Metering Overview

USAID | Iraq Economic Governance II Project

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Background

- The existing metering population is old and has fallen into disrepair.
- Many meters are faulty, damaged or missing.
- Accuracy of old metering is suspect.
- Estimated billing is high.
- Recommend:
  - a sample survey of metering accuracy.
  - Recommend a metering population survey to ascertain true picture of faulty, damaged or missing meters.
  - Initially conduct the population survey as a pilot in one Distribution area (Rusaffa).
- BearingPoint will offer assistance and expertise in:
  - Survey design.
  - Computer application for baseline database.
  - Possible contribution towards computer hardware
  - Interpretation of survey results.

Current Situation

Metering Population

- In 2001 there were approximately 2.6 million customers with electricity supply.
  - Domestic 80% of customers and 48% of load.
  - Industrial <1% of customers and 29% of load.
  - Government 13% of load.
  - Commercial 6% of load.
  - Agricultural 4% of load.
- At that time up to 30% of meters were damaged, faulty or missing.
- Local consensus is that this situation may have worsened.

Current Situation

Metering Accuracy and Maintenance

- Electro-mechanical meter accuracy degrades with age.
- Many of the meters in Iraq date from the 1970's and 1980's.
- Periodic maintenance or accuracy checking is not carried out on installed meters.
- Typically, electro-mechanical meters should be changed on a 15 year cycle.
- The overall accuracy of the total metering population is unknown.

Current Situation

Metering Processes

- Meter acquisition and storage is not formalized to good industry practice.
- There is no apparent centralized metering storage facility.
- Distribution stores keep stock control and accounting records only.
- There is a low level of technical and historical detail recording.

Current Situation

Meter Asset Management

- There is no Metering Asset Management System currently in use.
- The only repository for meter technical detail is within the Billing Master Files.
- The level of metering detail within the Billing Master Files is inadequate for any real life cycle control of metering systems.
- There are no processes in place to effectively control the issue of new meters other than basic stores outward.
- Monitoring of metering life post-installation is not carried out.

Current Situation

General Metering Issues

- Auditing of process is not done in a systematic manner.
- Procedural documents are old or non-existent.
- Meter reading staff also collect payments which could lead to a risk of fraudulent practice without adequate process, checking and balances.
- There is considerable scope for improving the efficiency of operations when compared to international electricity metering businesses such as rigorous tendering and purchasing procedures.

The Way Forward

Short Term Recommendations

- Selection of a Senior Management team to oversee commencement and completion of the recommendations.
  - The project needs senior MoE leadership to ensure commitment.
  - The steering committee already being set up for the BearingPoint project should oversee this initiative.
  - Appointment of smaller sub-committee may be appropriate.

The Way Forward

Short Term Recommendations

- ***Carry out metering population survey to ascertain magnitude of the problem***.
  - The perceived problem is based on outdated and approximate information and will require a full metering survey to evaluate.
  - This survey may be carried out during normal billing cycles.
  - A pilot survey is being planned for Rusaffa – this can easily be rolled out to other distribution areas.
  - A purpose-developed database will be required to store all the new data.
  - The benefits of the survey are:
    - Identify missing and faulty meters for priority replacement.
    - Provide independent check on meter readings.
    - Enable baseline database preparation to guide long term meter replacement plan.
    - Assist DG in better estimation of electricity losses due to faulty, missing or damaged meters.

The Way Forward

Short Term Recommendations

- ***Carry out metering accuracy survey on a small sample***.
- A sample survey is being planned for Rusaffa to:
  - Gather accuracy information from approximately 50 meters.
  - Provide evidence of the level of inaccuracy.
  - Enable expansion of the survey if evidence is inconclusive.
  - The benefits of the sample survey are:
    - Ascertain overall aged metering accuracy for a small sample.
    - Indicate the need for a more extensive survey.
    - Assist DG in better estimation of electricity losses due to inaccurate meters.

The Way Forward

Short Term Recommendations

- ***Selection of new Metering Technology to enable modern meter reading methods.***
  - The current metering technology is electro-mechanical with no pre-payment meters in use.
  - Migration to Solid State (SS) metering is the natural progression.
  - Benefits of electronic metering:
    - Use of multiple tariffs to encourage economic use of electricity.
    - Use of pre-payment meters where necessary or desirable.
    - Enable use of hand-held meter reading devices.
    - Enable introduction of modern fully- or semi-automatic meter reading solutions.

The Way Forward

Short Term Recommendations

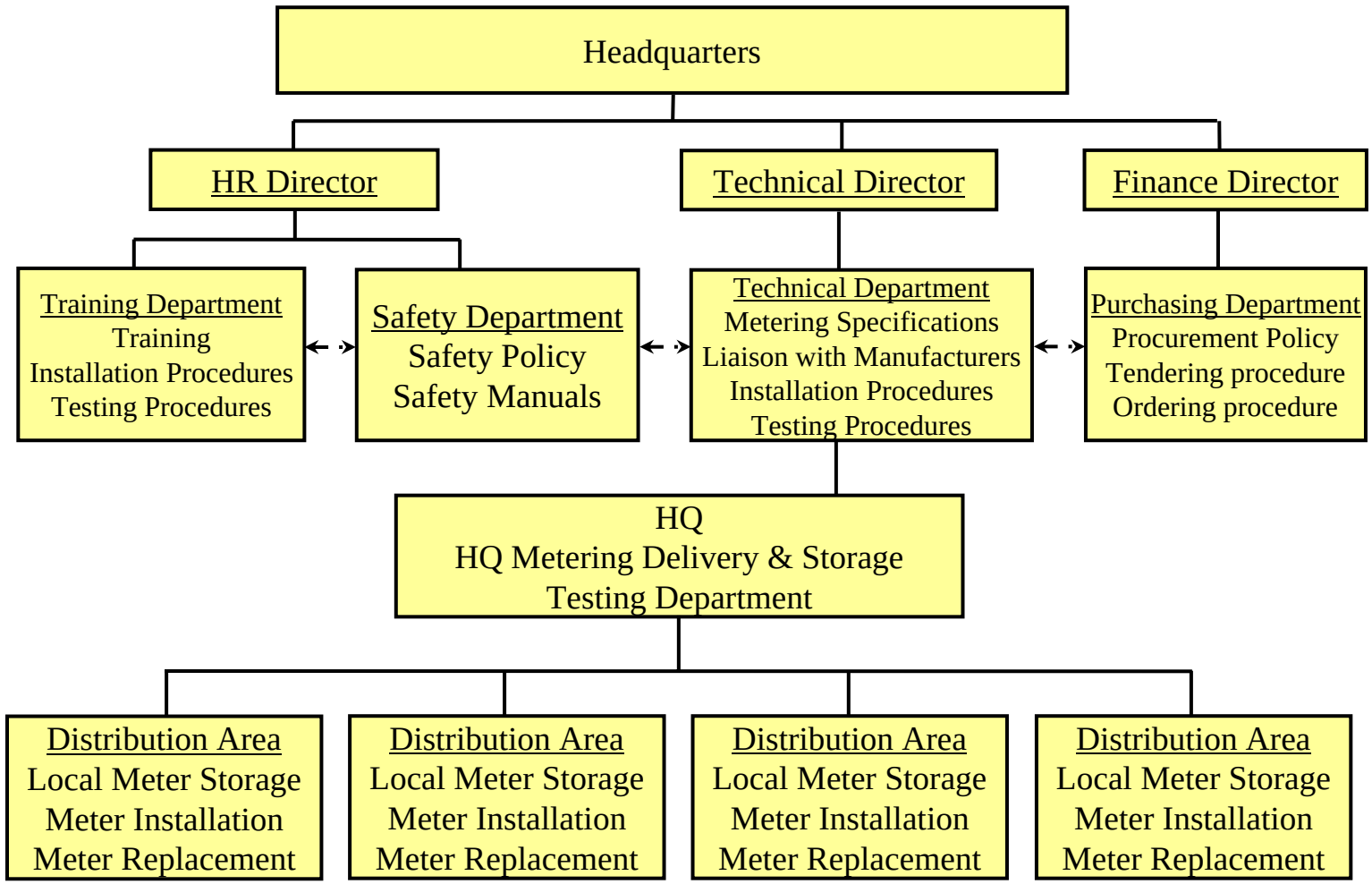
- ***Ascertain requirement for new computer equipment, office furniture and supplies for metering function office locations.***
  - In order to take advantage of new metering technologies, office locations will eventually need to be equipped with up to date computers, software and peripherals.
  - A study should be carried out to ascertain:
    - Diversity of current metering function locations.
    - Existing infrastructure and equipment.
    - New infrastructure requirements.
    - Staff training requirements
  - Develop institution plans for new infrastructure, staffing and training.

The Way Forward

Short Term Recommendations

- ***Define and strengthen a Head Office Distribution functional group to take responsibility for the complete Metering process.***
  - Metering is an integral business component and requires:
    - Process mapping from acquisition to installation.
    - Institution of good industry practice organization to include technical, purchasing, safety, training, storage and asset management.
    - Investigation of existing command structure and decision making process.
  - Typical metering organization structure follows.

Typical Metering Organisation Structure



The Way Forward

Short Term Recommendations

- ***Investigation and specification of the requirements for provision of effective transport and communications equipment to enable efficient and effective use of manpower resources.***
  - Current transport and communications are minimal and will:
    - Require study of potential future transport requirements.
    - Investigation of communications infrastructure to:
      - » Improve manpower efficiency and management.
      - » Enable implementation of work management system.

The Way Forward

Longer Term Recommendations

- The longer term recommendations require the same commitment as the short term.
  - The Steering Committee already being set up for the EG II project should provide management impetus to long term activities.
  - Appoint a project team consisting of representatives from related departments within the metering function.
  - Instigate regular reporting to Steering Committee to ensure progress.

The Way Forward

Longer Term Recommendations

- ***Carry out a pilot implementation for pre-payment metering within one Distribution Business.***
  - Select a suitable compact area for pilot implementation.
  - Specify technology to be implemented.
  - Design collection methodology and data repository.
  - Acquire hardware and appropriate office accommodation for data repository.
  - Staff training in pre-payment metering installation and programming.
  - Management and control of installation teams and data collection and input.

The Way Forward

Longer Term Recommendations

- ***Roll out to all Distribution Businesses in Iraq after the successful pilot results have been demonstrated to resolve current issues.***
  - Create strategy for roll out to all Distribution areas.
    - Meter acquisition.
    - Meter storage and issue.
    - Data collection, recording and storage
    - Meter readings transfer to billing and collection system.
    - Establishment of regional offices for pre-payment sales.

The Way Forward

Longer Term Recommendations

- ***Examine existing processes and carry out process re-engineering.***
  - Very few procedures were available for study.
  - All existing procedures should be examined for suitability.
  - Process maps covering all metering department functionality should be examined for suitability.
  - Prepare new or updated documentation.
  - Complete process re-engineering.

The Way Forward

Longer Term Recommendations

- ***Establish a Metering Asset Management System (MAMS).***
  - A MAMS is the core of any Metering Business and has several crucial benefits.
    - Maintains tracking and management of the complete life cycle of the metering asset.
    - Assists, in conjunction with a CIS system, in the management of the customer relationship.
    - Enables tracking of meter type issues.
    - Enables Work Flow Management.

The Way Forward

Longer Term Recommendations

- ***Establish a Work Flow Management System.***
  - A Work Management tool is a necessity in the everyday running of a Metering Business and provides:
    - Automatic scheduling of metering manpower.
    - Modular integration with MAMS to ensure minimal applications.
    - Automatic updating of MAMS with new meter details.
    - Complete tracking of manpower utilization, efficiency and productivity.

The Way Forward

Longer Term Recommendations

- ***Recruit or retrain existing staff where where necessary.***
  - Investigate staffing levels to suit new technology implementation.
    - The initial pilot study will require dedicated “hit teams” to ensure completion to acceptable timescales.
    - Roll out of new installations to repair existing problems is a large scale project.
    - Adequate levels of trained manpower are required to ensure both these tasks can be undertaken without compromising normal metering business.

The Way Forward

Longer Term Recommendations

- ***Training of metering field and office staff.***
  - The introduction of new technology will necessitate large scale training.
    - New staff will require training in all aspects of safety procedures and meter installation.
    - New and existing staff will require training in new metering technology and meter reading techniques.
    - Training in Asset Management and Work Flow Management.

The Way Forward

Longer Term Recommendations

- ***Investigate investment in a new Customer Information System (CIS).***
  - Modern CIS systems greatly assist in the running and management of any business.
    - A new CIS system is to be recommended for the Billing and Collection function.
    - The metering business should be integrated into this system to ensure better customer service for metering issues.
    - CIS will enable management of customer complaints and issue tracking,