to ensure the ME is well prepared to successfully carry out a Billing and Collection tender. BearingPoint recommends that the ME contract billing and collection activity be undertaken first in two districts with the lowest collection rates, Salahaddin and Basrah, both of which have been selected as pilot projects. This report highlights some of the key issues that will need to be addressed before tendering and recommends the most appropriate strategies for the way forward. The document suggests parameters within which the scope of the contract should be defined in order for the ME to set realistic expectations. The extent of management control the ME allows the contractor needs to be established before tendering. The report offers a number of options to manage contractor control and provides both advantages and disadvantages of these options. Also included are terms and conditions, payment structure and billing systems, the structure and the complete process of a tender. The report focuses on the need to ensure that the tender process is transparent, clear, and fair to all bidders. Key issues and options that are likely to arise in the implementation of the proposed pilot tenders are also addressed in the report.

Electronic File: *Tender Issues and Options 14 Aug*

**4.1.2.14. Metering Population Survey Requirements (Arabic and English)**

BearingPoint requested from the Ministry permission to execute a pilot program consisting of a survey of all meters in the Rusaffa area of Baghdad to collect information on the type, condition and other features of each meter. The survey is a vital part of the assessment of the ME metering process and will provide necessary information, based on which specifications for a meter, billing and collections management contract would be tendered.

*Electronic File: Metering Population Survey Requirements FINAL 15 Dec*

### **4.1.3. COST OF SERVICE AND TARIFFS**

Tariffs are crucial to the financial viability of the sector and its appeal to investors. In EG I, a Cost of Service study was conducted, which found that the tariffs charged to electricity consumers were far below cost recovery levels. This conclusion is reinforced by the fact that the ME has to negotiate annual subsidies with the Ministry of Finance to cover its operational and capital expenses. The current organization of the sector, where strategy/policy, operations and regulatory functions are all within the same organization, further complicates the issue. Traditionally, strategy/policy activities tend to be financed from general government revenues, like any other ministry. The gap between current and cost reflective tariffs is unsustainable in the long term. However, it is so great that it would be very difficult (and cause significant hardship) to move immediately to economic levels. There is therefore a need to determine a tariff policy, tariff transition plan and subsidy policy (including the possibility of providing longer term subsidies to socially disadvantaged groups). The deliverables in tariffs have involved the following:

- Work with the ME to revise and update the Cost of Service study. Present the analysis to key ME staff (including in the operating companies) to promote wider understanding of the issues and conclusions.
- Design and implement systems and procedures to enable ME/Regulator staff to update the analysis from year to year. These should be sufficiently flexible to allow for separation and restructuring of the operating companies. Provide the necessary training.
- Develop and agree on a tariff policy with the ME. This should cover issues such as the need for economic tariffs to promote the efficient use of resources, pricing principles for the different components of the industry (generation, transmission, distribution, supply), subsidy policy and time frame for transition.
- As part of the development of the regulatory framework, develop and implement a comprehensive scheme of tariff regulation for each industry sub sector. This should include tariff principles, formulae to be adopted and implementation procedures to be adopted by the Regulator.

#### ***Tariffs Deliverables:***

##### ***4.1.3.1. Generation Tariffs***

BearingPoint recommended in 2003 that the ME unbundle its operational companies and establish separate budgeting and financial accounting for each of the companies as separate profit centers. However, this new system of accounting has proven to be flawed as the standard transfer price for Generation reflects a straight average cost of production of all generating companies combined. This pricing methodology causes an imbalance between revenue and expenses, with cost of production varying for each company thereby creating inequity in revenue collection which results in lower cost producing companies being forced to subsidize the operation of those with higher costs. In an effort to correct the disproportion of revenue distribution and set the stage for further unbundling of functional units, BearingPoint recommends the separation of Tariffs charged by each generating company. This system would enable each generation company to be recognized as an individual profit center, thereby allowing for competition, which is expected to encourage efficiency and closer scrutiny of operations.

*Electronic File: BE REPORT – Generation Tariffs*

#### **4.1.3.2. Affordability of Electricity Report**

BearingPoint conducted a study to determine affordability of electricity in Iraq for the low-income user. Affordability in this report is defined as the share of utility payments in total household expenditures, a method used in less advanced countries. Utility expenditures are in this report defined as billed amounts rather than paid amount. The report analyzes affordability of electricity based on collected and analyzed data in an effort to design affordable tariffs that also manage to cover the cost of the operation.

Electronic File: *BE AFFORDABILITY OF ELEC REPORT-FINAL*

#### **4.1.3.3. Budget/ Tariffs Training (English and Arabic)**

This document is training material for a course in budget and tariffs, a translation of which is also provided in Arabic. The material was used to train ME Planning staff responsible for budgets. The course begins with the purpose and benefit of budgeting and takes the trainees through the process from beginning to end of budget preparation, its execution and use as a tool for planning and tracking business unit performance.

Electronic File: *Budget-Tariff Training Dec 05*

#### **4.1.3.4. BearingPoint Data Improvement Report- Iraq Ministry of Electricity**

This report follows up on the progress made by the ME on the work conducted by BearingPoint Economic Governance I Electricity project related to Cost of Service and Tariffs. The areas assessed included ME practices, policies, and processes following Econ Gov I, the impact of tariff training, the extent to which recommendations were adopted, the work completed on cost of service for the years 2002, 2004, and 2005 and the tariffs designed based on these studies. For Economic Governance II, BearingPoint followed with the second phase of its Tariff work by refining the quality of data collection, verification, and reporting processes. This report follows up on progress made on recommendations to address gaps in the program which include inconsistency in quality and frequency of reporting to the ME HQ, disjointed accounting and finance functions, weak communication within the organization, and questionable data efficacy. The review suggests that these issues have been successfully managed, thereby allowing BE to progress to the next phase of the Tariff program which includes the refinement of the tariff design to cover cost of service while maintaining affordability to low income consumers.

Electronic File: *tariff Data Improvement Report 19 oct*

#### **4.1.3.5. Fuel Subsidy 2005 Report**

In an effort to design tariffs that accurately reflect cost of service, BearingPoint examined both fuel subsidies and the cost of fuel. The cost of fuel, the largest cost component in the total cost of service, has the largest impact on tariffs as well as on outside investment for future power plant delivery. Prices of fuel in Iraq, rather than being determined by world market prices, are instead set as transfer prices for residual fuel from the Ministry of Oil to the Ministry of Electricity. The Iraqi government subsidizes the difference between the market and transfer price. The method of determining the value of the

subsidy is reviewed in this report in order to accurately reflect cost of fuel in the tariff design and for forecast and planning purposes.

Electronic File: Fuel Subsidy 2005 Report oct 19

#### **4.1.3.6. Demand Limiter Study Report- Initial Parameters for Consideration**

The ME requested a study on the feasibility of connecting demand-limiting devices on all Domestic Customers to force conservation of the currently scarce electricity supply. A general analysis with a few scenarios was presented to the ME on the cost and effect of applying demand limiter devices. The report also provides information about electric current limiters available on the market designed to interrupt supply once a set current limit is reached. These devices, which are available in various fixed current limiting settings, would be connected at the top of poles to prevent customer tampering. Their cost and installation time frame is also discussed in this paper.

Electronic File: Demand Limiter Report oct 19

#### **4.1.3.7. Tender Rules**

This document describes the bidding and tender process for a Management Contract for Billing and Collections in Salahaddin and Basra Governorates. The paper recommends the terms and conditions as well as bidders instructions that need to be included as part of the tender. Additionally, it explains the structured tender process for the ME to follow for the lifecycle of the tender from inception to closing. The process set out in this document provides clarity and transparency to the bidding as the roles and responsibilities of each party are openly established.

Electronic File: Tender Rules VI 24 Sep 05

#### **4.1.3.8. Level of Subsidies in Tariffs**

This draft document contains a brief discussion of Electricity tariff subsidies. The effort to increase tariffs is obstructed by a number of constraints that are discussed in the report. Tariff increases must be applied with considerable forethought to balance affordability to low-income consumers with economic practicality for the ME. Subsidies for Electricity predominantly consist of Regulatory Construction and Fuel subsidies and are inequitably distributed across the customer classes. In order to revise the subsidy scheme, both economic and political decisions need to be addressed at the Government level. At the same time, the ME needs to improve incentives for conservation, which are currently achieved through inverted block pricing. Unfortunately the impact of the rate block pricing is insignificant as tariffs are exceptionally low. Essentially, the report contains recommendations to increase tariff levels in direct correlation with the rapid rise in cost of service. Also recommended are methods to ensure that rate block pricing is customized according to the consumption habits and affordability of each customer class.

Electronic File: Subsidy Costs 31 aug

#### **4.1.3.9. Shift Movements in Cost of Service and Average Rates**

The actual cost of service by customer class for 2002 is compared to two budget scenarios, one for 2004 and the other for 2005. The analysis compares the growth rate in expenses to that of tariffs. The results indicate that the ME has failed to fully recover its

operational cost and will continue to experience a deficit should tariffs remain at the existing low rates. The analysis also shows the impact that different estimation methods of derived demand allocation among customer classes can have on shifting cost responsibility among classes.

*Electronic File: Shift Movements in COS 31 aug*

#### **4.1.3.10. Rate Comparisons - January 2005**

This paper compares the tariffs charged for electricity by the Iraqi ME with those of other countries. The formula to determine the rate is also included in this report.

*Electronic File: Rate Comparisons 31 aug*

#### **4.1.3.11. Cost of Service-Tariffs Training Curriculum**

This outline is of the training curriculum that accompanies the training course for the Tariffs and Cost of Service workshop. The course is intended to provide the participants with an understanding of the theory, tools, data, and the process required to develop a fully allocated Cost of Service Study and to design rates for each customer class.

*Electronic File: Cost of Service-Tariffs Training Curriculum*

#### **4.1.3.12. Report on Migration of Customers and Price Elasticity of Demand on the Iraq Ministry of Electricity System**

Since 2002, the last time revenues covered expenses, ME expenses have soared while the tariff has remained unchanged. In order to cover expenses for 2006, tariffs would need to increase by least nine times. New tariff design would involve re-categorizing customers into rate blocks to which customized tariffs would be applied. A review of past studies in Iraq and other countries concludes that an increase of this magnitude will result in a highly sensitive customer response and that conservation will occur at all levels of customer usage.

This report analyzes and reviews a migration of customers and an elasticity study done by the Ministry of Electricity in 2000. The study is compared to Price Elasticity of Electricity Demand studies done in Australia and other countries, some of which are regarded as having “transition economies”. The report concludes that the required price increase of electricity for 2006 on the order of nine times will result in conservation in the last two rate blocks of the domestic Tariff structure. Conservation as a result of these rate increases has historically been found to be in the order of 20-50%. However, the conservation will occur only in months other than the summer when temperatures are so high that customers will pay any price for comfort.

*Electronic File: Migration and Demand Elasticity Report – Final*

#### **4.1.3.14. Budget-Tariff Training (English and Arabic)**

This presentation is a training document used to train the Tariff Sub-committee on the creation of budgets and tariffs. The course stresses the importance of planning and variance analysis to improve the budget process. Because tariffs are developed based on

cost of service, emphasis on keeping costs low and under control becomes a priority for ensuring tariffs remain affordable.

Electronic File: *Budget-Tariff Training (English and Arabic)*

#### **4.1.3.15. Evaluation of Performance of Tariff Sub-committee**

This is a summary presented to the Executive Steering Committee of the ME evaluating the work performed by the ME Tariff Sub-committee up to December 2005. The Tariff Subcommittee has been training and working on assessing the cost of service and designing efficient tariffs for the past year and has made significant progress.

Electronic File: *Report - Evaluation of Tariff Sub-committee*

#### **4.1.3.16. Policy on Subsidies**

This report provides analysis and recommendations for the Ministry to formulate a policy on subsidies. The Ministry currently uses a variety of different subsidies that are inefficient and uneconomic and which should be targeted to meet set financial objectives. Because the ME cannot become self sufficient in the near future and must therefore rely on subsidies, BearingPoint suggests maintaining the following subsidies among others discussed:

- Capital Expenditure Subsidy if foreign investment is sought for capital expansion.
- Fuel Subsidy as fuel is the largest cost component and its prices and supply are heavily at the discretion of and agreement with the MoO, with whom ME has a poor relationship.
- Inter- and intra- class subsidies already exist and offer support to certain customer classes. However, the subsidies have been misdirected and distort customer incentives. To bring the tariffs back in line with cost and social equities, the agricultural class, in particular, should not be subsidizing other customers.
- The huge subsidy given to all domestic customers should be reduced by shortening the first block and eliminating the subsidy to higher blocks.

These subsidies are discussed in further detail in this paper.

Electronic File: *Policy on Subsidies*

#### **4.1.3.17. COS Training Attendees**

This is a list of 50 Ministry of Electricity staff members who had attended the Cost of Service course.

Electronic File: *COS Training Attendees*

#### **4.1.3.18. Total Allocated Cost of Service to Rate Classes**

This spreadsheet model was developed for the ME Tariff Sub-committee, which is charged with the development of feasible tariffs. The model calculates the total cost of service for 2002, 2004, and 2005 as allocated to different rate classes and provides scenarios for 2004 as case studies. The model breaks down cost of service by generation, transmission, distribution and other sundry and overhead costs. Currently,

the ME Planning Department is utilizing this model to design feasible multi-class tariff rates.

Electronic File: *Tot Ministry COS-2005*

#### **4.1.3.19. Draft Cost of Service/ Tariff Regulation**

This document is a draft Cost of Service and Tariff Regulation that states the terms and basis upon which cost of service will be calculated and tariffs designed. The objective of this regulation is to clarify that service will be provided at a reasonable cost, with criteria for reasonableness defined. The Cost of Service studies will be used to attribute costs to different categories of customers based on how those customers cause costs to be incurred. The prime purpose of cost of service studies is to support the design of rates that are acceptable by consumers and sufficient to cover ME cost of service. Rates will be designed and prices charged to customer classes using the costs incurred by each rate class as a major determinant. Other non-cost attributes considered in designing rates shall include revenue-related considerations of effectiveness in yielding total revenue requirements, revenue stability for the company and rate continuity for the customer, as well as such practical criteria as simplicity and public acceptance.

Electronic File: *DRAFT COS-TARIFF REGULATION*

#### **4.1.3.20. Cost of Service- Training Course**

The objective of this course is to provide the participants an understanding of the theory, tools and data needed, and the process required to develop a fully allocated Cost of Service study based on which ME would be designing rates to collect costs from customer classes. The course also tests participants' understanding of the principles through a work session to design a rate based on a fully allocated Cost of Service Study. The course integrates the processes of Cost of Service and Tariff Design. Participants will learn how to best assign costs on the basis of causation, determine how costs are recovered within each customer class, calculate costs of each type of service, determine the total revenue requirement to be paid by customers, and separate costs by regulatory jurisdictions.

The course also defines the theory and detailed calculations used to allocate all costs to the customer classes on the basis of Demand, Energy, and Customer components. The course teaches cost allocation categorized by various components such as Generation, Transmission, Distribution and plant and operation. As well, cost allocation methodologies are discussed, such as Peak Demand Allocation Methodologies, Coincident Peak Method, and Non-Coincident Peak Method.

Also discussed in the course are external factors that affect rates such as public policy, economic and regulatory issues, as well as internal issues such as management, financial targets. Case studies and examples are applied to the Iraqi system.

Electronic File: *Cost of Service- Training Course - 2005 May 20*

#### **4.1.3.21. Rates- General Provisions**

This document is a draft Tariff Regulation that defines tariff rates and the factors based on which these rates are developed. Included in this draft tariff regulation are the following:

- The calculation of the rates, which define reasonableness of rates, components of invested capital, construction work in progress, depreciation, net income, determination of revenues and expenses, and expense differentiation and classification.
- General procedures for rate changes as proposed by the Ministry as defined for an electricity company, which include the process and deadlines through which a rate change must undergo.
- General procedures for rate changes as proposed by an Electricity Commission (should the Iraqi Government decide to institute one to exist independently of the Ministry)
- Cost recovery and rate adjustment

Electronic File: *DRAFT TARIFF REGULATION – LAW*

#### **4.1.4. PRIVATE SECTOR PARTICIPATION**

BearingPoint approached privatization of the sector by developing a plan to implement the restructuring strategy that was developed under EG I. Restructuring, however, is complex and time-consuming. Under current circumstances it is likely that restructuring will take upwards of 3-5 years to complete. While the ME has taken initial steps towards appealing to the private sector (through a Build Own Operate [BOO] tender for diesel generation and through proposals for contracting out billing and collections), there is as yet no overall strategy for private sector participation (PSP) or privatization in the sector.

The restructuring of the sector will require the ME to adopt an investor- friendly structure which in some instances forces it to absorb some of the investment risk in order to attract private capital. To begin with, the ME needs to separate the functions of policy making (the Ministry's function) from regulation (creating a new independent Regulator) and operations. The core operations need to be corporatized, establishing functional/regional businesses as corporate entities, with appropriate governance provisions. As well, the ME needs to decide on the type of market model to be adopted for the restructured sector (e.g. Single Buyer, Bilateral contracts).

Once these issues have been determined a privatization strategy for the sector can be developed. This activity will require the following:

- Develop options for the future market model for the electricity sector and agree with the ME on the most appropriate for Iraq.
- Review the organization structure of the ME (including the operating companies), paying particular attention to the need to separate policy development, regulation and operations. Formulate recommendations for restructuring the ME to improve its efficiency and effectiveness.
- Develop a strategy for PSP in the electricity sector. This will include policy on competition and liberalization and areas that are most suitable for Greenfield private investment (e.g. IPPs, possibly rural electrification). Prepare a privatization strategy for the Government-owned operating companies.
- Undertake a Training Needs Analysis of the ME (post-restructuring), which identifies the key skill sets that will be required for its new role as a strategy/policy maker and the gaps in its existing capabilities. This will require an analysis of the skills and experience of the staff that will remain with the ME (as opposed to moving to the unbundled utilities or the Regulator). Establish the training needs of the ME based on this analysis.

#### ***Private Sector Participation Deliverables:***

##### ***4.1.4.1. EG II Project - Electricity State Dept Nov 05 and EG II Project - Electricity JICA Workshop Nov 05***

A presentation was prepared for IRMO Electricity at State Department and the JICA Workshop, which provides an overview of the progress made by BE on Electricity Sector capacity development projects at the ME. Projects focused on areas of finance, procurement, metering, tariffs and human resources, all of which have dedicated ME subcommittees that work with BE to advance the projects. The presentation also includes a time-lined work plan for each of these projects.

*Electronic File: EG II Project - Electricity State Dept Nov 05 and EG II Project - Electricity JICA Workshop Nov 05*

#### **4.1.4.2. Procurement Course Slides (Arabic and English)**

A procurement course, translated into Arabic, was created for the ME Private Sector Participation Unit, which has oversight on contracts and tenders. The course thoroughly covered methods of procurement, detailing the full process of carrying out a competitive tender from inception to closing. The trainees received training on management of common problems and negotiation tips, reviewed some of the legal issues related to electricity tenders with great emphasis made on the importance of fairness and transparency throughout the process. The training material also compared various types of tenders that were assessed against the needs of the ME. Trainees were instructed on all steps in the process of operating a tender which include prequalification, due diligence, bid process and bid closing as well as resources requires such as advisors, legal, financial, technical review qualification criteria, bid fees, confidentiality agreement, information memorandum, instructions to bidder, data room, bid bonds and guarantees. As well, the requirements of running a competitive tender were explained with respect to bid structure, managing alternative bids, creating bid evaluation criteria, evaluation of financial bids, ways to minimize negotiations, and dealing with common practical problems.

*Electronic File: Procurement course slides and Procurement course 2 days slides Nov 2005*

#### **4.1.4.3. Costs and financial benefits of the contract**

This spreadsheet, which is developed as a training tool, evaluates the financial feasibility of a management contract by comparing the costs and benefits of the contract. The spreadsheet bases its valuation on specified assumptions of collection rates and monthly fees for 12 years. This spreadsheet only assesses profitability without a NPV valuation.

*Electronic File: Costs of contract 26 Nov 05*

#### **4.1.4.4. Sector Restructuring Plan**

This document serves as a training document on the restructuring process of the Electricity Sector with an objective to separate policy and regulation from the operation of the ME. Through the ME Restructuring Subcommittee, the ME is advised to create a less complicated and more efficient structure with clear reporting lines and separation of responsibilities. The proposed sector structure is also intended to fit compatibly with future plans for privatization, should the ME pursue that option. Two options for restructuring are discussed in this paper, one for a semi-independent regulator that combines regulation and policy but separates operations, and the other which separates all three functions with an independent Electricity Regulatory Commission. The document also discusses the advantages of adopting the Single Buyer Model, which would be supported by an independent regulatory body, the Electricity Regulatory Commission.

*Electronic File: Restructuring Plan to DGs Oct 05 English and Arabic*

**4.1.4.5. Bid Information Memo**

An Information Memo was drafted to capture the information that investors would require before entering into a bid for a management contract for billing and collections. This memo is used as training material.

Electronic File: *info memo contents*

**4.1.4.6. Complete Private Sector Participation Course 23 to 26 Nov 2005**

This training material is designed for a workshop for the ME staff in private sector participation (PSP) in Iraq's Electricity sector. The course work introduces the ME to all aspects of private sector participation beginning with a general overview of the advantages and disadvantages and its fit within the Iraqi power infrastructure, and including the actual activities and responsibilities of an established PSP unit. The applicability of various types of PSP models is discussed, with comparisons and case studies provided. PSP is expected to prevent political interference with ME policies and operation and to increase capital investment and access to more advanced technology and implementation of best practices. BE provided case studies on PSP in regional countries and scenarios that could be applied to the local electricity sector. The PSP mechanisms discussed include Build-Operate Transfer, Rehabilitate – Operate- Transfer, sale, sale of shares, concessions, management contract, initial public offer and spin-offs. A range of approaches to tendering and the entire tender process was also covered in the workshop, including bid criteria, consortia, required documentation, due diligence, timetable, public relations and management of tender following its award.

Electronic File: *Complete private sector participation course 23 to 26 Nov 2005*

**4.1.4.7. Ministry of Electricity Capacity Building Steering Committee  
Summary Progress Report 1 June-30 September 2005**

This is a progress report to USAID, which provided an update on the progress made in capacity projects from June 1 to September 30 by the Subcommittees for Finance, Procurement, Metering, Tariffs and Capacity building and HR.

Electronic File: *Steering Committee Progress Report Summary June-Sep 05*

**4.1.4.8. Procurement workshop Sep 4 to 7 exercise**

This is a section of training material for a three-day procurement workshop, which took place in Amman from September 4 to 7, offered to the Private Sector Participation Steering Committee in charge of procurement.

Electronic File: *Procurement workshop Sep 4 to 7 exercise*

**4.1.4.9. Private Sector Participation International Tendering**

A training document was developed and presented to the ME introducing the Private Sector Participation Unit (PSP) as a vehicle to position Iraq's Electricity Sector as an investment opportunity to outside investors. At the same time the PSP is separated to assist the ME gain access to new technological and managerial expertise, injection of large-scale investment capital, and a reduction of public subsidies. Implementation of a necessary regulatory framework, gaining expertise in various options of contracting mechanisms, understanding contract structures, and attaining the ability to manage the

tender and bidding processes are considered to be precursory requirements to attracting investment from outside of the country.

Electronic File: *Slides for Tendering and PSP training 20 aug 05 (Arabic, English)*

#### **4.1.4.10. Presentation to Minister new action plan 4 July 2005**

A presentation of the revised work plan for the Electricity sector capacity projects under Economic Governance II was made for the Minister of Electricity in response to a discussion that took place on June 14 in which the Minister's priorities for the projects were redirected. The previous work plan emphasized legislation & regulation, restructuring and private sector participation as the top three priorities. The new work plan, reflecting the Minister's priorities, positions financial management, procurement, metering and tariffs as the top priorities, as the Minister felt that the country was unprepared and in fact, opposed to the idea of sector restructuring and privatization.

Electronic File: *Presentation to Minister new action plan 4 July 2005*

#### **4.1.4.11. Briefing Note for USAID**

Periodic briefing notes were produced for USAID to provide updates on the progress of the Economic Governance II Electricity projects. In this document, BearingPoint briefed on past and on-going support to the ME through Economic Governance I&II since 2003 and summarized both the role of the USAID and BearingPoint in Iraq. EG I focused predominantly on the development of the Master Plan which is currently being utilized by both the ME and PCO to plan and execute projects and future investments. Other EG I projects discussed included capacity development in finance, billing and metering, tariffs, network planning, legislation and regulation, reorganization and training. EG II activities build on the EG I projects but with an emphasis on new Ministry priorities which include restructuring of the core functions, private sector participation, legislation and regulations, tariffs, financial information systems, training, metering, and financial information system.

Electronic File: *Minister Briefing Note - ME Final May 2005*

#### **4.1.4.12. Capacity Building Steering Committee Progress Report**

This presentation is a summary of BearingPoint's work with the ME under Economic Governance II program. The areas that have been provided support to the ME include legislation, restructuring, private sector participation, metering, and financial information systems. The progress of each area, including timelines and milestones and achievements to date, is highlighted and presented.

Electronic File: *Steering Committee Summary 19 May 2005*

#### **4.1.4.13. Ministry of Electricity Restructuring Subcommittee- Options and Recommendations for Sector Restructuring**

BearingPoint in this report makes recommendations on restructuring of the current utility sector. The disadvantages of the existing structure comprise a concentration of authority whereby 32 DGs report to the Minister. Such centralization created a reluctance to take decision, overburdens senior staff, weakens cross-functional coordination, and results in lack of checks and balances. Additionally the vertical integration is seen to create

conflicts of interest economically and politically. Other disadvantages with the current organizational structure are the inefficiencies created by overstaffing, excessive bureaucracy and inflexibility to accept change. BearingPoint recommends decentralization of the sector in order to separate policy and regulatory functions from the operating companies. Three decentralization options are discussed and compared. The first option proposes separating policy and regulatory functions from the Ministry operation, while positioning the Ministry as a holding company that exercises control through a board of directors. The second option is the proposal of an independent Electricity Regulatory Commission with regulatory responsibilities that are independent of ME oversight, while maintaining the operational functions of the Ministry. The third option is the establishment of a regulatory commission which will gradually gain independence from ME oversight in three phases as it absorbs from the ME full regulatory function, first in generation, then transmission and finally distribution. The second option was deemed most suitable for Iraq.

*Electronic File: restructuring recommendations FINAL 15 May*

#### **4.1.4.14. USAID Iraq Economic Governance II Project**

The Minister of Electricity was presented with a comprehensive overview of the role of USAID and its mission in Iraq through BearingPoint as its implementing partner. The objectives of Economic Governance II are highlighted as efforts to assist the Iraqi Government in implementing an operational legal, fiscal, regulatory and institutional framework to facilitate economic growth. The scope of each project is summarized to include non-utility projects such as Financial Reform; Monetary Policy and the Central Bank; Common Law and Institutional Reform; Fiscal, Tax and Customs Reform; and Social Safety Net and Pension Reform. Additionally explained is BearingPoint's approach to combine institutional building, information technology, training and public education and improvement of business processes. BE further demonstrates the accomplishments and progress made with each Electricity Sector project at the ME by applying the BearingPoint approach.

*Electronic File: Presentation to New Minister - 2005 May 21*

#### **4.1.4.15. Recommended Structure for ME Privatization Unit (English, Arabic)**

The Ministry of Electricity with the help of BearingPoint has established a Private Sector Participation (PSP) unit to initiate and operate tenders for contracting out billing and collections operations as well as Build Own Operate (BOO) generation projects. The PSP unit is structured to report to the Deputy Minister responsible for Capacity Building. The report sets out an action plan for the unit to carry out the responsibilities to formulate and implement short and long term investment and PSP strategies, as well as develop and run tenders such as BOOs, management contracts, spin-offs, and service contracting. A Capacity Building Steering Committee with a PSP Subcommittee has been developed to identify projects and implement PSP strategies. The short and long term projects and required resources are also addressed in the presentation.

*Electronic File: Structure of ME Privatization Unit final 23 apr*

**4.1.4.16. *Comments on recent ME PSP tenders 19 apr 05 (English, Arabic) and Comments on previous BOO Tender Documents 20 apr 05 (English, Arabic) Comments on Recent Ministry of electricity Private Sector Participation Tenders and Comments on Recent Ministry of Electricity BOO Tender Documents***

In 2004 the ME issued two tenders, one for a Build Own Operate (BOO) generation plant and the other for a Billing and Collections management contract. Neither tender was executed due to unsatisfactory response from investors. Eager to try again, the Privatization Subcommittee asked BearingPoint to review the tender documents and offer recommendations. These draft reports, which were translated into Arabic for the final submittal, serve as training documents, which provide feedback on both tenders and recommendations for the next attempts.

Electronic File: *Comments on recent ME PSP tenders 19 apr 05 (English, Arabic) and Comments on previous BOO Tender Documents 20 apr 05 (English, Arabic)*

**4.1.4.17. *Indicative timetable for a tender***

This document is produced as part of training material for the Private Sector Participation workshop in which the tender process is fully reviewed. This timetable illustrates the lifecycle of a tender from the initiation stage to the closing stage.

Electronic File: *Indicative timetable for a tender*

**4.1.4.18. *Wrap up - Working Together***

The presentation was developed for the Ministry of Electricity to establish work targets and deadlines for proposed deliverables to be accomplished through joint effort between BearingPoint's Electricity Sector team and the Capacity Development Steering Committee and its Subcommittees. The deliverables are categorized by areas of restructuring, metering, Financial Management Information System, Investment planning, Master Plan, procurement and regulation/ tariffs.

Electronic File: *Wrap up - Working Together*

**4.1.4.19. *Capacity Building Workshop for the Ministry of Electricity- Regulation***

Comprehensive training material was developed for a workshop on Electricity regulation and presented to the ME Steering Committee in Amman, Jordan. The workshop on regulation covered the functions of government policy in the Electricity Sector; the need for an Electricity commission to provide independence, transparency, and division of responsibilities and structure; Electricity law and regulatory options. Regulation in regional countries is discussed in the paper and compared to that of Iraq. The workshop focused on the need to create an independent Electricity Commission in order to implement policy and regulate the structure, competition, tariffs, establishment of technical criteria and standards and control private sector participation in the Electricity sector. Case studies within the region were also studied and their applicability to Iraq discussed.

Electronic File: *ME Workshop Regulation*

#### **4.1.4.20. Capacity Building Workshop for the Ministry of Electricity- Private Sector Participation**

BearingPoint developed training material for a workshop in Amman on private sector participation for the ME Steering Committee. The workshop discussed the objectives developing the structure of the Iraqi Electricity Sector to appeal to private investors. The objective of the workshop is to promote the Private Sector Participation unit at the ME, which would have oversight on creating and running tenders, management and service contracts, procurement, and privatization activities such as corporatization of core operations such as generation, transmission and distribution. Options for new and existing assets introduced as part of PSP include Greenfield investments, Build Own Operate/ Transfer, asset sales, strategic share sale, concessions and management contracts among others. The risks and benefits as well as the applicability of each option were compared in the workshop. Additionally, the tender process from initiation to closing was presented to the Steering Committee for discussion.

Electronic File: *ME Workshop PSP*

#### **4.1.4.21. Electricity Sector Privatization Project Jordan**

A presentation was made by the Executive Privatization Commission (EPC) of Jordan, which includes an overview of its functions and history. The purpose for establishing the EPC was to develop a competitive private sector that would attract international investment in order to alleviate the debt burden and dependence on the local financial institutions. Privatization of Jordan's Electricity sector involved restructuring of the sector to include the Regulatory Commission, unbundling of the national power utility, and the initiation of a privatization program of the generation and distribution assets. The presentation discusses the process by which Jordan privatized its electricity sector, which included a number of challenges, which finally resulted in the structure that better fits the country.

Electronic File: *Electricity Sector Privatization Project Jordan*

#### **4.1.4.22. Checklist for Power Purchase Agreements**

As part of capacity building on procurement, BearingPoint provided extensive training on the development of tenders. This document is a comprehensive checklist of the terms and conditions that need to be included in a Power Purchase Agreement (PPA). The document describes the purpose and relevance of legal, technical, financial and commercial provision found in a typical PPA.

Electronic File: *Note on PPA Terms 3 jan 2005*

#### **4.1.4.23. Comparison of Regulation**

This document compares the sector regulation of Iraq to that of Jordan, Syria, Lebanon, Turkey, Egypt, and Abu Dhabi. Specifically compared were the existence and nature of independent regulators, tariffs, market model, private sector participation, licensing, quality of service regulation, dispute and customer complaint resolution systems.

Electronic File: *Comparison of Regulation*

#### **4.1.4.24. Presentation to Deputy Minister**

A presentation was made in November 2004 to the Deputy Minister of Electricity to introduce the BearingPoint Sector Team Leader and Regulatory Advisor to describe the BearingPoint projects at the ME and to present the agenda for the next few months. The Deputy Minister was briefed on the activities of the ME Steering Committee, which is dedicated to work on Capacity Development in areas of sector regulation and legislation, financial management, and business training for senior management.

Electronic File: *Presentation to Deputy Minister Nov 04 V2*

#### **4.1.4.25. Approach for Implementing International Tenders**

The document explains the undertaking of a transparent, competitive international tender, which is described as either a two, or a three-stage tender. The two -phase tender is broken down into preliminary and final bid stages while a three- phase tender may include an additional preliminary bid process before the final bid stage. The two or three phase stages fall between the initial prequalification and the closing. The key tasks within these stages described in detail include: internal due diligence, marketing, prequalification, preparation of the bid package, bidder due diligence, draft PPA and Concession, bid submission and evaluation, and closing. The paper further summarizes the features that should be included in the actual tender.

Electronic File: *Note on International Tenders 3 jan 2005*

#### **4.1.4.26. Electricity Steering Committee- First Meeting**

This presentation was created for the first meeting held with the newly formed Electricity Steering Committee, which was established through BearingPoint to oversee capacity projects at the Ministry. The objective of the first meeting was to specify the key work areas for the ME, and to establish the role of the Steering Committee and the framework of subcommittees to support the work. The presentation summarized the mission of BearingPoint, which is to offer comprehensive assistance to the ME to develop and affect institutional reforms. In this presentation, BearingPoint proposes an agenda for the work that it will jointly undertake with the Steering Committee. Focus of capacity building projects for EGII as a continuation of the work completed in EGI was set to include finance and Management Information System; metering, billing and collections, implementation of the Master Plan with respect to future investment planning and procurement, regulation, and tariffs. Organizational structure and administrative issues were also addressed in the document.

Electronic File: *Electricity Steering Committee 1st meeting 21 Dec 04*

#### **4.1.4.27. Ministry of Electricity Restructuring Subcommittee Sector Restructuring Plan**

A plan was developed by BearingPoint to assist the Ministry of Electricity in the restructuring of the electricity sector. This report builds the foundation to support a restructuring plan. The report first establishes the objectives of restructuring the Iraqi Electricity sector, which is to separate policy, operations and regulation. Efficient and clear reporting lines need to be established with distinct and separate responsibilities in order to shape the sector to become more compatible with the expectations of private sector investors. Corporatization of the core operations (Generation, Transmission and

Distribution) would be considered as necessary groundwork for appealing to the private sector. To that end, an independent regulatory commission is recommended to separate regulation from policy and operation at the Ministry. The restructuring plan proposed features the creation of the Single Buyer Model in which a single entity acts as the agent through which all transactions are executed between generation, transmission, distribution and fuel sourcing. The advantage of a Single Buyer to the ME is a simple and transparent structure that facilitates private investment in new generation plants and stabilizes the market as suppliers pay one price for electricity. This model is the most common model in the Middle East. However, the Single Buyer Model is difficult to regulate. With such a structure, the role of the Ministry would be redefined to have overall direction of sectoral development, policy, tariffs, subsidies and investor incentives.

*Electronic File: Restructuring Plan V 2 18 May*

#### **4.1.5. REGULATION AND SECTOR REFORM**

Under the Economic Governance I, BearingPoint worked with the Ministry of Electricity to establish an independent Electricity Regulator. A committee was established with which BearingPoint worked jointly to develop its overall policy to the electricity sector. This effort was further advanced under Economic Governance II. BearingPoint prepared a draft of a new Electricity Law to cover defining the powers and responsibilities of the Minister of Electricity and the Regulator; provisions governing the establishment, objectives, governance, independence, and funding of the Regulator; key policy principles such as market structure, tariff regulation, universal service, competition and liberalization; the status, restructuring, and the corporatization of the electricity operating companies.

The draft of the Electricity Law also extended to the draft of a comprehensive package of secondary legislation to ensure the effective regulation of the electricity sector in line with the legislation, Government policy and international best practices, including consideration of any existing regulations and recent regulatory developments in other emerging markets and elsewhere in the Middle East (including Jordan, Egypt, and Turkey). This package covers tariffs, universal service obligations, third party access, licensing procedures, service standards, and street works.

In addition to drafting the Electricity Law, BearingPoint also provided policy advice and guidance to the ME and has been engaged in the drafting of proposals to establish an independent Regulator, including reporting lines, sources of funds, location within the Government, organization, staffing (which may include the need for long term technical assistance) and resource requirements. BearingPoint assisted the ME in the development of set processes and procedures for key regulatory tasks, and worked to ensure that the governance and administration of the Regulator is in line with international standards and regional/national precedents. These procedures cover record keeping, accounts, budgeting and reporting, preparation of annual plans, transparency and public information.

#### ***Regulation and Sector Reform Deliverables:***

##### ***4.1.5.1. Utilities- Regulatory Discussion Points***

This briefing paper, presented to a senior member of the Ministry of Electricity, discusses the commercial viability of the electricity sector with improved regulations. Areas of regulation that this paper discusses include pricing of core functions (generation, transmission, distribution), security of supply and service, quality of service, compliance with worker safety regulations, dispute resolution, licensing, and interconnections.

Electronic File: *notes on regulation*

##### ***4.1.5.2. Institutional Strengthening summary***

This is a review of the work performed under the Economic Recovery, Reform and Sustained Growth Project for US AID (Economic Governance I) focusing on sector organization (both infrastructure and the recommendations of the Master Plan), and Ministry operations, and includes a list of documents that was prepared at the outset of the Project.

Electronic file: *institutstregtheningsumm, oct 04*

**4.1.5.3. Presentation to the Ministry of Electricity - Regulatory Working Group**

A presentation was made to the Ministry of Electricity that introduces the BearingPoint Sector Team Leader and Regulatory Advisor, and reviews previous BearingPoint work in the electricity sector under the Economic Recovery, Reform and Sustained Growth Project for US AID, including regulatory achievements, with the purpose of gaining an understanding of the Ministry's priorities and objectives and agreeing on a work plan to establish a commercially viable electricity sector with improved regulation. The presentation highlights BearingPoint's work in regulation and offers its expertise for the ME to utilize in implementing regulatory reform.

*Electronic File: presentation rwg dal nov 21*

**4.1.5.4. Capacity Building Workshop for the Ministry of Electricity – Law and Regulation (English and Arabic)**

A day-long presentation (also translated into Arabic) was developed and provided to the Ministry of Electricity Steering Committee in Amman on the development of laws and regulations for the Electricity Sector. Attendees were engaged through breakout sessions in thinking directly about reforms appropriate for Iraq, and in developing a policy statement for the Iraqi electricity sector.

The workshop covered: the legal and regulatory objectives of the Electricity Sector as related to government policy; the need for an Electricity Regulatory Commission independent of the Ministry of Electricity (proposed in order to promote certainty in the sector, and one that will be commercially viable for outside investors); the concept of regulatory independence itself (very new to Ministry officials), funding of a Commission and the functions and powers, and structure and organization of a Regulator, division of responsibilities between a Regulator and government policy, and the concept of a shadow regulator formed initially within the Ministry itself; the respective areas covered by laws and regulations; the structure and possible future operation of the sector; tariff methodology, including the rationale for, and main methods of, regulating (price cap v. rate of return) and subsidies; a licensing regime; methods for resolving disputes; future generation competition and the future possible development of a wholesale market (including a discussion on the single buyer and bilateral contracts models); the establishment of technical criteria for transmission and distribution, and of quality of service obligations; health and safety compliance; new industry contracts; and a comparison of electricity reform in MENA countries.

The workshop also covered effectiveness and feasibility of the existing Electricity Law. The participants were also provided with regulatory options, the applicability of which was considered for the Iraqi sector. Case studies were utilized and working groups were formed. The workshop took place in early March of 2005.

An excellent formal discussion was also facilitated with the Transaction Manager of the Jordan Executive Privatization Commission (the DG of the Jordan Electricity Sector Regulatory Commission was unable to attend at the last minute), who gave a presentation to the Steering Committee on Jordan's experiences to date. This was followed by an informal discussion, which the Iraqis found very useful.

The day following the presentation the Regulatory Advisor and DG of the Jordan Electricity Sector Regulatory Commission presented papers on, respectively, the legal and regulatory options for Iraq and reforms to date in Jordan, at the “Rebuilding Iraq’s Power Sector Investment Forum” in Amman, organized by the PCO at the US Government’s request and attended by the Minister of Electricity. The Jordan Regulatory DG met senior Steering Committee members who attended and other senior representatives of the Iraqi ME.

*Electronic File: law and regs presentation, dal*

#### **4.1.5.5. Electricity Law Draft, May 2005 and Summary of Sections (English and Arabic)**

The draft Electricity Law for the Iraqi Electricity Sector and its summary is a comprehensive document, developed over the course of discussions with the Steering Committee and presented to the Ministry Steering Committee and Legal Department of the Ministry of Electricity in May 2005. It comprises comprehensive sections dealing with the following areas of the law:

- Objectives of the Electricity Law;
- Structure and operation of the Iraqi Electricity Industry (offering options for functional unbundling and legal separation, or corporatization, authorization of possible future restructuring, and prohibitions of discrimination, cross-subsidization and distortion of competition);
- Establishment, duties, powers and functions of an independent Electricity Commission, including legal boundaries as to the manner of exercise of functions and the method of funding of the Commission;
- Composition and management of the Iraqi Electricity Commission;
- Duties of the Minister of Electricity, the principal duties being to set policies for the electricity sector that seek to achieve the electricity sector objectives, to prepare a national electricity strategy, promotion and facilitation of investment, and to cooperate and consult with the Commission;
- The methodologies to be adopted for determining tariffs and prices for regulated activities;
- Establishment of a licensing regime covering regulated activities, including the criteria for issuing forms, terms and conditions of licenses (for generation, transmission, scheduling and dispatch, distribution), amendments and derogations, enforcement, exemptions and transfer;
- Electricity sector regulation-making procedures;
- Duties and responsibilities of generation companies;
- Establishment and duties and functions of a wholesale exchange (if decided upon);
- Duties and responsibilities of the transmission system operator
- Duties and responsibilities of distribution companies; and
- Authorization of private sector investment, creation of competition and tender criteria.

The draft Electricity Law also contains sections dealing with the following:

- Duties and functions of electricity supply companies;

- Transitional Period related to legal succession of electricity companies, property rights, employee rights, contracts and land access;
- Policies concerning electrification of towns and villages as developed by the Minister and implemented by the commission;
- Customer protection and advocacy offices and public information;
- Methods for dispute resolution and offenses for unauthorized use and distribution of electricity;
- Offences.

A high quality translation (oversight was provided by an Arabic-speaking US lawyer) of the draft Law was provided to the Ministry.

*Electronic File: draft iraq elect law may 9 05 and summary draft law*

#### **4.1.5.6. Possible Form of Customer Dispute Resolution Procedure**

A customer dispute process is proposed in this document that serves as a best practice guide to effectively resolving customer disputes through various options depending on the nature and complexity of the dispute.

*Electronic File: customer dispute resolution v2*

#### **4.1.5.7. Hierarchy of Laws in Iraq**

This memo explains the legal hierarchy of Iraqi laws, which comprises the following (in order of importance): Constitution; legislative authority or law; resolution; regulation; instruction; limitation.

*Electronic File: legal hierarchy memo final oct 13 05*

#### **4.1.5.8. Schedule of Present Iraqi Electricity Laws (Arabic and English)**

Present Iraqi laws, resolutions, regulations and instructions relating to the electricity sector were obtained and translated, and a schedule was developed that summarizes their provisions in order of importance, the date they came into effect, and relevant areas covered by each law. This document acts as a guide in determining where and the nature of the changes that need to be made to redefine laws and regulations of the Iraqi Electricity Sector.

*Electronic File: schedule final aug 14 05*

#### **4.1.5.9. Comparison of the Single Buyer and Bilateral Contract Model**

This document is developed as training material for the Ministry of Electricity. The presentation compares the “Single Buyer” model with the “Bilateral Contracts” model. An overview is presented of the two models with respect to their structure, participants, and the situation and environment that best suit each model’s economic feasibility.

*Electronic File: Single Buyer v. Bilat Contract 13 april*

#### **4.1.5.10. Electricity Regulation in Iraq - Issues and Options (English and Arabic)**

This is a lengthy paper developed for the ME Steering Committee, that discusses in detail

the main issues involved in, and options for, establishing a legislative and regulatory regime for the Iraqi electricity sector. The paper discusses briefly the present state of the sector and BearingPoint's previous work with the Iraqi Ministry of Electricity, and provides an overview of the present state of the Iraqi electricity sector. Typical objectives for legislative and regulatory electricity sector reforms and Iraqi government policy are discussed, followed by sections on the role of law and regulations, and the distinction between primary legislation (an Electricity Law) and secondary legislation (regulations) and application to Iraq. BearingPoint proposes that the Iraqi Legislature pass a new Electricity Law that provides a framework for the future structure, operation and regulation of the sector. Such a Law would also establish the Iraq Electricity Commission, which would be given power to promulgate regulations. The precise boundaries for this power and method by which it is exercised need to be established.

Also covered is the establishment of the future structure of the electricity sector and the respective roles of the Iraq Electricity Commission and Ministry of Electricity, with a focus on different options for tariff regulation, the legislative establishment of a licensing regime and the different possible methods for resolving disputes (and the enforcement issues that need to be resolved by an Electricity Law). Possible models are offered for establishing a wholesale electricity market or exchange, the regulatory aspects of licenses, establishment of technical operating criteria (notably a Grid Code and Distribution Codes), quality of service and health and safety.

The paper discusses the division of responsibilities between an Iraq Electricity Commission and the Ministry, including the difference between guidance and instructions, the need for a regulator to be free of political and commercial pressures, and independence and how it is established. Wider issues of relevance to BearingPoint's work with the Ministry and wider Middle East issues are also discussed. Most important is the need, firstly, to ensure the full participation of senior personnel in the decision-making process and, secondly, to educate Ministry employees about the benefits of reforms and to persuade them to participate fully in their implementation. Section 8 also lists those areas of simultaneous reform in Iraq that are of particular relevance to objectives for the electricity sector. These are:

- ensuring an understanding of the building blocks that need to be established before private sector investment will be attracted;
- inter-Ministerial cooperation, especially coordination with the Ministry of Oil;
- competition law principles – essentially, the monitoring and regulation of commercial behaviour to ensure that there are no barriers to effective competition in market sectors and to ensure that firms do not act in an anti-competitive manner;
- dispute resolution procedures, both generally and their acceptability to foreign investors;
- consideration of the need for an umbrella regulatory authority to oversee and review decisions of the IEC and possibly other newly created Regulators in Iraq;
- rules and regulations in other areas – taxation, environmental law, company law, banking, capital markets and securities laws, and administrative law – that together create an environment attractive to foreign investors.

The Paper looks at wider Iraq and Middle East issues, and includes two schedules, one comprising a summary of all the laws, orders and commands that presently relate to electricity in Iraq, and the other comprising a detailed report on the status of reforms in other countries in the Middle East region. This report reviews the following key aspects of reform in (and provides notes on) Jordan, Egypt, Syria, Lebanon, Turkey and Abu Dhabi:

- the state of establishment of an independent regulatory commission;
- tariff setting procedures;
- the market model and competition;
- licensing or permitting regime and third party access;
- performance standards and quality of service;
- dispute resolution methods;
- status of privatization.

*Electronic File: paper to moe final 2*

#### **4.1.5.11. Ministry of Electricity Law and Regulation (English and Arabic)**

Training material (also translated into Arabic) was developed for presentation to the Ministry of Electricity Law Review Committee in order to assist the committee to gain the knowledge and experience necessary to develop a sound framework law for the electricity sector and regulations that “flesh out” this law. The training material discusses the legal objectives for the Electricity Sector. The institution of an independent Electricity Commission is proposed in order to separate policy decisions from implementation, to assist the sector to become commercially viable for outside investors. The workshop also covered effectiveness and feasibility of existing electricity laws and regulations. The participants were also provided Regulatory Options, the applicability of which was considered for the Iraqi sector. Case studies were utilized and working groups were formed. The workshop took place in March of 2005.

*Electronic File: law and regs training for moe*

#### **4.1.5.12. Transitional Law and Electricity**

This memo is a review of the Transition Law for Iraq in relation to the status of existing Iraqi legislation concerning the electricity sector and the legislative authority of the Transitional Iraqi government. A summary of the relevant provisions is provided. The transitional period began on the handover by the CPA on 27 June 2004. It ends with the formation of an elected Iraqi government pursuant to a permanent constitution as required by the Law, which in any case must be no later than 31 December 2005.

The transitional period consists of two phases: The first phase began with the formation of the (fully sovereign) Iraqi Interim Government that took power on 27 June 2004. This government had power to exercise authority in accordance with the Law and an annex that was to be agreed upon and issued before the beginning of the transitional period. The second phase began after the formation of the Iraqi Transitional Government, which occurred after the elections for the National Assembly held on 30 January 2005 as stipulated in the Law. The second phase ends upon the formation of an Iraqi government pursuant to a permanent constitution. The memo discusses thoroughly how the transition laws in those phases will affect the Electricity sector.

Electronic File: *transitional law and electricity*

**4.1.5.12. Legal Work Plan, Ministry of Electricity**

A work plan covering the process of finalizing an electricity law and giving training on the new law, legal office capabilities and training in electricity sector contracts, commercial law, commercial structures, and legal aspects of power projects was agreed with the DG of the Legal Department at the Ministry.

**4.1.5.13. Private Involvement in Developing Infrastructure – Legal Considerations**

This paper discusses the legal considerations for the development of electricity infrastructure projects through contract structures such as Build Own Operate (BOO), Build Operate Transfer (BOT), and Build Own Operate Transfer (BOOT). It comprises a detailed outline provided to the Ministry, that focuses on the allocation of risks among the many parties involved in such projects, describes the parties involved and each of their roles, describes the agreements involved and important matters to be covered by those contracts, and other legal considerations such as the interdependency of the contracts and default.

Electronic File: *boot and bot transactions outline*

**4.1.5.14. Procurement - Legal Consideration**

This outline serves as a training document for the Procurement Subcommittee training on the development of tenders and contracts. The document lists the legal considerations, terms and conditions that should be included in the administration of loans and development of contracts. The outline is intended for a standard procurement contract.

Electronic File: *legal assistance to procurement training*

**4.1.5.15. Legal Aspects of Procurement and Power Projects (English and Arabic)**

This presentation was created for Ministry of Electricity Senior Personnel as the legal component of training in procurement given to the Ministry in September 2005. The training material is a comprehensive explanation and description of all aspects of procurement. Trainees are first provided a general overview of procurement as it refers to donor and privately financed power projects. The roles and responsibilities of the ME personnel responsible for procurement are also briefly defined in order to establish the skill set required to manage a procurement department. Required skills include negotiation, legal, contracting, planning, financial, dispute resolution, and project management skills, the functions of which are covered in the presentation. The project also covers contract structure, and contractual legal considerations.

Electronic File: *legallaspectsofprocurementfinalsep6051(English and Arabic)*

**4.1.5.16. Legal Aspects of Procurement (English and Arabic)**

A procurement course was created and delivered to Ministry of Electricity Senior Personnel as the legal component of the week long training in procurement provided to 30 Ministry staff in November 2005 and covering areas additional to the previous

training. A general overview of procurement is provided and roles and responsibilities of the procurement department are explained along with the required skills. Effective negotiations, international negotiations, project management, introduction to structured finance; legal issues affecting the GOI as owner of infrastructure, bonds and security, construction contracts, and dispute resolution are all covered.

*Electronic File: dal procurement training nov 23 05*

**4.1.5.17. Ministerial Resolution regarding the Steering Committee and Subcommittees**

Passed on September 4, 2005 this Order from the Ministry of Electricity affirmed the work of BearingPoint in only the following areas, and the functions and members of the relative Subcommittees: Finance; Supplying and Bidding; Metering; Tariff; Manpower Development Committee

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**ECONOMIC GOVERNANCE I & II  
LESSONS LEARNED**

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## **5.0 LESSONS LEARNED IN THE ELECTRICITY SECTOR**

The successes in the Economic Governance I&II projects were an absolute function of the joint team effort of BearingPoint and the Ministry of Electricity staff. The most notable successes came as a direct result of the formation of the Steering Committee and its subcommittees, which created the framework for driving all management studies and changes within the Ministry. Clearly, effecting change within the sector would fail without maintaining continuous contact with the Ministry. Delays in the transition between USAID's EG I and II programs caused loss of momentum that is difficult to regain. Such funding delays have not only stopped progress, but actually regressed conditions. Institutional memory was allowed to slip between Econ.Gov. I and II, so that new personnel at USAID and the implementing project team were unable fully to leverage preexisting initiatives.

### **Mission Creep and Focus**

A factor that hampered progress was mission creep, which shifted focus from core projects. The original scope of activity in the Electricity sector was allowed to expand unmanageably into regulatory matters – issues that required far more resources, effort and institutional stability than was or is present. Focus and momentum was lost due to distracting, tangential, involvement in:

- Industry Restructuring
- Unbundling of Generation, Transmission, and Distribution
- Market Reforms and Privatization

The Ministry was clearly unprepared for these activities as its core operations were yet to be fully stabilized and were not sophisticated enough to take on more complex issues. Generation projects were hindered by lack of spare parts, slow contractors, and poor operations and maintenance. Transmission and Distribution infrastructure was continuously vandalized, placing the Ministry in a perpetual repair mode. Fuel shortages forced the Ministry to resort to less economical activities such as power and diesel imports. Such chaotic conditions shifted Ministry focus from, and reduced the priority of, effecting sector reform in areas of regulation, tariff, restructuring, reorganization, financial management, metering billing and collections.

### **Teamwork and Commitment to Success**

Both Economic Governance I & II have been hindered by unpredictable funding, leading to uncertainty with regard to scope, duration and priorities within and among the sectors. Loss of funds forced stoppage of efforts in key areas, resulting in confusion by Ministry personnel. Therefore, success of future capacity projects requires that the following be done:

- Position the Ministry as the driving force in effecting change.
- Develop joint working groups with the Ministry to engage critical segments of the Ministry in taking part in the implementation of new processes.
- Maintain mission focus and prevent scope creep as it delays projects and reduces their impact.
- Ensure that a mechanism is put in place that would enable the Ministry to continue with and encourage sector reform and improvement in operational efficiency without the involvement of consultants.

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**RECOMMENDATIONS FOR FUTURE  
CAPACITY DEVELOPMENT PROJECTS  
FOR  
THE MINISTRY OF ELECTRICITY**

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## **6.0 RECOMMENDATION**

The Electricity capacity development projects under Economic Governance I&II remain incomplete in achieving the results necessary to effect sector reform for a transparent regulatory environment for business formation and operation. The discontinuation of the Electricity projects will have a devastating impact on the progress thus far achieved by the ME Capacity Development Steering Committee. The ME has insisted for BearingPoint to continue its projects without which the ME has expressed a sense of loss in direction and momentum.

The recommended capacity development projects below are chosen based on discussions with the Ministry Steering Committee, USG and non-USG agencies, as well as the US military. The recommended projects are designed to meet the ME capacity needs and sector reform objectives that EGI & II projects fell short of completing due to lack of time and funding. Projects were chosen based on needs as prioritized by the ME as well as on their potential level of impact to expedite effective sector reform.

The EGI & I Electricity projects are critical to the advancement of both the ME and the Electricity sector to reach international standards. BearingPoint therefore recommends the continuation of the following projects from Economic Governance I&II:

### **6.1. REORGANIZATION AND TRAINING**

The M.E. was reorganized in October 2003 to include eight Headquarter directorates, four Common directorates, seven Generation companies, six Transmission companies the “operating companies” and seven Distribution companies. The structure is intended to enable the ME to support reform such as industry restructuring, regulation, privatization, and entry of private power. At present, the ME has no single unifying corporate and financial system intended to unify all activities of the sub sectors.

BearingPoint completed a study in 2004, which assessed and analyzed the processes of the entire Ministry. The result was a comprehensive plan to restructure the Ministry to become an efficient and productive entity. Significant operational efficiency is essential before the ME can realize true reform in the sector. According to the BearingPoint Organizational Structure and Staffing Assessment for the Ministry of Electricity report, produced in 2004, the Generation and distribution companies are small enough to create a competitive market although without excessive market power, to provide multiple points of comparison for a central regulatory commission. However, the size of these companies prevents any advantages of economies of scale.

A lean and sound organizational structure is critical at the Ministry, which is currently greatly overstaffed, particularly at the engineer level. All eight functional offices (Generation, Transmission, Distribution, Control & Communications, Planning & Studies, Commercial, Administrative and Finance, and Training and Development) at the ME are over staffed with a concentration of senior engineers and technicians while under staffed with accountants, financial managers and business administration experts. The assessment addresses methods of increasing productivity at the Ministry by retraining surplus staff and gradually transitioning them to areas with deficiency in expertise and staff such as financial management while allowing natural

attrition to take its course. The Ministry must therefore restructure to solve fundamental productivity problems in the long term.

Essentially, major initiatives must be taken by the Ministry to operate and maintain the electricity system properly, initiate reforms in regulation and energy efficiency, convert technical managers into financial managers, and capture the training and productive work experience. Without these measures and commitments, the nation's electricity infrastructure will remain unreliable and unable to support economic growth.

### **Necessary Tasks for Inclusion in Scope of Work**

- Based on the assessment made by BearingPoint, work with the ME to develop a restructuring plan that could be effected within two years.
- Identify workshops and courses that are designed to build leadership qualities and create a performance-based system for promotions that require demonstration of leadership qualities and traits.
- Implement the Staffing Action Plan with the sponsorship of the Minister and Deputy Ministers.
- Assist the Ministry with the establishment of a corporate structure mechanism to reorganize all sub-sectors of the ME.
- Establish an independent auditor function at the same grade and seniority level as the other functional offices.
- Create a corporate governance system that supports rigorous accounting standards, transparency of operation, and responsiveness to regulatory bodies, circumvents corruption with the establishment of checks and balances within the organization.
- Create a steering committee that consists of senior key players of all eight directorates who would be dedicated to change management as related to reorganization of the Ministry.
- Implement a system in which performance and productivity of individual staff and departments could be measured through goal setting exercises, assignment of accountability and performance reviews.
- Develop an incentive system and strategy to motivate Ministry employees to become more productive and accountable in their position and in control of their progress and advancement to higher positions.
- Identify technical and business training curriculums inside Iraq for training and develop partnerships with the institutions that provide these programs.
- Strengthen job security by putting in place mechanisms for job terminations, transfers, so that each sitting Minister does not clean house en mass.
- Deliver training material and HR manuals with metrics that define performance based policies, as well as benefits and incentives.

## **6.2. REGULATION**

The current legal and regulatory framework is deficient and unsuitable for Iraq's future goal to establish a power market or an environment that attracts and permits private sector involvement. The Electricity sector is in critical need of a regulatory structure that is independent and which promotes competitive development of the local entities and prepares the environment for international companies and financiers. The ME consequently needs to create a transparent regulatory framework consistent with an international and investment legal framework. Only then would financial markets in the international community become accessible to the ME. Without a proper regulatory system, the Ministry would be unable to support procurement practices, power purchase agreements and other financial agreements. In the present state, the private investor assumes most all risk associated with entering the Iraqi electricity market. A functioning legal and regulatory framework would correct such an imbalance of risk/ reward distribution. Fundamentally, a stronger legal framework would allow the private sector to provide wider access to capital markets, better management skills, access to latest technology and generally to implement projects faster than the public sector.

### **Necessary Tasks for Inclusion in Scope of Work**

- Help develop a legislative framework that supports clear energy policies and framework for policy making.
- Work with the Ministry to determine if a separation between regulator and the operation of the Ministry is required in order to help the ME to institute a regulatory body that is separate from the commercial functions of the utility. Alternatively, a separation between the two could be made with appropriate laws and transparent and separate accounting.
- Create and implement a strategy that would support a competitive market in electricity generation and energy supply. Assess whether worthwhile efficiency gains could be achieved by corporatizing the generation operation particularly at this stage in the economy.
- Develop and incorporate public policy objectives that are transparent to Electricity Sector participation.
- Work with the other areas of the Ministry to establish performance targets for the Ministry and to implement tariff policies that are consistent with the regulatory framework.
- Create transparency through clear processes for making regulations and subject to independent review.
- Strategy must incorporate regulations that are consistent with those of central and provincial governments as well as with their approval processes to avoid uncertainty, duplication of effort and costly negotiation time.
- Develop political risk clauses to provide coverage against expropriation. The Ministry needs to agree on the degree to which political instability risk should pass through private investors.
- Ensure regulation incorporates mechanisms for dispute resolution and to enable parties from differing jurisdiction (regional or international) to agree on a "neutral" system of law to avoid bias.

### **6.3. LOAD PLANNING**

The Ministry requires on-going capacity planning training that provides the Ministry knowledge to determine how best to meet expected growth in electricity demand, given available resources, expected load shapes, expected demand and fuel prices, environmental constraints, and costs for utility and non-utility technologies.

The load-planning program should specifically cover capacity planning, fuel dispatching, finance and pricing, and load and demand-side management. The focus of the program should concentrate on minimizing costs on fuel mix and variable operating and maintenance (O&M). Capacity expansion should be based on the most economical mix of all costs, including capital, O&M, and fuel. ME should be able to determine electricity demand through load curves, varied by region, season and time of day. The electricity capacity planning should project the construction of new utility plants. The electricity fuel dispatch function should enable dispatch of available generating units, allowing surplus capacity in select regions to be redirected to regions with unmet needs.

The load-planning program should include load and demand-side management (LDSM) that generates load curves representing the demand for electricity. The program should enable the operators to construct operational and planning analysis, an annual load duration curve, which represents the aggregated hourly demands. Because demand varies by geographic area and time of year, the LDSM should generate load curves for each region and season.

Additionally, the program should include electricity finance and pricing function, which encompasses the costs of building capacity, buying power, and generating electricity. The program should simulate both competitive electricity pricing and the cost-of-service method often used by State regulators to determine the price of electricity.

#### **Necessary Tasks for Inclusion in Scope of Work**

- Transmission Reliability Assessment Course for Using Load Planning Programs (LPP) to provide an overview of transmission reliability and to discuss assessment tools and methods, criteria and practices, deterministic and probabilistic measures. Courses should include hands-on experience in LPP for transmission reliability analysis, including data setup, contingency enumeration process, solution engines, switching events, corrective actions, outage probabilities and customer based indices.
- Provide courses in the use of LPP for power flow, steady-state analysis, and dynamic simulation.
- Courses should teach language and sample applications in load flow, short circuit and dynamic simulation studies using LPP. Classes to include tutoring sessions, followed by hands-on examples designed to teach practical use of LPP.
- Courses that teach the basics of LPP language and how to write and execute effective scripts for controlling LPP which should include automating LPP execution, creating specialized reports, communicating LPP data to other software applications, building custom program dialog.
- Courses that update on current technological improvements for experienced LPP users to refresh and update users' knowledge. The courses should be structured to include lecture

- sessions and hands-on exercises for selected topics in both load flow and dynamics use of LPP.
- Classes should include tutoring sessions, followed by hands-on examples designed to teach practical use of LPP.

#### **6.4. FINANCIAL MANAGEMENT AND BUDGETING**

The financial management system that currently exists at the Ministry of Electricity is inadequate for the size and span of operations at the Ministry, as the records are manual and the record keeping processes are discretionary. For over 30 years, the ME has used the same accounting system, the Unified Accounting System and Charter of Accounts that were adopted from Egypt. With this system, the cost reporting is unstructured and based on insufficient cost centers that not only distort budgetary requirements but also fail to correctly measure performance. The operating budgets depend on one key driver, the generating unit maintenance schedule with critical performance reporting based on the determination of cost per unit (kilowatt hour). Although the ME companies have fallen under ME control, the financial and accounting systems remain disjointed with respect to internal transactions and interactions between departments or standardization. Transfer pricing between generation, transmission and distribution is illogical and is incorrectly accounted. The Ministry has neglected to analyze the cost of service as the ME companies in the past had been independently operated.

The Ministry critically lacks a financial management information system (FMIS) that tracks financial activity to facilitate budgeting and reporting consistent with international best practices. The FMIS should include budget execution, expenditure control, government payments, accounting, financial reporting, cash management, debt management, internal and external audit and procurement.

#### **Necessary Tasks for Inclusion in Scope of Work**

- Support the implementation of an effective and efficient debt management capability in the ME.
- Support the development of a comprehensive cash flow forecasting capability and assist in implementing more efficient cash management processes.
- Develop a sound budget planning and reporting procedure for preparation of the coming year under a budget cycle in a manner that effectively incorporates cost efficiency analysis. The consultant and the Ministry should be able to incorporate a long-term budget.
- Implement a budget system that provides budgetary information by organizational structure, functional classification, economic classification and source of financing at the line agency and municipal levels. Full and comprehensive implementation by 2007.
- Recommend changes in treasury and financial management processes to increase efficiency, ensure accountability and transparency, and fully utilize the enhanced functionality of the new FMIS.
- Identify and document any potential requirements for automated interfaces between the new FMIS and existing or planned systems such as budget formulation, fixed assets management or payroll systems, etc.

- Develop and assist in the implementation of a training program on reformed financial management processes and using the new FMIS.
- Help the ME develop the ability to build comprehensive cash flow models and forecasts that are representative of their operation.
- Deliver training and operational manuals for the FMIS system in Arabic.

### **6.5. TARIFFS, METERING, BILLING AND COLLECTION**

The Ministry suffers great inefficiencies in its tariff, metering, billing and collection operation. The excessively low tariffs that are currently facilitated by heavy subsidies encourage over-consumption and discourage energy efficiency. Lack of transparency in Iraq's consumer subsidies has propagated inequitable gains for certain consumer groups such as government buildings and privileged others to be exempt from paying tariffs.

The pricing structures are ill designed as they inaccurately reflect cost of service and fail to reflect the price which consumers regard feasible. Poorly designed subsidies have severe negative effects that could overwhelm the social benefits unnecessarily. Government subsidies need to be established and implemented to achieve energy accessibility, availability and acceptability.

In addition to low and inappropriately priced tariffs, the Ministry faces major capacity deficiencies in metering energy consumed, billing the energy delivered and collecting payment. Increasing billing and collection rates is critical for the Ministry, as it enables it to achieve better financial returns while making possible the financial ability to maintain and further develop the existing infrastructure without further need for subsidies. Greater self-sufficiency can be facilitated for the ME through feasible tariffs, metering, billing and collections systems.

#### **Necessary Tasks for Inclusion in Scope of Work**

- Establish an agenda to develop an effective tariff, metering and billing system that correctly reflects total cost of service.
- Assist the ME in structuring a long-term subsidy plan as advised by BE that is designed to optimize resource allocation. The consultant in this case should help the Ministry practice all that it has learned through these programs; therefore, close coordination is required with these organizations.
- Coordinate with BE on the implementation of the cost of service on which BE is working with the ME. In ME's case, as with Utilities of many developing countries, a clear idea of the cost structure is needs to be better defined.
- Help develop options to limit demand for electricity. Consult with BE and the ME in order to put in practice the feasibility study that was initiated by BE.
- Work with the ME Planning Department to develop surveys on the breadth of the private generation business and its cost to consumers. Understand the consumer market in all of its customer categories in order to build customized and feasible tariff structure for each.
- Assist the ME in addressing the lack of transparency in consumer subsidies and eliminate distortions in subsidy pricing.
- Work with Ministry to implement an effective billing and collection strategy.

- Coordinate with the capacity development agencies to implement a metering system that is suitable for the country.
- Help the Ministry choose software packages that are suitable for tariff planning, billing and collections. Ensure that the software packages are suitable for the Ministry's team as well as for their level of knowledge. The consultants must be prepared to train an entire team that will be assigned to work on these packages.

## **6.6. CONTRACTING AND PROCUREMENT**

The Ministry needs to establish and adopt international standards and procedures for contracts. ME procurement process must permit open and competitive bidding for support of infrastructure projects. Capital projects and procurement for equipment and spare parts are critical for maintenance of ME infrastructures. During the sanctions, plants were maintained using parts procured with subsidies at sizeable discounts obtained through the UNDP administered Oil For Food program. Going forward, the Ministry will have to source required spares and equipment from the open market without such subsidies. Additionally, financial support for sustainment would have to be reflected in its annual budget, which may be insufficient. Therefore, taking advantage of price competition and wider choice of suppliers is vital for the proper maintenance of electricity infrastructure.

Without international procurement regulations and guidelines, the ME will have difficulty in attracting international bidders and financiers, most of whom are accustomed to international procurement practices. The ability of the Ministry to finance these requirements through the international arena to benefit from competitive bidding is vital to its future operation. The procedures developed and hopefully adopted should focus on enforcing transparency in transactions in order to eliminate corruption.

The ME needs to build a competent Contracting and Procurement Department to engage international investors despite the current volatile security situation and depressed economy. The Contracting and Procurement Department needs to develop practical knowledge of the various acquisition approaches to include full and open competition, fixed price contracts, and blanket purchase agreements, for example, as well as to formulate the appropriate documentation for the various approaches.

### **Necessary Tasks for Inclusion in Scope of Work**

- Assess ME Legal Dept. capabilities; assess needs for training, external legal assistance, and technology and communications support.
- Assess requirements of ME funded projects, donor funded projects and lender requirements and report to ME and agree on conclusions and recommendations.
- Obtain funding and commence implementation of installation of agreed upon technology/communications, and commence implementation of other agreed upon improvements.
- Due diligence on Iraqi contract and trade law and form tenders and procurement contracts with foreign suppliers- identify any contractual issues.
  - Agree with ME required contract terms and structures as well as standard forms and structures of contracts for ME funded, donor funded and lender funded projects for both smaller scale procurement documentation and high value tenders and procurement documentation.

- Identify any gaps in Iraqi trade law in relation to dealing with foreign suppliers.
- Discuss advantages of using international contract forms and models, e.g. NCITRAL, FIDIC, ICC an ECOTERM.
- Devise and develop, in consultation with ME, training programs to meet agreed upon recommendations, and translate training material into Arabic.
- Consult on methods of entering contracts such as joint ventures, consortia, cooperation, partnership agreements, as well as on general contractual/ legal matters such as types of contract, contractual parties, formation of contract, defining scope of work, fundamental terms, allocation of risk, warranties, performance and payment obligations and liabilities.
- Consult on tendering documents such as form of tenders, instructions, terms, technical specification, guarantees, security for performance, authority to execute, key clauses (indemnities, force majeure, breach, termination, IP transfer and protection).
- Develop training programs on corruption, dispute resolution methods, environmental obligations, insurance and financing.
- Help the ME form bid development and evaluation committees, and ensure the committees consist of staff members with the necessary industry, legal and financial expertise.
- Establish a system to enable the ME procurement staff with the designated departments and plants to assess requirements and assist in the development of specification for equipment, materials and suppliers to be purchased.
- Prepare and amend procurement instruments, life-cycle contract cost estimates and cost option analysis.
- Direct and consult on the establishment of organizational partnerships, and to develop risk management strategies.
- Take ME Procurement Department through all life cycle phases of contracting, including the pre-award phase of contracting (acquisition planning, solicitation, source selection and award), and post award contract administration, as well as contract problem identification, analysis and resolution.
- For major procurements, develop contract line item structures, reduce technical requirements into logical frameworks and unambiguous specifications and statements of work, lead development of evaluation criteria and evaluation schemes, and craft project unique contract clauses.
- Help develop the requisite planning and justification documentation for approval of major procurements, and support and defend the procurement to approval authorities.

## **6.7 ENTERPRISE MANAGEMENT INFORMATION SYSTEM**

The only practical and effective approach to overall institutional strengthening and capacity building in the Ministry of Electricity is to implement a world-class, utility-focused Ministry-wide integrated computer applications suite. Internal workflows and business processes would be

reengineered/ realigned with those best practices embedded in the applications. These types of enterprise-wide applications, properly implemented, yield data integrity and transparency, and create an opportunity to alter the culture of an organization by empowering any designated individual throughout the organization to access appropriate corporate data to support analyses and decision-making. The IT organization, if restructured, would be positioned to provide support through the enterprise-wide commissioning activities and to acquire the technical and administrative skills to serve as the Ministry's information resource management experts.

Proposals for project activities also provide for:

- The start-up of process reengineering in anticipation of the implementation of the proposed IT applications suite;
- The standardization of existing core business computer applications to provide a stable and standard starting point for implementation of the proposed applications suite;
- The delivery of IAS training;
- The preparation of Financial Accounts following IAS and Cost Accounting analyses on a parallel track to current prescribed regulations and standard ME practices;
- Cost of Service data collection and analysis activities in preparation for an immediate COS Study using available data, and
- Training Needs – start up analysis and planning.

Longer Term proposals are generally related to providing a strengthened institution that supports sustainable ME capacity improvements and sector commercialization and corporatization initiatives. Critical elements are 1) implementation of the recommended Information Systems and related Information and Communications Technology (ICT) infrastructure and 2) upgrading accounting laws, regulations and practices to align to international standards (IAS). Institutionally, reengineering work associated with implementation of the procured information systems will require set-up of functional teams to realign internal processes to match the best-practice workflows embedded in the specific applications procured.

### **Necessary Tasks for Inclusion in Scope of Work**

- Evaluate EMIS software packages options, and acquire, configure, customize and implement the most appropriate package.
- Develop and assist in implementing a training program on administration and technical operation of the new EMIS software, hardware and any associated networking components.
- Create functional reengineering work teams to join the implementation project team (vendors, consultants and other ME staff) in establishing all user-definable workflows within the applications and setting out a roadmap to migrate corporate workflows into alignment with the applications.
- Provide training to responsible executives to give them the basis to assist in setting the scope and design of the information system and to commit themselves and their subordinates to support the system installation and the vast change-management exercise that will follow throughout the Ministry.
- Provide through vendor(s) of the IT procurement, application and technology-specific technical training a) to users of the individual applications and b) to IT technicians who

- will be responsible for maintaining network availability, database restructuring, back-up and recovery, and application maintenance and periodic upgrades.
- Train management to ensure they are well positioned to provide critical leadership for the extensive procedural and cultural changes the wholesale introduction of modern information systems will bring throughout the Ministry. Top-down is the only approach to implementation that will yield success.
  - Provide standards manuals in Arabic on the EMIS system.

### **6.8. INVENTORY MANAGEMENT SYSTEM**

All electricity infrastructure reconstruction projects funded by Iraq Relief and Reconstruction Program (IRRF) are expected to execute operations and maintenance work, which includes efficient use of spare parts. Unfortunately the USG effort to introduce an inventory and maintenance management system, MAXIMO failed to be successfully implemented due largely to cost over-runs.

Implementation of MAXIMO, a computerized maintenance management system (CMMS) at ME plants was staged into three phases. Phase I defined the web-based technology and infrastructure platform and deployed satellite equipment to provide data connectivity to most of the generation sites. Phase II completed the infrastructure deployment, provided application training in the areas of spare parts management, set up a centralized computer location, and deployed both application and database computing capabilities in the al Rashidiya parts distribution center. Phase III, which was the full operational phase of the program, failed to gain funding because the competition of Phase II and success of Phase I were both disputed.

Currently, the ME is in dire need of an efficient CMMS to track its existing inventory of spare parts. Additionally, both PCO and USAID are currently managing the procurement of spare parts programs, which the ME needs to track. Additionally, the newly awarded long-term O&M program contains a spare parts component, which needs to be efficiently tracked. Without a CMMS, the ME will continue to experience theft and corruption which remain major obstructions to reconstruction progress.

#### **Necessary Tasks for Inclusion in Scope of Work**

- Evaluate inventory management software package options and acquire, configure, customize and implement the most appropriate package.
- Train ME on the use of Maximo to support the collection or identification and reporting of defect maintenance requirements. Training should include tracking follow-up efforts of the mechanical-electrical-controls departments' processes of prioritizing and accomplishing the requested work.
- Train on the CMMS functions that support preventative maintenance, and strengthen planning, scheduling, forecasting and tracking capabilities among others, in order to establish an efficient tracking system.
- Develop and assist in the implementation of a training program on administration and technical operation of the new computerized inventory management system.

- Deploy a pilot site to familiarize the Iraqi management and workforce with the capabilities and advantages of using computer based management system software.
- Train ME staff on the technology's capability to document and track parts and maintenance tasks as well as plan and forecast spare parts and maintenance needs of the plants. The technology is expected to assist in the reduction of un-planned outages.
- Implement demonstration pilot site, which could track defect maintenance operations, expandable into other functional areas (preventative maintenance, inventory control, spare parts tracking), while concurrently serving as a training platform.
- Present ME with an evaluation of the program's operation, and make recommendations for the further development of the CMMS efforts.
- Gain sponsorship of the Ministry to implement this program countrywide in order to standardize operations for better quality control.